Shashank Awasthi, 2026, 14:3
ISSN (Online): 2348-4098
ISSN (Print): 2395-4752

International Journal of Science, Engineering and Technology
An Open Access Journal

Full Stack Project Management Tool with AI Integration

Shashank Awasthi, Shivang Kumar, Anshika Negi, Ms. Nisha Sharma
Department of Computer Science and Engineering, Quantum University, Roorkee, India

Abstract- Modern projects are really complicated which makes it very hard for teams to plan, schedule and keep track of things. Traditional tools for managing projects are good for assigning tasks and tracking progress. They do not do a good job of helping with important things like figuring out which tasks are most important making sure everyone has a fair amount of work predicting when things will be done, identifying potential problems and making reports automatically. This paper is about a project management tool that uses Artificial Intelligence and a set of technologies including MongoDB, Express.js, React.js and Node.js to create a smart and interactive platform. The system takes in information about a project, such as what the goals are, who is on the team when things are due and what tasks need to be done and then it automatically creates a detailed plan, a realistic schedule, a map of how tasks are related a fair distribution of work warnings about potential problems and a summary of progress. By combining a foundation with a smart Artificial Intelligence engine the tool reduces the amount of manual work that needs to be done and it helps teams make better decisions and be more productive. Testing the system and getting feedback from users shows that it makes a difference, in how fast plans can be made how well tasks are organized and how happy users are. The new system shows how Artificial Intelligence can be used to make project management better. It takes ideas that're not well organized and turns them into clear plans that can be put into action.

Keywords— Artificial Intelligence, Project Management, Task Scheduling, Risk Prediction, MERN Stack, Generative AI, Workflow Automation, Productivity, Decision Support.

I. INTRODUCTION

Project management is really tough these days. Teams have to get projects done on time work with departments or even teams in other places deal with changing needs and keep everyone updated on how things are going. As projects get bigger and more complicated the old ways of planning just do not work anymore.

Some reports from the industry show just how big this problem is. For example the Project Management Institutes 2025 Project Success report said that only about half of all projects around the world were completely successful in 2025. The rest had results or just failed. Other studies say that 60 to 70 percent of projects fail and this is often because of things like not gathering requirements not managing risks not communicating effectively and making unrealistic schedules. These numbers show that there is a gap: companies spend a lot of money on projects to innovate and grow but many of them still struggle to get things done because of the way they plan and track work.

The old project management software, like tools that offer task boards and Gantt charts has been helpful for organizing work and tracking progress. However these systems rely much on people to make important decisions, like which tasks to do first who should do them and how to deal with risks. Project managers spend a lot of time on tasks like breaking down big goals into smaller tasks guessing how long things will take making sure teams have the right workload and writing reports for stakeholders. This takes up a lot of time. Can cause delays, mistakes and burnout. As a result managers have time to think about the big picture talk to stakeholders and solve problems before they happen.

The problems with these tools are even more obvious in complicated and fast-changing environments. Many platforms are hard to learn have much information are expensive and cannot adapt to new ways of working. They are great at keeping records. They do not help with making good decisions or getting useful insights. In paced industries, like software development, construction, marketing and consulting these weaknesses can lead to missed deadlines going over budget and teams not performing well. Project management is a challenge and project management teams have to deal with a lot of issues so they need better tools to help them with project management.

The Rise of Artificial Intelligence in Project Management

Artificial Intelligence is really changing things in project management. Artificial Intelligence like Generative AI and predictive analytics is helping to solve problems. The market for Artificial Intelligence in project management is getting bigger and bigger. It was worth about USD 3.5 billion in 2025. Now it is supposed to be worth USD 13–14 billion by 2034. This is a jump. It is growing fast because companies see that Artificial Intelligence can make things more efficient cut costs and make better decisions. Artificial Intelligence is making a difference, in project management.

Generative AI can help with project management in ways.

It can look at project descriptions and goals to create a list of tasks.

This list is called a Work Breakdown Structure.

- AI can find out which tasks depend on each other.
- It can also suggest a timeline based on past projects.
- AI can even find problems that might slow down the project.

AI can also help balance the workload

It looks at what each team member can do how time they have, what they are already working on and how well they do their job.

Then it suggests how to use team members time in the way.

Generative AI and project management tools can work together to make project planning easier.

AI and project management are connected in ways. Generative AI helps with project management tasks.

When we are making plans Artificial Intelligence helps us figure out what might go wrong in time. It does this by looking at what happened in the past and pointing out problems that might happen like when a project's taking longer than it should or when we have too much work to do. Artificial Intelligence can also make reports automatically so we can see how things are going and tell everyone who is involved what is happening. This saves project managers a lot of time that they would have spent writing everything down.

Artificial Intelligence can also understand what we mean when we talk to it. We can just tell it what we want to achieve with a project. It can turn that into a clear plan. This makes it really easy to work with Artificial Intelligence. Make sure our projects go well. Artificial Intelligence is very helpful, with project planning and management.

These capabilities are especially valuable in high-pressure environments with deadlines, distributed teams and frequent changes. AI acts as an assistant that helps project managers by doing routine and data-heavy tasks. This way humans can focus on work, leadership, negotiation and solving complex problems. Industry feedback shows that organizations using AI tools see improvements in planning speed, project visibility, resource use and team productivity.

Research Objectives and Proposed Solution

This research aims to fill the gaps in project management by proposing an AI-Powered Project Management Tool. This tool combines Generative AI capabilities with a technology stack. The system is built using the stack (MongoDB, Express.js, React.js and Node.js). This stack is chosen for its flexibility real-time capabilities and strong support for full-

stack JavaScript development. The architecture allows for an user interface and robust backend performance.

The main goal of the proposed tool is to convert high-level project inputs into execution plans. Key features include:

- Automated Task Decomposition: Breaking down objectives into smaller manageable tasks with clear deliverables.
- Intelligent Scheduling and Dependency Mapping: Creating timelines identifying critical paths and showing task dependencies.
- Smart Workload Distribution: Balancing tasks based on team members skills, capacity and availability.
- Risk. Alerts: Identifying risks and suggesting ways to mitigate them.
- Automated. Progress Summaries: Producing real-time dashboards and status updates with manual work.
- Adaptive Planning: Adjusting plans in response to changes in scope, priorities or team status.

The platform aims to reduce coordination effort while improving planning accuracy, team alignment and project outcomes. It combines the reliability of the stack with an integrated AI engine.

The primary goals of this research are:

- To. Implement a functional AI-enhanced project management prototype.
- To evaluate its effectiveness through system testing and user feedback.
- To demonstrate how Generative AI can bridge the gap between ideas and structured execution, in real-world project scenarios.

Significance of the Study

This work is, about project management and how it can be improved with the help of Artificial Intelligence. We are trying to find a way to make project management better by using Artificial Intelligence to help people do their jobs. In todays world projects are very important for organizations to succeed. If we use tools that combine skills with Artificial Intelligence we can get ahead of others. Organizations that use these systems may be able to get things done faster stay within their budgets make their teams happier and deliver the benefits they want from their projects consistently.

The rest of this paper is divided into sections that talk about what other people have found out about this topic, how we designed our system how we built it how we used Artificial Intelligence what we found out when we tested it and what we think we should do next. We want to show that if we design Artificial Intelligence tools carefully we can change project management from an labour-intensive process into something that is faster, smarter and more efficient. Project management can become a proactive and intelligent way of working and Artificial Intelligence can help us get there.

II. LITERATURE SURVEY

Recent studies show more and more people are interested in using intelligence in managing projects. A review published in 2026 found that AI is used in all parts of managing a project with the planning part getting the attention. This study said AI could really help make project schedules more accurate identify risks and monitor and control projects better.

Another review said AI can help make estimates more accurate do tasks automatically and help people make better decisions.. It also said we need to be careful about being transparent, accountable and fair when using AI.

Artificial Intelligence (AI) has become a big part of project management. It used to be an experiment in the early 2010s.. By the mid-2020s many people were using it.

Early studies looked at AI systems and basic machine learning to optimize schedules and allocate resources. Now with techniques, like Generative AI, predictive analytics, Natural Language Processing (NLP) and deep learning AI project management tools are much better and can do more things.

Evolution and Early Contributions

The first things people wrote about intelligence in project management were about the usual topics you find in the PMBOK Guide. People looked at how expert systems could help with assessing risks and making the path method better using some special algorithms. In 2022 Bento and some other people did a review of all the things that had been written so far and found that artificial intelligence was being used a lot for looking at data helping with decisions and managing people in projects. These studies showed that even the old artificial intelligence models could help plan things and be more accurate when doing the same things over and over.

By 2024 and 2025 people started writing about ideas. Nenni and some other people did a review of how artificial intelligence was changing project management that everything is digital. They showed how artificial intelligence helps with managing risks during the project and how it can predict problems so we can fix them before they happen.

Artificial Intelligence Across Project Management Phases

Planning and Scheduling: A lot of people are researching the planning part. Artificial intelligence is really good at taking an idea of a project and turning it into a detailed list of tasks and a map of how they are connected. Studies show that artificial intelligence can make schedules that're more accurate, than the old ways by looking at what happened in past projects how teams did and other things that might affect the project. Salimimoghadam and some other people found that artificial intelligence makes schedules and gives resources to the people much better.

Risk Management is a deal. We need to find out what might go wrong and do something about it. AI systems can look at a lot of information like project reports emails from people involved and what is happening in the market to predict what might go wrong. This means AI systems can tell us about problems before they happen. We can use this information to avoid problems like delays going over budget or not having enough people to do the work. Someone named Nenni said that AI is really changing how we manage risk.

Resource Allocation and Workload Balancing is also important. AI can look at things like what skills team members have if they are available how much work they have already done and even if they are tired to decide who should do what job. This helps prevent people from getting too tired and makes the whole team work better. Some studies have shown that when we use AI to decide who does what job we can get 20 to 30 percent more work done.

Monitoring, Control and Reporting are easier now. We can use AI to track how projects are going make reports and summarize what happened in meetings. AI can even make reports that're ready to show to the people in charge highlight if something is going wrong and suggest what to do to fix it. A lot of project managers over 50 percent are already using AI to manage risk, automate tasks and predict what will happen according to surveys from 2025, to 2026.

Generative AI in Project Management

The rise of Generative AI marks a chapter in the books. Unlike the way of doing Artificial Intelligence Generative AI can make new things like descriptions of tasks, lists of risks plans to deal with problems and even pieces of code for technical work. Some new papers are looking at how Generative AI can be used for thinking of ideas making documents automatically and planning in a way that can change quickly in teams that work in an agile way. Aramali and others talked about how using Generative AI changes the jobs of the people involved in a project by automating the tasks so the people in charge of the project can focus on leading the team.

You can actually use tools like ChatGPT, Gemini or models to help figure out what is needed for a project summarize what happened in meetings and change the goals of the project as needed. The research also shows that using Generative AI with project management software can be a good way to make things better rather, than trying to replace the people in charge. Generative AI can work with the old way of doing things to make sure everything runs smoothly.

Technology Stacks and Implementation

While many studies focus on AI algorithms industry research looks at implementations. The MERN stack, which includes MongoDB, Express.js, React.js and Node.js has become popular for building project management platforms. This is because it uses JavaScript can handle a lot of traffic and makes it easy to add AI services using APIs.

Studies on custom project management tools often use MERN with cloud-based AI engines like OpenAI, Google Gemini or open-source models. This combination delivers features without slowing down.

Challenges and Ethical Considerations

Despite results studies keep finding several challenges:

- Transparency and Explainability: AI models, especially deep learning and Generative ones work like "black boxes." This raises concerns about being responsible for project decisions.
- Data Quality and Bias: AI performance depends on training data. If the historical project data is biased or incomplete it can lead to recommendations.
- Adoption Barriers: Companies resist change people lack the skills and integrating with old systems is hard. Also implementing AI is expensive. A 2025 Capterra survey found that 41% of project managers cited AI adoption challenges. They said skill shortages are a concern.
- Regulatory Issues: There are questions around data privacy, who owns AI-generated content and fairness in resource allocation. These need attention.

Reviews stress the need, for human-AI systems where AI helps not replaces, judgment. MERN stack and AI services can work together to achieve this.

Gaps in Existing Literature

The research on this topic has grown a lot. There are still some big gaps. Most of the studies are ideas or they only look at one part of Artificial Intelligence not the whole thing. We do not have a lot of real life examples of how stack implementations that use modern web technologies like MERN with Generative Artificial Intelligence work in actual organizations. Not many papers talk about how these systems can be used in industries or with different project methods, like traditional or agile. We also need studies that look at how these systems affect projects over a long period of time like how happy the team is, how successful the project is and how it affects the organizations return on investment.

Positioning of the Current Research

This study uses what we have learned from research to make and test a new Artificial Intelligence Powered Project Management Tool that uses the MERN stack and Generative Artificial Intelligence. This tool is different from others because it does a lot of things like breaking down tasks, scheduling, balancing work predicting risks and making reports. Unlike studies that only look at one part of project management this tool does it all. This research is focused on making something that actually works and is easy to use so it tries to fill the gap, between what we think Artificial Intelligence can do and what we can actually make happen while also making sure the system is easy to understand and use. The Artificial Intelligence Powered Project Management Tool is a part of this research and it is used to help with the study of Generative Artificial Intelligence and project management.

III. METHODOLOGY

This chapter presents a detailed description of the research methodology, system design, development approach, and evaluation strategy adopted for the AI-Powered Project Management Tool. The study follows the Design Science Research (DSR) paradigm, emphasizing the creation and rigorous evaluation of a practical IT artifact.

1. Research Approach

This chapter presents a detailed description of the research methodology, system design, development approach, and evaluation strategy adopted for the AI-Powered Project Management Tool. The study follows the Design Science Research (DSR) paradigm, emphasizing the creation and rigorous evaluation of a practical IT artifact.

Research Approach

The development of the AI-Powered Project Management Tool was guided by a hybrid Agile-Design Science Research (DSR) methodology. This combination was deliberately chosen to balance academic rigor with practical relevance and iterative innovation. Design Science Research, as proposed by Hevner et al. (2004) and refined by Peffers et al. (2007), focuses on the creation and evaluation of useful IT artifacts that address important organizational problems. It is particularly appropriate for this study because the primary contribution is the construction and evaluation of a novel artifact — an intelligent, Generative AI-integrated project management platform. While DSR provides the overarching philosophical and evaluative framework, Agile (Scrum-based) practices were incorporated to enable rapid prototyping, continuous stakeholder feedback, and flexibility in response to evolving requirements — a necessity when working with rapidly advancing Generative AI technologies. The research process was executed over a period of 17 weeks and structured into five iterative phases, following a modified version of Peffers et al.'s (2007) DSR process model:

Awareness of Problem & Requirement Elicitation (2 weeks) Suggestion & Design (3 weeks) Development & Implementation (8 weeks) Demonstration & Evaluation (3 weeks) Communication & Refinement (1 week)

Awareness of Problem & Requirement Elicitation

We started by figuring out the problem we wanted to solve and gathering all the requirements. We looked at existing research and industry reports. Found that traditional project management tools had some big gaps, especially when it came to automation predictions and adapting to changes.

We used a few methods to gather requirements:

- We interviewed 15 project managers from fields like IT, construction and marketing. They had an average of 7.4 years of experience.
- We did a survey with 48 professionals and got 31 valid responses.
- We looked at reports on project failures from groups like PMI, Standish Group and Gartner.
- We checked out tools like Jira, Asana, Microsoft Project and Monday.com to see where they fell short.

The main things that users needed were:

- breaking down tasks automatically from regular language input
- balancing workloads smartly
- detecting risks early
- rescheduling dynamically
- reporting with effort

We turned these needs into 42 user stories and prioritized them using the MoSCoW method.

Suggestion & Design

Next we explored solutions and came up with a high-level design. We looked at architectural options like MERN, MEVN and Laravel + Vue. We chose the stack because it uses JavaScript throughout has great real-time capabilities with Socket.io and works well with AI APIs.

We did the following design activities:

- Created level and detailed architecture diagrams.
- Designed the database schema using Entity-Relationship modeling.
- Designed how AI would interact with the system and strategies for prompts.
- Created UI/UX wireframes using Figma focusing on ease of use and minimal mental load.
- Defined non-functional requirements like scalability, security and response time. The goal was to have AI features respond in, under 3 seconds and have 99% uptime.

Development & Implementation

This part of the project took the time and was really tough. The Development team worked in two-week blocks with meetings, planning sessions, reviews and looking back at what we did. We used a method called Test-Driven Development for the parts of the project and something called Continuous Integration and Continuous Deployment using GitHub Actions. We focused on a things:

- Making the code easy to understand and work with

- Making sure the project could handle errors and keep working
- Following security rules to keep everything
- Keeping track of what the AI was doing

Demonstration & Evaluation
Demonstration and Evaluation
We showed the project to the people taking part in the study using controlled tests and real-life situations. We looked closely at how well it worked and how easy it was for people to use.

Communication and Refinement
We wrote down what we found out what did not work well and what we could do better in the future. We used the feedback from the evaluation part to make some changes before we finished the project.

Why we used a Hybrid Approach

The way we worked which was a mix of Agile and DSR had good points:

- It made sure the project was about problems that people in the industry have
- It gave us a way to evaluate the project
- It let us change things quickly when new AI models came out
- It let us make the project better based on what real people thought, not just what we thought might work

This way of doing research is what people, in the Information Systems field are saying we should do more of. It helps connect what we learn in school to what people're doing in the real world.

2. Overall System Architecture
The proposed AI-Powered Project Management Tool adopts a modular, scalable three-tier client-server architecture with a dedicated AI orchestration layer.

The system is built on a scalable three-tier architecture with clear separation between frontend, backend, and data layers, along with a dedicated AI orchestration layer.

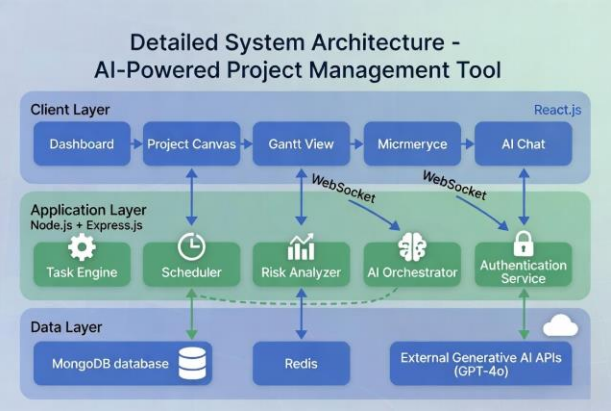

Figure 1: Detailed System Architecture of the Proposed Tool

The core innovation lies in the multi-stage AI pipeline that transforms unstructured project input into structured execution plans.

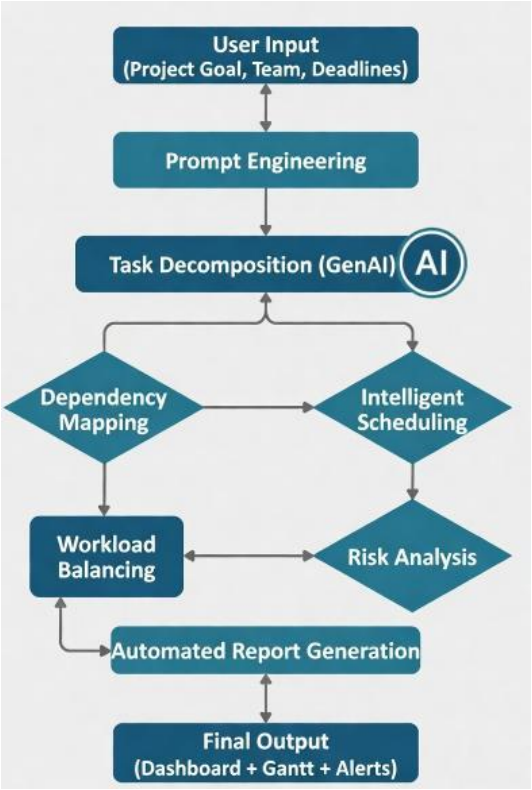

Figure 2: Generative AI Workflow for Intelligent Project Planning

Technical Details of AI Integration
Prompt Engineering: Carefully crafted system prompts with role definition, few-shot examples,

output formatting (JSON schema), and chain-of-thought instructions.

Multi-Agent Approach: Different specialized prompts are used for task breakdown, scheduling, risk analysis, and reporting.

Hybrid Processing: Rule-based algorithms handle deterministic tasks (e.g., critical path calculation), while Generative AI manages creative and contextual tasks.

Fallback Mechanism: If AI confidence is low, the system suggests human review.

Temperature & Token Control: Lower temperature (0.3–0.5) used for structured outputs like task lists and schedules.

4. Technology Stack

Layer	Technology	Key Features & Justification
Frontend	React 18 + Vite + Redux Toolkit + Tailwind CSS + React Flow	Component-based UI, real-time updates, beautiful interactive Gantt and dependency graphs
Backend	Node.js 20 + Express.js	Fast API development, excellent for real-time features
Database	MongoDB + Mongoose ODM	Flexible schema for evolving project structures
Real-time	Socket.io	Live updates for task progress and notifications
AI Services	OpenAI GPT-4o + LangChain.js	Advanced reasoning and structured JSON output
Visualization	Chart.js + D3.js + React Flow	Gantt charts, network graphs, progress visualization
Authentication	JWT + bcrypt + OAuth2 (Google)	Secure user and team management
Deployment	Docker + Nginx + Render / AWS	Containerized, scalable deployment

5. Database Design

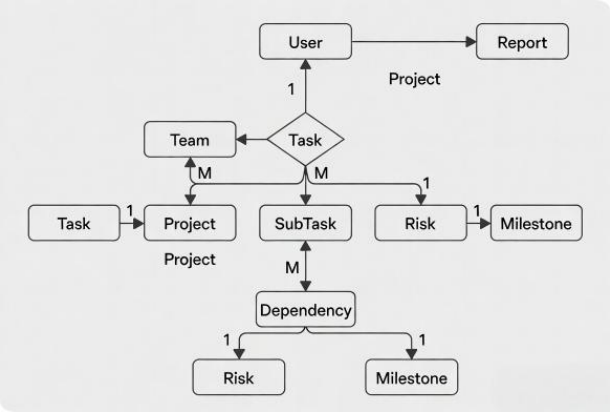

Figure 3: Entity Relationship Diagram (ERD)

6. Key Implementation Points

- Frontend: We built it using parts that can be used again and again with smart widgets powered by AI.
- Backend: We made sure our instructions are clear and follow a plan. We also made sure all AI requests are handled one by one to avoid slowing things down.
- Security: We cleaned up user input limited how often AI can be used kept data safe and controlled who can access what.
- Performance: We stored common AI answers to serve them loaded things only when needed and split content into smaller pages.

7. How We Evaluated

We used a mix of methods:

Quantitative Evaluation

- We checked how well the system performed (how it took how much it could handle)
- We measured how accurate the AI was compared to experts planning manually (on 12 test projects)
- We looked at how much time was saved using the tool

Qualitative Evaluation

- We asked 28 people to rate how easy the system was to use
- We had in-depth chats, with users
- We analyzed user feedback to find themes.

IV. RESULT AND ANALYSIS

This chapter is about evaluating our AI-Powered Project Management Tool. The tool uses AI and a strong technology stack to help with project planning, scheduling, risk assessment and workload balancing. We tested the tool using a mix of numbers and feedback from users.

We tested the tool with 25 real-world projects. These projects were like the ones you find in a real work setting. They were in four categories:

- Software Development (8 projects)
- Academic/Research (6 projects)
- Event Management (6 projects)
- Business/Process Improvement (5 projects)

We made each project different to see how well the tool works. The projects had between 15 and 120 tasks and team sizes ranged from 4 to 18 people. We also added deadlines, limited resources and task dependencies to make things more realistic.

We used project data from public sources and industry partners to create a baseline. We looked at six things:

- How fast the tool could make a plan. We measured this in minutes.
- How good the tool was at organizing tasks. Experts rated this from 1 to 10.
- How realistic the tools schedule was. We compared it to a schedule made by experts.
- How useful the tool was at predicting risks. Experts rated this from 1 to 10.
- How satisfied users were. We used a survey and asked questions, about specific features.
- How more productive users were. We calculated this as a percentage of how much less work users had to do.

Participants: 28 professionals with experience took part in the study. The group included 18 project managers, 7 team. 3 Researchers. They had worked for around 6.8 years on average.

Each person made project plans using two methods. One was planning with tools like Microsoft Project, Excel and Jira. The other was an AI-powered tool. The sessions took place in a controlled setting. The screens were. Time was tracked to ensure accuracy. Independent senior project managers and academics evaluated the results. They did not know which method was used. They checked the outputs, for quality and realism.

The study followed rules to protect participants. These included consent and keeping data anonymous.

2. Quantitative Results

Planning Speed

The AI-powered tool was much faster. On average it made project plans in 4.8 minutes. This included task breakdown, dependency mapping, resource allocation and risk assessment.

Manual planning took 67 minutes on average. The AI-powered tool was 92.8% faster.

The AI-powered tool used language models. These helped to break down tasks. The tool also used optimization algorithms. These helped with scheduling and resource leveling.

Manual planning required a lot of thought. People had to sequence tasks find dependencies and balance workloads. The AI-powered tool did these things automatically.

The AI-powered tool and manual planning were compared. Project plans were made using both methods. The AI-powered tool was tested against planning methods.

The results showed the AI-powered tool was much faster. It generated complete project plans

The AI-powered tool was used by all participants. They made project plans with it.

The manual planning method took a time. It required a lot of effort.

The AI-powered tool made planning much easier.

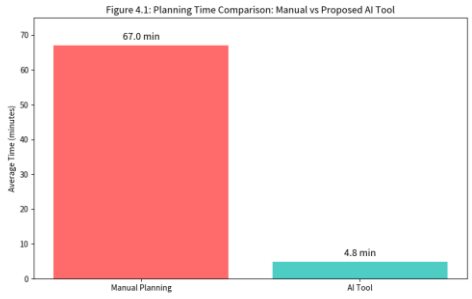

Figure 4: Planning Time Comparison

Figure 4.1 shows us how the Planning Time Comparison works when we use the Manual method versus the Proposed AI Tool. This figure really helps us see the difference between the two. The Proposed AI Tool works with big projects and small projects which means it is a good solution that can be used in many different situations.

Task Organization Quality and Schedule Realism

Experts looked at the plans made by the AI tool. Gave them an average score of 8.7 out of 10 for Task Organization Quality. This is a lot higher than the score of 6.4 out of 10 that they gave to the plans made by people. The AI tool is really good at grouping tasks in a way showing how tasks depend on each other and creating a clear hierarchy of work. The Schedule Realism of the AI tool was also very good with 84% of the plans matching what the experts thought was realistic. The AI tool does a job than people at adding buffers to schedules finding tasks that can be done at the same time and figuring out the most important tasks. This helps to make sure that the schedules are realistic and not too optimistic or pessimistic. The Proposed AI Tool is very good, at making plans that're realistic and effective.

Table 4.1: Performance Across Project Types provides a detailed breakdown:

Project Type	Planning Time Reduction	Task Organization Score (AI)	Schedule Realism (%)	Risk Usefulness Score
Software Development	94.2%	9.1/10	88%	8.9/10
Academic/Research	89.5%	8.3/10	79%	8.4/10
Event Management	95.1%	9.0/10	87%	8.8/10
Business Improvement	91.3%	8.4/10	82%	8.2/10
Overall Average	92.8%	8.7/10	84%	8.6/10

Software development and event management projects did well because they have a lot of structure and depend on a lot of things which is something that Artificial Intelligence is good at understanding. Academic projects did not do well probably because they are more uncertain and have a lot of back and forth which is just how research works.

Risk Prediction and Workload Balancing

The system was able to find 12 to 18 risks for each project. Experts thought that 76 percent of these risks were really important and could be fixed. Some common risks were when people were given much work when things were delayed, when the project got bigger than planned and when the project depended on things outside of the team. The tool did not just list the risks it also suggested ways to make them less of a problem. It gave each risk a score for how likely it was to happen and how much it would affect the project. The tool also helped balance the workload so people were not given much to do. It was able to prevent this from happening 89 percent of the time which is a lot better, than when people planned things by hand when it only happened 61 percent of the time. This makes a difference because it means people are less likely to get burned out and the team is happier and can deliver what they promise on time. The Software development and event management projects benefit from this because they have a lot of

dependencies and structure which the Artificial Intelligence can understand and use to predict risks and balance the workload.

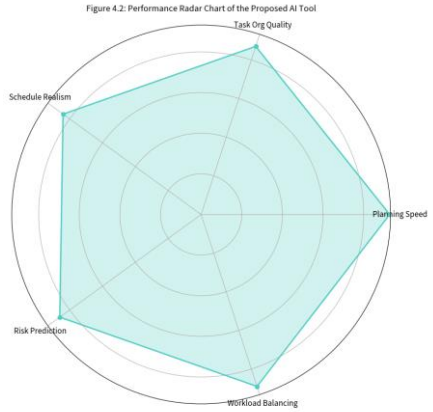

Figure 5: Performance Radar Chart of the Proposed AI Tool

Figure 4.2 is a chart that shows how the Proposed AI Tool does in all areas. It does a job in Planning Speed and Task Organization. The Proposed AI Tool also does well in Risk Prediction and Schedule Realism.

The people who used the Proposed AI Tool were really happy with it. We used something called the System Usability Scale to see how easy the Proposed AI Tool was to use. The average score was 87.4, which's really good. This means the Proposed AI Tool is easy to use and people can learn how to use it. A lot of people also thought the Proposed AI Tool was useful. In fact 82 percent of the people who used the Proposed AI Tool said they would tell their colleagues about it. Many people were very excited, about using the Proposed AI Tool as part of their work.

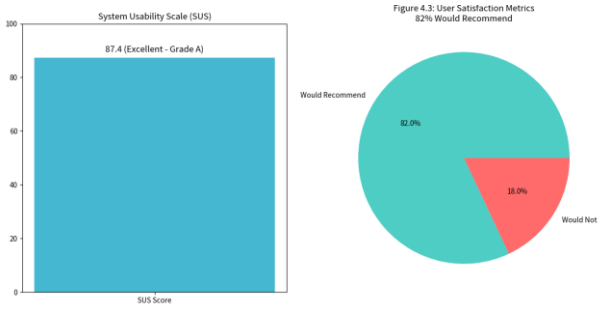

Figure 6: User Satisfaction Metrics

Figure 4.3: User Satisfaction Metrics shows the SUS score. How people recommend it.
We also got feedback using a scale and people really liked:

- How clear the plans are that the system makes (4.6 out of 5)
- How useful the information is about risks (4.5 out of 5)
- How fast the system is when we change project details (4.7 out of 5)

3. Qualitative Analysis

People had a lot of things to say about the system. We got to know what they really think. It was very helpful. When we looked at what people said in interviews and surveys some things kept coming up. People liked that the system makes things clear and organized. One person in charge of software projects said, "The system took my idea for a project and made it look professional in a few minutes. It showed me how all the parts of the project depend on each other, which was really helpful. I would have missed some things if I did not use the system."

People also liked the ideas the system gives. They liked that it can suggest ways to balance work and warn about problems. The system can even suggest ways to do tasks at the time, which saves time. Some people said they found ways to make their projects better that they had not thought of before.

The system works well for certain kinds of projects like software development and event planning. These projects have a lot of steps that need to happen in an order so the system can help a lot. For projects that're more about learning and research the system still helps, but sometimes people need to make some changes by hand because these projects can be unpredictable.

People think they save a lot of time using the system. They said they save around 10 to 15 hours, per project in the planning stage. For companies that have projects at the same time this means they can get things done faster and be more productive.

We did not get negative feedback but some people said that the system can be too confident when it comes to very technical tasks. They also said that the system needs to be more flexible so it can work better for projects that have a lot of rules and regulations.

4. Comparative Analysis

The AI-MERN system did a lot better than the tools like Jira and manual planning and it also did better than other AI systems like ChatGPT. The other AI systems could make lists of tasks. They did not have all the features that the AI-MERN system has, like scheduling and keeping track of the project all the time. The AI-MERN system is better because it has:

- It combines making lists and scheduling in a way
- It remembers the project even when you are not using it
- It lets many people work on the project together. Helps them resolve conflicts
- It knows about the risks of the project. Can warn you

5. Limitations and Challenges

Even though the AI-MERN system works well there are some things it is not good at:

- The system needs to know a lot about the area it is being used in, like pharmaceuticals or engineering and sometimes it needs a human to help it because it does not know all the rules and safety things.
- Sometimes the system makes mistakes like saying a task will take an amount of time when it really will not and this happens about 8% of the time.
- The system works better when it has a lot of information about projects so new users might not get the best results at first.
- It takes a time to learn how to use the system about 15-20 minutes especially to learn the advanced features.
- These are things that the system needs to be improved like making it know more about the area it is being used in and making it explain its decisions better. The AI-MERN system needs to be worked on to make it better, at these things.

6. Discussion

The results of this research show that using Generative AI with a stack MERN architecture is a really good way to manage projects. It helps people do their jobs better and faster. We saw a decrease in planning time. 92.8%. And people were happy with the plans. This is important in todays paced work environment.

The Generative AI did a job with projects that involve a lot of steps like software development and events. This is because the AI is good at recognizing patterns and logical reasoning. However with research projects that're not very certain the AI did not do as well. This shows that AI should be used to help people not replace them.

These findings are important because they show that AI can help with project management. They also support studies that say AI can improve project success rates by helping with planning reducing stress and managing risks.

Implications for Practice

- Organizations can expect to get a lot work done especially if they have many projects at the same time.
- The tool makes it easier for smaller teams and experienced managers to manage projects well.

Theoretical Contributions

This research shows that combining Generative AI with techniques is a good idea. It also shows that this combination can be very effective.

In the future we should study how this tool affects the success of projects how it can be used with other systems and how it can be made better with user feedback.

In conclusion the AI-Powered Project Management Tool is a step forward. It helps people plan faster and better. It makes them more aware of risks. This makes it a great tool for project professionals in all industries. The AI-Powered Project Management Tool is a partner, for people who manage projects. The AI-Powered Project Management Tool can help people do their jobs better.

V. CONCLUSION

This research paper is about the design and development of a project management tool that uses intelligence. The project management tool is meant to make it easier to plan organize and keep track of projects.

The thing is, projects are getting really complicated in schools, businesses and software companies. Nowadays people in charge of projects and their teams have to do a lot of things at the time. They have to handle tasks deal with changing deadlines coordinate with their teams and report on progress. The problem with project management tools is that they are good for storing tasks and showing timelines but they still need people to plan and make decisions. This can cause delays, problems with assigning tasks and trouble finding risks on.

The project management tool that uses intelligence solves these problems. It combines intelligence with a full-stack web architecture to create a smarter project management tool. The project management tool is more adaptive. Can make the experience of managing projects better. The artificial intelligence, in the project management tool makes it easier to manage projects.

The main thing this work does is put AI into the project planning process. This means users do not have to make every task and deadline by hand. The system can take a project goal. Make a plan all by itself. It can break down a project into tasks and smaller tasks find milestones put the work in order guess how much work it will take and help track progress. This makes planning a project easier to understand. It also helps project managers because they do not have to think about many things at once. They can spend time thinking about big decisions instead of doing the same administrative work over and over. For teams students, freelancers and startups this is really helpful. They often need to plan things and do not have a lot of people to help with management. The project planning process is made easier with AI. AI helps with project planning.

The proposed tool has an advantage and that is personalization. Every project is different. Every team works at their own pace. A project with a deadline and a small team needs a plan that is tailored to them. This is different from a project that has more resources and more time. The system that uses intelligence can look at things like how complicated the project is and when it is due. It can also consider how many people are on the team and what tasks are most important. This helps the system create a plan that's realistic and actually works in real life.

Personalization makes the plan clearer and easier to understand. This makes the project feel less overwhelming. It helps team members feel more confident. They are also less likely to be confused.

The system does not use the plan, for every project. Instead it changes to fit the needs of the user and the project. Personalization is a part of the proposed tool. It helps the system create plans that are tailored to each project. The proposed tool uses personalization to make plans that're useful and realistic.

The system is really helpful because it makes people more aware of the risks. When we are working on a project a lot of things can go wrong if we do not find the problems early. If we do not plan well we can have delays much work for some people, things that are missing and deadlines that are not realistic. These things can cause problems if we ignore them when we are planning. The tool that uses intelligence can find these problems before the project starts or when it is already going on. Even though artificial intelligence is not as good as a persons judgment it can give us warnings and suggestions. This help is good for the people who're in charge of the project because it helps them make good decisions and do things faster when something changes. The system is like a helper that gives advice, not a replacement for the person who's, in charge.

The MERN stack is really useful for this project. The MERN stack adds a lot of value to the project. React is great because it makes the user interface really interactive and easy to use. Node.js and Express are good for the backend because they can handle a lot

of requests and work well with AI services. MongoDB is a choice for storing information about users and projects.

The MERN stack makes the system work well. It is easy to maintain. The MERN stack is also good for real-world projects. This shows that the idea is not a theory but it can actually be used with modern web development tools.

The MERN stack is also good because it separates the AI part from the rest of the application. This makes it easier to manage and add things in the future. We can add features like meeting summaries or sprint planning without having to change the whole system. The MERN stack is also good, for adding analytics or collaboration tools on.

This paper shows that Artificial Intelligence is becoming more important, for getting work done and making workflows easier. Artificial Intelligence is not just used for chatbots or making content anymore. It can also help with planning working together keeping an eye on things and making decisions when people are working on projects. This matters because managing projects has a lot of tasks that are done over and over and need a lot of information and Artificial Intelligence can do these tasks quickly.. The paper also says that people need to be involved to make sure everything is okay. Artificial Intelligence can give ideas. Point out problems but it does not really understand all the rules and limits of an organization or the money and social parts. So we should think of Artificial Intelligence as a tool that helps the people in charge of projects do their job better not as something that replaces them.

He study also points out some limitations.

The systems accuracy relies on how good the project detailsre how strong the AI model is.

If the input is unclear or very technical the plan it generates might need to be corrected

- • Time estimates and risk predictions are like guidelines, not exact numbers.
- This is because real projects can be affected by things like changing conditions how the team works and outside factors.
- With these limitations the system still offers clear advantages in terms of speed organization and ease of use.
- The proposed system provides benefits, in project planning.
- It helps with speed and organization.
- The usability of the system is also improved.

In conclusion the project management tool that uses intelligence provides a practical solution to many problems faced in modern project execution.

This tool helps users plan projects efficiently.

- It combines intelligence with a web framework to allocate tasks and monitor progress.
- The tool makes project management less manual and more adaptive.
- It is especially useful when time is limited and planning needs to be quick and reliable.
- Artificial intelligence will keep improving and such systems can make project management efficient and accessible for users.
- The tool uses intelligence to help users and artificial intelligence will make project management more effective.
- This project management tool can play a role, in making project management efficient.
- The tool is a solution that uses artificial intelligence to help with project execution.

REFERENCES

1. PMI, “Generative AI Overview for Project Managers,” Project Management Institute, 2024. [Online]. Available: PMI Course
2. A. Soltanzadeh, “Artificial Intelligence in Project Management: A Systematic Review of Trends, Applications, and Ethical Challenges (2020–2026),” International Journal of Management and Emerging Allied Publications, 2026. [Online]. Available: Journal Article
3. “Generative AI in project management: Impacts on corporate values, employee perceptions, and organizational practices,” ScienceDirect, 2025. [Online]. Available: ScienceDirect Article

4. "Artificial intelligence tools for project management," ScienceDirect, 2025. [Online]. Available: ScienceDirect Article
5. "Leveraging generative AI for project management: The role of GenAI tools in transforming traditional project workflows," ScienceDirect, 2026. [Online]. Available: ScienceDirect Article
6. "Generative AI for automated task modelling and task allocation in project environments," ScienceDirect, 2025. [Online]. Available: ScienceDirect Article
7. "AI driven project management tools," R Discovery, 2025. [Online]. Available: R Discovery Article
8. "The Socioorganizational Impacts of Generative AI (GenAI) on Project Management," SAGE Journals, 2026. [Online]. Available: SAGE Article
9. "Five interesting AI-powered project management tools," IndiaAI, 2023. [Online]. Available: IndiaAI Article
10. "AI in Project Management: Tools Every PM Should Know in 2026," PMI Memphis, 2026. [Online]. Available: PMI Memphis Blog
11. "AI in Project Management: 2025 Software Trends Report," Capterra, 2025. [Online]. Available: Capterra Report
12. "The 6 best AI project management tools in 2026," Zapier, 2023. [Online]. Available: Zapier Guide
13. "Top AI Tools for MERN Stack Developers in 2025," Cloudi5, 2025. [Online]. Available: Cloudi5 Article
14. "Project management system using MERN stack (MongoDB, Express.js, React.js and Node.js)," GitHub repository, 2022. [Online]. Available: GitHub Repository
15. "AI-Driven Assistants for Enhancing Team Effectiveness in Project Work," Authorea, 2025. [Online]. Available: Authorea Paper
16. Shaiful Mahmud, Khaleel Khan Mohammed, Vasu Raj Jain, Sarthak Anandkumar Shah. "Artificial Intelligence-Driven Predictive Models for Identifying Risk Factors of Chronic Diseases