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USING GENAI IN IT PROJECT MANAGEMENT: CASE STUDIES, INSIGHTS AND CHALLENGES

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Purpose: This study examines the potential of integrating Generative Artificial Intelligence (GenAI) into IT project management, with a view to identifying how it could transform project management processes.
Design/methodology/approach: A case study approach was employed in order to analyse IT companies across a variety of industries. In order to gain a comprehensive understanding of GenAI's applications and impact, the research combined qualitative interviews with project managers and technical leads with quantitative analysis of project performance metrics.
Findings: The results demonstrate GenAI's capacity for markedly enhancing project management, encompassing enhanced project efficiency, more effective risk management, and more efficacious stakeholder communication. Key applications include predictive analytics for risk identification, resource optimisation algorithms to mitigate bottlenecks, and automated quality assurance tools for defect detection. However, challenges such as data quality, algorithmic bias, organisational resistance, and the necessity for transparent AI frameworks were also identified.
Research limitations/implications: The findings, based on IT companies, may have limited generalizability to other industries. The study primarily addresses short-term impacts, with long-term implications yet to be explored. Future research should examine GenAI's applicability in different sectors, its ethical considerations, scalability, and integration with traditional project management frameworks.
Practical implications: Organisations can use GenAI to overcome long-standing project management challenges. The case study examples presented in the article demonstrate GenAI's ability to manage the complex dynamics of IT projects, making it an invaluable tool for IT professionals seeking to optimise project outcomes.
Originality/value: This study contributes to the limited research on GenAI in IT project management by presenting empirical evidence from case studies. It offers actionable insights for practitioners and proposes directions for future research, including exploring long-term impacts, ethical implications, and hybrid methodologies integrating GenAI with traditional frameworks.
Keywords: Generative Artificial Intelligence, GenAI, Project Management, IT Project Management, GenAI in PM.
Category of the paper: Research paper.

1. Introduction

The advent of Generative Artificial Intelligence (GenAI) represents a pivotal moment in the evolution of technology, exerting a significant influence across a range of sectors, including information technology (IT) project management. GenAI comprises sophisticated machine learning models that are capable of creating content, generating solutions and solving complex problems autonomously based on specific inputs and constraints. Such capabilities facilitate the automation of intricate tasks and enhance decision-making processes, rendering GenAI a particularly pertinent technology in the context of the dynamic landscape of IT project management. The IT sector is distinguished by a high degree of complexity and rapid development cycles, which in turn requires the implementation of innovative approaches to the effective management of resources, schedules and risks. Conventional project management methodologies are often insufficient for addressing the growing volume and intricacy of data, evolving expectations of diverse stakeholders, and the necessity for continuous innovation. The complexity and demands of IT projects have increased, necessitating the implementation of effective management strategies to ensure their success. In this context, project management assumes a pivotal role in orchestrating the tasks, resources, and stakeholders in a manner that ensures the efficient achievement of project objectives within defined constraints. Nevertheless, the efficacy of project management methodologies is subject to question in light of the inherently dynamic and complex nature of IT projects.

The ability of GenAI to generate predictive insights, optimise workflows, and support real-time decision-making makes it a uniquely positioned technology to address these challenges. By enhancing operational efficiency and strategic foresight, GenAI offers a transformative tool for IT project managers to navigate the intricacies of modern projects.

Despite the considerable promise that GenAI holds for the field of IT project management, it remains a relatively unexplored area within both academic and practical discourse. While existing studies have provided extensive examination of the integration of artificial intelligence in broader organisational functions, limited attention has been paid to the specific use cases and impact of GenAI in managing IT projects. The extant literature frequently concentrates on general AI applications, thereby neglecting the distinctive characteristics and demands of IT project environments. These include adaptive planning, cross-functional collaboration, and rapid technological shifts.

Furthermore, the potential of GenAI to enhance decision-making, resource optimisation, and project lifecycle management has yet to be systematically studied. There is a dearth of empirical evidence on how GenAI tools can be tailored to align with established project management methodologies, such as Agile, Scrum, or Waterfall. Addressing these gaps is crucial for understanding how GenAI can be effectively leveraged to improve IT project outcomes.

Anticipating challenges, dealing with disruptions and minimising risks have constituted the core responsibilities of project management professionals for decades (Tominc et al., 2023). Furthermore, they are an integral component of contemporary discourses pertaining to the prospective applications of GenAI in project management. Despite their daily familiarity with these concepts, many project professionals may find themselves ill-prepared for the manner in which their organisations will utilise GenAI, as well as the precise impact that it will have on their work. While it is not possible to predict the full extent of the impact that GenAI will have on business operations and processes, it is clear that this emerging technology will enhance the role of many workers, including project professionals. GenAI is having a significant impact on the structure of project work (Curcirito et al., 2023). In light of the accelerated pace of development and adoption of GenAI, there is an increasing imperative for project professionals to cultivate expertise in artificial intelligence. This will result in increased productivity, efficiency and project success (Taboada et al., 2023).

For those in project management roles, GenAI has the potential to automate a range of complex tasks across multiple project activities. These include the generation of reports, updates to schedules, data analysis, cost estimation, and more. Those project professionals who are able to harness the power of artificial intelligence will ultimately be able to free up their time and focus on higher value tasks that contribute to project success. Consequently, project professionals are able to dedicate more time and attention to the generation of new business value, the development of leadership skills and the advancement of innovation within the organisation, in alignment with the organisation's business objectives (Kerzner, 2017).

This paper presents the findings of a study conducted on the data extracted from ten IT companies currently utilising GenAI. The objective is to demonstrate how GenAI can facilitate project management activities within IT companies. To this end, the paper will present a series of practical examples from IT companies, illustrating the potential benefits of integrating GenAI into project management.

2. Literature review

Prior research has examined the incorporation of technology into project management methodologies, underscoring its capacity to enhance project performance and outcomes. Although it is unlikely that artificial intelligence will entirely supplant the role of the programmer in the near future, if ever, it is already capable of markedly enhancing the quality and productivity of IT departments (Taboada et al., 2023). As posited by Wolf and Company, AI has the potential to enhance the efficiency of programmers by up to 10 times by the year 2030 (Curcirito et al., 2023). As reported by McKinsey, over half of companies are utilising AI in at least one business area (McKinsey&Co, 2024). An analysis conducted by Goldman Sachs

suggests that AI could potentially displace 300 million full-time positions while simultaneously enhancing global productivity by 7% (McKinsey&Co, 2024). The statistics pertaining to the integration of AI and project management are noteworthy. As indicated in a Gartner report, the use of AI in project management is expected to reach 80% by 2030, representing a significant increase from the current 2% (Gartner, 2024). A further survey conducted by PMI revealed that 81% of project managers consider AI to be a significant factor in the future of project management (Grandview Research, 2024; Maphosa et al., 2022). The results of recent research appear to reinforce the view that the use of AI in the field of project management is beneficial. As might have been anticipated, at the conclusion of January 2024, Microsoft declared a commitment of $10 billion to the advancement of artificial intelligence. A few months ago, it would have been challenging to envisage the potential implications of this for us. It is possible that, in the near future, many people's imaginations may be transformed into tangible outcomes (Grandview Research, 2024). The field of artificial intelligence is progressing at a rapid pace. Notable corporations such as Google are engineering devices with artificial neural networks, which imitate the functionality of the human brain. Such a proposition would have been deemed implausible a few years ago. It will be of interest to observe the future development of AI (Gartner, 2024).

In order to address these challenges, there is a growing interest in integrating a range of emerging AI technologies, such as GenAI and machine learning (ML), into project management practices within the IT domain. GenAI comprises a variety of AI techniques that are capable of autonomously generating solutions, models or designs based on specified criteria and constraints. The potential benefits of this technology in IT projects include improvements in decision-making processes, optimisation of resource allocation and acceleration of development cycles. Despite the potential benefits, the integration of GenAI with IT project management methodologies remains relatively unexplored in the existing literature. Therefore, this study seeks to address this gap by investigating the feasibility and effectiveness of integrating GenAI with established project management practices in the context of IT. This article aims to provide valuable insights into the synergies between GenAI and project management in IT, thereby contributing to the advancement of both theoretical knowledge and practical applications in this area.

2.1. GenAI in Industry

GenAI represents a transformative innovation with applications across a range of industries, including healthcare, manufacturing, finance and logistics. By employing sophisticated machine learning methodologies, GenAI is capable of autonomously generating content, devising solutions, and conducting predictive analysis, thereby addressing intricate challenges in real-time (Hashfi, Raharjo, 2023). Such capabilities render GenAI a vital instrument for augmenting efficiency, curbing operational expenses, and facilitating innovative solutions (Bahai et al., 2024).

GenAI is particularly impactful in domains that require high degrees of adaptability and creativity. For example, it is widely employed in the fields of automated content generation, real-time data analysis, and scenario modelling, assisting businesses in navigating uncertainty and making data-driven decisions (Bodea et al., 2020; Hess, Kunz, 2024). The integration of GenAI with existing workflows frequently results in notable increases in productivity. This is evident in sectors such as healthcare, where it is employed in diagnostic imaging and drug discovery, and in finance, where it is utilized to enhance fraud detection and portfolio optimization.

Despite the considerable potential of GenAI, the adoption of this technology is often impeded by a number of factors, including technological challenges, ethical concerns and organisational resistance. It is emphasised in studies that these barriers must be addressed in order to fully capitalise on the benefits of GenAI in different domains (Bodea et al., 2020; Hess, Kunz, 2024).

2.2. IT Project Management

IT project management is inherently complex, necessitating the coordination of diverse teams, technologies, and resources to achieve project objectives within specified time and budget constraints. The traditional methodologies of the Waterfall and Agile models have long been regarded as the cornerstones of IT project management. While the Waterfall methodology places an emphasis on the completion of tasks in a sequential manner, the Agile approach emphasises iterative development, flexibility and the fostering of close collaboration with stakeholders (Hashfi, Raharjo, 2023).

However, these methodologies are constrained in their ability to effectively manage the increasing complexity and dynamism of modern IT projects. The management of cross-functional collaboration, the addressing of rapidly evolving requirements and the mitigation of risks in an effective manner represent significant challenges (Bodea et al., 2020; Hess, Kunz, 2024). The advent of new technologies has led to the emergence of tools that facilitate enhanced visibility and control over projects, including collaborative platforms and project management software. However, these tools frequently lack the sophisticated analytical capabilities necessary to optimise decision-making and resource allocation in real time.

The integration of AI into project management has provided a solution to some of these issues, facilitating predictive analysis, automated scheduling and enhanced risk assessment. Nevertheless, the integration of more advanced AI tools, such as GenAI, remains underexplored, particularly in terms of aligning these tools with established methodologies like Agile and Scrum (Hashfi, Raharjo, 2023).

2.3. Conjunction of GenAI and IT Project Management

The conjunction of GenAI and IT project management signifies a substantial leap forward in the resolution of the challenges inherent to contemporary projects. The capacity of GenAI to automate intricate processes, generate actionable insights and facilitate decision-making renders it particularly well-suited to the dynamic nature of IT projects (Bodea et al., 2020; Hess, Kunz, 2024).

The applications of GenAI in IT project management include:

- **Automation of tasks:** GenAI automates routine tasks, including the generation of reports, updates to schedules, and estimation of costs. This allows project managers to direct their attention to activities of a more strategic nature (Hashfi, Raharjo, 2023).
- **Enhanced collaboration:** is facilitated by NLP capabilities facilitate enhanced communication and alignment among project stakeholders by summarising meetings, generating real-time translations, and analysing stakeholder sentiment (Bodea et al., 2020).
- **Predictive analytics:** The application of predictive analytics enables the forecasting of future outcomes based on historical data. GenAI models facilitate enhanced risk assessment and decision-making by identifying patterns and predicting project outcomes based on historical data (Hashfi, Raharjo, 2023).

Nevertheless, the incorporation of GenAI into project management remains in its nascent stages. A review of the literature reveals significant gaps in knowledge, including a lack of empirical evidence on the long-term impacts of GenAI and the absence of structured frameworks for its implementation within traditional project management methodologies (Bodea et al., 2020; Bahai et al., 2024). Furthermore, ethical concerns pertaining to data privacy and algorithmic transparency remain pivotal challenges.

The reviewed literature evinces the considerable potential of GenAI to transform IT project management by augmenting efficiency, collaboration, and decision-making. Nevertheless, substantial gaps and challenges must be addressed to fully harness its capabilities. This study aims to bridge these gaps by investigating the practical applications of GenAI in IT project management, thereby providing actionable insights for researchers and practitioners.

3. Methodology

The case study approach was employed in this study to investigate the integration of GenAI in IT project management. The selection criteria were designed to encompass a diverse range of sectors within the IT industry, thereby ensuring a comprehensive perspective on the application of GenAI. The companies were selected based on their reported adoption of

AI technologies, demonstrated use of project management methodologies, and willingness to participate in the research. A purposive sampling strategy was employed to identify organisations with varying levels of AI integration, thereby ensuring representation of both early adopters and more established users of GenAI technologies (Górniak, 1998; Šmite et al., 2023).

3.1. Data Collection

A mixed-methods approach was employed for the collection of data, combining qualitative and quantitative methods in order to gain a comprehensive understanding of the implementation of GenAI in IT project management.

The companies selected for the interviews were chosen for specific reasons. Given the particular focus of the interview, organisations operating within the IT sector (including software development, IT system maintenance and related activities) were selected for inclusion. Ultimately, the interviews was completed by ten IT companies. The table (Table 1) provides a comprehensive overview with a snapshot and presentation of how they used GenAI and notable outcomes of the companies from which the case studies have been derived.

Table 1.
Company overview from the case studies

Company	Industry	GenAI Application	Notable Outcomes
Company 1	Software Development	Risk Management Optimization	Enhanced risk identification accuracy; proactive mitigation strategies
Company 2	IT Consulting	Resource Allocation Optimization	Reduced resource conflicts; improved workload distribution
Company 3	IT Solutions	Predictive Scheduling	Improved adherence to project timelines; minimized delays
Company 4	Software Development	Automated Quality Assurance	Reduced defect rates; faster release cycles
Company 5	Telecommunications	Task Automation	70% reduction in time for status reporting
Company 6	Financial Technology	Decision-Making Support	Informed decisions through real-time insights
Company 7	E-commerce	Stakeholder Communication	Streamlined updates; improved alignment
Company 8	IT Services	Resource Optimization	15% improvement in resource utilization
Company 9	Logistics	Predictive Analytics	20% improvement in on-time delivery rates
Company 10	Healthcare IT	Quality Assurance Automation	Enhanced product stability; increased customer satisfaction

Source: own study.

The primary data were gathered through semi-structured interviews with project managers, team leads, and IT professionals, thereby ensuring insights into both the strategic and operational levels. Furthermore, the interviews were supplemented by an analysis of project documents, stakeholder feedback, historical project data, and external databases. Use data analysis techniques to extract insights and patterns that can inform decision-making throughout the project lifecycle. The multi-source data collection was designed to enhance the validity and

reliability of the findings, as emphasised in prior research on effective research methods in dynamic organisational settings (Gałuszka et al., 2024; Stronczek, 2024).

3.2. Data Analysis

The data were subjected to thematic analysis in order to identify patterns and themes related to the application of GenAI in IT project management. A grounded theory approach was employed to identify insights emerging from the data, thereby enabling the formulation of a conceptual framework linking GenAI capabilities to project outcomes. Furthermore, quantitative data from project performance metrics were employed to triangulate qualitative findings, thereby ensuring a robust and comprehensive understanding of the phenomena under study.

To guarantee methodological rigour, tools such as Principal Component Analysis (PCA) were referenced for structuring multi-dimensional data, in accordance with methodologies employed in related studies on technology integration and organisational performance (Kowalska et al., 2024; Tomala, 2024). The study also employed techniques for validating data, including cross-validation between interview responses and document analysis, as recommended for high-credibility qualitative research in complex environments (Kaczmarek, 2024; Nycz-Wróbel, 2024).

4. Results

This chapter synthesises the insights from multiple case studies, offering a comprehensive overview of the application of GenAI in IT project management. These case studies, which encompass diverse contexts and organisational settings, provide invaluable insights and illustrate the practical utility of GenAI in addressing critical project management challenges. They not only highlight the benefits but also elucidate the constraints and implications of GenAI adoption in project processes.

4.1. Case Study Insights

The findings are classified into four principal categories, each exemplified by a distinct case study. This approach allows for a concentrated examination of the ways in which GenAI facilitates project management.

4.1.1. Risk Management Optimization

Objective: To evaluate the role of GenAI in enhancing risk management processes.

Methodology: A multinational software development company implemented GenAI-based predictive analytics tools with the objective of identifying and mitigating risks in a proactive manner. A machine learning model was constructed using historical project data, including risk

registers and performance metrics, with the objective of predicting and prioritising potential risks.

Results:

- Enhanced accuracy in identifying risks and predicting their impacts.
- Faster response times in addressing critical project threats.
- Improved allocation of resources to mitigate high-priority risks.

Implications: The case demonstrated that GenAI's predictive capabilities significantly improve risk management by enabling project managers to act proactively. However, challenges such as data quality and organizational readiness for AI adoption were identified, emphasizing the need for robust data governance and staff training.

4.1.2. Resource Allocation Optimization

Objective: To assess GenAI's ability to optimize resource allocation in IT projects.

Methodology: A large IT consulting firm applied GenAI algorithms to historical resource utilization data, employee skill profiles, and project schedules to dynamically allocate resources.

Results:

- Reduced resource conflicts and bottlenecks.
- Improved workload distribution and team productivity.
- Greater flexibility in adapting resource plans to changing project requirements.

Implications: The integration of GenAI enhanced project efficiency and throughput. However, concerns regarding algorithmic bias and transparency in resource allocation decisions underscore the need for ethical frameworks and validation processes in AI implementations.

4.1.3. Predictive Scheduling for Improved Timelines

Objective: To evaluate the effectiveness of GenAI in predicting and mitigating project scheduling conflicts.

Methodology: A leading IT solutions provider implemented GenAI-powered tools to analyze task dependencies, resource availability, and project milestones. Predictive scheduling tools anticipated delays and identified critical path activities.

Results:

- Improved project adherence to schedules.
- Proactive adjustments to resource allocations minimized delays.
- Insights into root causes of scheduling disruptions supported preventive measures.

Implications: GenAI demonstrated its value in enhancing project scheduling, reducing overruns, and improving stakeholder satisfaction. However, challenges related to data quality and the interpretability of machine learning models need further attention.

4.1.4. Automated Quality Assurance

Objective: To explore the use of GenAI in automating testing and quality assurance in software development projects.

Methodology: A software company utilized GenAI-powered tools to analyze code and identify potential defects early in the development cycle. Historical defect data and testing scripts informed machine learning models.

Results:

- Reduced defect rates and improved software reliability.
- Faster release cycles due to automated testing processes.
- Enhanced customer satisfaction with product quality.

Implications: The automation of quality assurance processes underscored GenAI's ability to streamline testing and improve software reliability. Nonetheless, the success of such implementations relies heavily on addressing infrastructure needs and ensuring organizational buy-in.

4.2. Synthesis of Insights

The integration of GenAI into project management processes across the case studies revealed several overarching themes:

- **Risk Management Enhancement:** GenAI's predictive analytics provide foresight into potential risks, enabling proactive mitigation and fostering resilience in projects.
- **Resource Allocation Optimization:** Dynamic algorithms minimize conflicts and ensure efficient use of resources, contributing to smoother project execution.
- **Scheduling Improvements:** Predictive tools enable the anticipation of delays and bottlenecks, resulting in timely adjustments that enhance delivery timelines.
- **Quality Assurance Advancements:** Automated testing powered by GenAI detects defects early and reduces post-release issues, accelerating time-to-market.

4.3. Challenges Identified

Although the case studies underscore the advantages of GenAI, they also draw attention to the considerable obstacles that remain. The availability of clean, unbiased, and comprehensive data remains a significant challenge, as the accuracy and reliability of GenAI models are contingent upon the quality of the input data. The ethical concerns associated with algorithmic decision-making, including the potential for bias and a lack of transparency, necessitate a significant focus on ensuring fairness and accountability in the deployment of GenAI systems. Organizational resistance to change, frequently rooted in skepticism about AI's capabilities or concerns about job displacement, can further impede the effective adoption of GenAI technologies. Additionally, the interpretability of GenAI models presents a challenge, as understanding and explaining their decision-making processes is essential for fostering trust among stakeholders and ensuring effective implementation in project management practices.

4.4. GenAI Tools in Project Management – examples of Tools using by the companies

There are already many AI-based project management tools and software available on the market. These tools use AI for different types of duties. While we can use many of them to streamline our project work, the excitement of artificial intelligence makes us equally eager to use its capabilities in our personal lives, and thus support ourselves with simple, tedious duties. In an era of digital transformation, the ability to use AI to optimize project management processes is becoming crucial. Below are some interesting implementations:

- **GPT Chat** - a basic tool you need to become friends with. This is the chat that started the whole storm about artificial intelligence November 2022. It will help us create descriptions for products, arrange schedules for both meetings and entire projects. It will make it easier to embrace creative brainstorming by summarizing the ideas that emerged during it. He can both group the conclusions and prioritize them. In turn, he will then answer emails according to the templates we give him in advance.
- **AIPRM for ChatGPT** - a browser plug-in will help with the above tasks, giving us access to the commands we use to communicate with chat, written by other users. In the context of tasks for project management, four categories are worth noting: Plan, Script Writing, Spreadsheets, Summarize. The "Script Writing" category fits perfectly into the growing "no code" trend. AI allows you to successfully develop rules for Excel, write appropriate macros, and also finds its way well into Google Apps Script or JavaScript. People who don't have much exposure to programming languages on a daily basis can try to automate certain parts of their work this way.
- **Gist/Claude** - creates notes and extended summaries from meetings, being a useful tool for meeting participants and those returning to work after a vacation, are add-ons for Slack that write meeting notes and extended summaries. This functionality is useful for both the meeting participants themselves and for people who are returning to work after a vacation.
- **Tome** - a still fledgling tool for semi-automatic creation of presentations.
- **Compose AI** - makes it easier to write back emails.
- **Otter AI** - prepares transcription of recordings and summaries of meetings in Microsoft Teams.
- **Browse AI** - allows you to program a robot that collects data from defined web pages and monitors changes on those pages.

4.5. Prompting in project management: an examination of the ways in which companies use it

In the field of project management, the concept of "prompting" harnesses the power of artificial intelligence to streamline and increase the efficiency of various project activities. A prompt, in this context, acts as a specific instruction or input given to an AI system, which

then generates tasks, decisions or content relevant to project management needs. This section illustrates how AI-based prompts can significantly optimize the creation and tracking of task lists, the assignment of responsibilities to team members, and the overall coordination of project schedules and goals. Using precise prompting, project managers can ensure more structured, efficient and proactive management processes, thereby increasing the productivity and success of their projects. Examples of their use are shown below, along with an example of prompts in project management.

4.5.1. Generating task lists and prioritizing work

AI can be used to create comprehensive task lists for projects, helping project managers organize work and prioritize tasks based on factors such as urgency, importance and dependencies. By providing AI with information about the project, it can generate a list of tasks that need to be completed, allowing project managers to easily track work and make sure nothing gets missed.

Prompt example: *Identify potential bottlenecks in the following project tasks: user research, modelling, design, development, testing and deployment.*

4.5.2. Assign tasks to team members with clear instructions

Project managers can use AI to create clear and concise tasks for team members. By inputting the necessary information and desired outcomes, AI can generate task descriptions with specific instructions, making it easier for team members to understand their responsibilities and expectations.

Prompt example: *Write instructions for a developer to implement a user authentication function in our web application.*

4.5.3. Track progress on tasks and ensure deadlines are met

AI can help project managers track task progress and ensure deadlines are met. By using AI to generate progress reports, project managers can easily monitor the status of tasks and identify potential issues before they become critical. This allows project managers to proactively address any issues and keep projects on track.

Prompt example: *Provide a list of tasks that are at risk of missing deadlines and suggest possible solutions to get them back on track.*

4.5.4. Using AI to create meeting agendas and minutes

Project managers can use AI to create meeting agendas and record detailed minutes, ensuring all team members are on the same page and meetings are productive. By providing AI with meeting information and objectives, it can generate well-structured agendas and comprehensive minutes, helping project managers maintain clear communication and documentation.

Prompt example: *Transform the following meeting notes into a well-structured set of minutes: budget approved, deadline extended, new team member assigned and additional resources allocated.*

4.5.5. Using AI to brainstorm and gather team feedback

Project managers can also use AI to facilitate brainstorming sessions and gather feedback from team members. By providing AI with a specific topic, it can generate a list of ideas or discussion points, helping project managers create a more diverse and inclusive environment for generating ideas.

Prompt example: *Come up with ideas to increase team engagement and motivation during a long-term project.*

4.5.6. Identify potential risks and mitigation strategies

AI can help identify potential risks and develop mitigation strategies for projects. By providing AI with information and project context, it can generate a list of potential risks and suggest strategies to address them, helping project managers to proactively manage potential challenges.

Prompt example: *Analyze the potential challenges of implementing a new project management tool on our team and offer recommended ways to overcome them*.

4.5.7. Create engaging team building activities

Project managers can use AI to come up with engaging and creative team building activities that foster collaboration and camaraderie among team members. By providing AI with information about a team's size, interests and goals, it can generate ideas about team building tailored to specific needs.

Prompt example: *Suggest five integration activities suitable for a team of developers working remotely.*

4.5.8. Generating user stories and acceptance criteria

AI can help project managers in Agile environments generate user stories and their respective acceptance criteria. By providing information about project goals and user requirements, AI can create user stories that align with project goals and define the criteria needed to ensure their functionality meets user expectations.

Prompt example: *Generate acceptance criteria for a user story related to the implementation of a secure login feature for an online banking application.*

4.5.9. Documenting project requirements and changes

Artificial intelligence can be a helpful tool in documenting project requirements and tracking any changes to scope or objectives. This helps to ensure that project documentation remains accurate, up-to-date and accessible to all stakeholders.

Prompt example: *Develop a project requirements document for our new application, including functional and non-functional requirements.*

4.6. Conclusion

The findings from these case studies demonstrate the tangible benefits of integrating GenAI into IT project management, such as improved efficiency, reduced costs, and enhanced project outcomes. However, they also point to challenges that need to be addressed to maximize its value. Future research should focus on refining GenAI applications, developing best practices, and exploring new areas of integration to fully realize its potential in revolutionizing project management processes.

5. Discussion

This study demonstrates the considerable impact that GenAI can have on IT project management. It illustrates the capacity of GenAI to optimise processes, enhance decision-making and improve collaboration among stakeholders. The findings demonstrate how GenAI tools, such as predictive scheduling and resource allocation algorithms, facilitate more efficient project management in organisations, whilst addressing long-standing challenges such as resource conflicts, scheduling delays and risk management.

The capacity of GenAI to analyse extensive datasets and generate actionable insights is especially beneficial in the context of managing the complexities inherent to IT projects. To illustrate, the predictive capabilities of GenAI permit project teams to anticipate potential risks and address them in a proactive manner, thereby enhancing project resilience and stakeholder satisfaction. Similarly, the deployment of GenAI for the automation of repetitive tasks, such as reporting and quality assurance, has the effect of reducing the manual workloads of project managers, thereby enabling them to focus on strategic priorities.

Nevertheless, the study also uncovers significant obstacles to the successful implementation of GenAI. The quality and availability of data remain significant concerns, as the efficacy of AI-driven tools is contingent upon the integrity and comprehensiveness of the datasets upon which they rely. The necessity for robust frameworks to ensure fairness and accountability is underscored by ethical challenges, including those pertaining to algorithmic bias and the lack of transparency in decision-making processes. Furthermore, organisational resistance, driven by scepticism or concerns about job displacement, serves to further complicate integration efforts. Furthermore, the interpretability of GenAI models remains a significant challenge. In order to build trust and confidence, stakeholders require clear explanations of AI-driven decisions.

In order to address these challenges, organisations should develop and implement ethical AI frameworks with the aim of mitigating the risks associated with bias and transparency. It is similarly crucial to invest in training and capacity-building programmes, with the objective

of equipping project teams with the requisite skills to utilise GenAI tools effectively. The implementation of incremental adoption, commencing with pilot projects, enables organisations to refine their strategies, cultivate expertise and identify potential impediments prior to the comprehensive deployment of GenAI.

This study makes a contribution to the theoretical discourse on GenAI in IT project management by providing empirical evidence on its applications and effectiveness. Furthermore, the study identifies shortcomings in existing research, including the necessity for investigations into the long-term consequences of GenAI, sector-specific applications, and hybrid methodologies that integrate traditional project management frameworks with AI-driven tools.

It is recommended that future research explore these areas while addressing the ethical and social implications of GenAI adoption. By addressing these challenges and building on the insights provided, organisations can unlock the full potential of GenAI, leading to innovative, efficient, and ethical project management practices. This study offers a foundation for such advancements, emphasising the need for continuous exploration and adaptation in the integration of AI technologies in project management.

6. Summary

This study illuminates the potential for transformative change in the field of IT project management through the application of GenAI, drawing insights from case studies conducted in ten IT companies. The findings demonstrate that GenAI has the capacity to enhance project outcomes in a number of ways. Firstly, it can automate routine tasks, thereby freeing up time and resources for more complex tasks. Secondly, it can optimise resource allocation, ensuring that the right resources are allocated to the right tasks at the right time. Thirdly, it can improve risk management, allowing for more informed decision-making and the mitigation of potential risks. Finally, it can streamline scheduling processes, reducing the time required for planning and execution. To illustrate, the predictive analytics capabilities of GenAI facilitated more effective risk identification and mitigation, whereas its resource optimisation algorithms alleviated congestion and enhanced team productivity. Notwithstanding these successes, challenges such as data quality, algorithmic bias, and organisational resistance were evident, underscoring the necessity for robust frameworks and best practices for integration.

Further research is required to investigate the long-term effects of GenAI on project success, organisational dynamics and team collaboration. It would be beneficial for future studies to investigate the sector-specific applications of this technology, as well as its ethical implications and potential for integration with traditional project management methodologies, such as Agile

and Scrum. Furthermore, research is required to develop effective skill-building initiatives for project teams to utilise GenAI effectively.

It should be noted that this study is not without limitations. Firstly, the focus on ten IT companies may not fully represent broader organisational contexts. Secondly, the emphasis on short-term impacts over long-term outcomes may not fully capture the full scope of the study. The rapid evolution of AI technologies also presents a challenge in maintaining the currency of findings. Nevertheless, this research offers valuable insights into the practical applications of GenAI in IT project management and establishes a foundation for further investigation, addressing critical challenges and fully elucidating its potential.

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