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Evaluating the Integration of Artificial Intelligence in Risk Management in Project Management

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Abstract

The employment of AI in risk management within a project management context has lately received attention as it assists with the predictive analytical component and helps make better decisions in this area. However, some potential problems, including ethical issues, technical requirements, and socio-technological integration of humans and AI, are not comprehensively studied in the empirical literature. This study explores how AI influences risk identification and estimation in project management, issues about AI integration, and the interdependence of AI and human factors in risk-driven decision-making. The study employed an exploratory qualitative approach, conducting semi-structured interviews with 15 different project managers across the sectors. The findings reveal that AI integration in risk management increased probability detection, allowing the identification of possible failures at an earlier stage. It also highlights the existing challenges, technical barriers, resistance to change, and ethical issues. The study emphasized that human intervention should not be removed from the process of decision-making to ensure that both positive and negative consequences are attained. However, for the adoption of AI in risk management, there is a need for strong back end and constant model verification to ensure the predictive models achieve high accuracy and safety. In general, the study contributes to the growing literature on AI implementation in risk management and highlights the need to align AI with human capabilities, call for better AI policies, rules, and regulations, and enhance AI innovation and deployment for optimal application of AI in managing projects.

Keywords: Artificial Intelligence (AI), Risk Management, Project Management, AI-human collaboration, Predictive Analytics.

1. Introduction

The application of Artificial Intelligence (AI) in the field of project management in general and risk management in particular has become increasingly popular in the recent past. Advanced tools like ML and predictive analytics have brought changes in conventional approaches to project management as they facilitate better and more accurate decision-making on risks. For example, through predictive analytics, project managers are able to see that risks that occurred in the previous project are likely to reoccur by analyzing patterns that show that failure indicators and failure factors are likely to reoccur. This capability is important, especially in large projects, because of the risks involved, which may result in high costs and time overruns. It is observed that in the current trend of using AI applications in organizations, risk management using AI has become more prominent, and several investigations point out that AI can greatly help in the reduction of time and efforts required for the identification and management of risks (Adebiyi, 2023; Nahar et al., 2024).

Furthermore, there is a trend in the number of studies showing that increased levels of AI can contribute to better project performance. For instance, plans such as predictive models depict high levels of accuracy when it comes to the prognosis of dangers; this empowers project managers to take preventive measures (Nahar et al., 2024). The use of big data through the application of AI is not only beneficial in improving the level of risk analysis but also enables project observation of its activities in real-time so that necessary adjustments can be made on the fly (Nzeako et al., 2024; Aljohani, 2023). Understanding the role and effectiveness of AI risk management for organizations is critical as they continue to transition to a new climate of an awash world and a complex business setting.

However, while the possibilities of AI application are clear and can be regarded as bright for improving risk management practices, the available research in this field is still very scarce, and there is a limited number of empirical

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studies that provide insight into how exactly AI can affect risk management practices. There are several challenges that organizations face when implementing and integrating AI technologies, such as a lack of measuring tools, ethical issues, and issues around bending human decisions by AI outcomes (Zhao, 2024; Alotaibi, 2023; Guerra, 2024). Therefore, the absence of comprehensive studies on project managers' experiences with AI-related risk management complicates the understanding of how these technologies can be used. Also, a major challenge in the adoption of AI solutions is organizational culture, the presence of the necessary technical infrastructure, and skills that enable the successful implementation of AI solutions (Edilia & Larasati, 2023). This literature gap, therefore, provides the need for further literature review to map out the use of AI in risk management in project management frameworks.

Based on the presented gaps, the following research questions are formed:

RQ01: How do project managers perceive the impact of AI on risk identification and risk assessment?

RQ02: What organizational and technical challenges do they face when integrating AI into risk management practices?

RQ03: How do project managers balance AI outputs with traditional human risk assessment?

This study is relevant to the existing literature as it seeks to explore the empirical effects of AI on project management risk management practices. By paying attention to the context of work done primarily by project managers, the proposed research will reveal the actual effects of AI implementation for furthering theoretic understanding and contributing to improvements in the practice of companies and organizations. In addition, identifying the barriers to the implementation of AI will help those organizations implement strategies that will help them overcome these barriers, thus boosting their risk management. The areas of applicability of the research cover different industries that require project management, which helps to expand the overall understanding of the place of AI in diverse organizations.

2. Literature Review

2.1. Overview of AI in Project Management

AI has become a key factor in the management of projects, which has improved traditional approaches and methods to be used in projects. Several theoretical frameworks have been proposed to explain the role of AI in this discipline by analyzing its capability to enhance organizational decision-making, offer solutions to the management of routine tasks, and address existing risks. For example, Holzmann et al. reported findings derived from a Delphi study that identified the expectations of project managers, which entails the use of AI to enhance project planning, execution, risk assessment, and prognostic outcomes Holzmann et al. (2022). This is in line with Hossain et al.'s account of how AI improves the rate of project management by automating processes and providing data-driven solutions (Hossain et al., 2024).

In this job, machine learning and predictive analytics have been established as crucial in enhancing the accomplishments of projects. Tominc et al. think that there is a possibility of having a system that monitors projects and sends notifications in case it deviates from the planned path, which will allow for modification (Tominc et al., 2024). In addition, various studies show that companies adopting AI in project management claim increased best performance. For instance, Alhasan and Alawadhi explained that utilizing AI systems minimized scheduling inaccuracies by 35%, implying shorter and more effective timelines that were 20% shorter because of optimal resource use and improved risk mitigation (Alhasan & Alawadhi, 2024). These figures clearly point towards the advantages of AI when implemented in project management.

However, like any other form of adoption of technology, the integration of AI in project management comes with several challenges. Sturm et al. have discussed the criteria for selecting the problems to solve, for which they proposed to focus on searching for certain areas where AI may be valuable (Sturm et al., 2021). This raises the timely and important question of the level of AI adoption within organizations and the need to take a measured approach. Moreover, Hashfi and Raharjo noted that while AI can help to make decisions, there are some ethical issues involved, and people must ensure the right balance between determining their decisions and using results provided by AI (Hashfi & Raharjo, 2023). Thus, managers are always faced with the dilemma of using AI in their projects.

The theoretical stance towards AI in project management is advanced by the existing studies on the extent to which SMEs and large enterprises are supported by AI. Tominc et al. identified significant differences, meaning that by establishing increased resources and supportive infrastructure, larger organizations are more inclined to implement advanced AI tools (Tominc et al., 2024). This leads to another set of questions regarding the AI technologies available for SMEs and the impact that they

will have on project management in a mixed organizational environment.

Overall, using AI for project management analysis has its advantages and disadvantages. The utilization of AI in increasing productivity and improving decisions while pointing out that AI applications should be well-conceived and must consider the principles of ethical use of the technology. Thus, further research should be performed to investigate how organizations of varying industries and sizes experience and adapt to AI and its effects on project management in the future.

2.2. Previous Studies

There are several research gaps that have been identified in the integration of Artificial Intelligence (AI) in project management, even though it has received a lot of focus in recent years. One of the major gaps is the lack of primary empirical evidence and standard assessment tools. There is a vast literature that has reviewed and discussed the theoretical advantages that increase through the use of AI – increased efficiency and three times better decisions than that done by human beings; however, there is a shortage of empirical research studies that can definitively quantify these in project management settings. For example, Hossain et al. (2024) explained AI usage in project management through a substantial literature review; however, most research findings stem from questionnaires and interviews. This creates a problem for practitioners when choosing how to adopt and implement AI.

In addition, there is a lack of covering the organizational and human aspects of AI adoption in the literature. Raisch and Krakowski (2021) note that the automation-augmentation concept points out that AI is the actor in the organization, not just a tool. This perspective has called for more studies that investigate organizational culture, employees' preparedness, and managers' perceptions towards AI integration. Also, the integration of AI systems with human skills has not been adequately explored, and only a few papers explore how project managers can incorporate AI-derived information and use their personal experience and knowledge.

Another gap is the limited research on practical issues of AI integration and potential ethical issues in project management. Concerns like data protection and explaining AI decision-making also pose significant risks for organizations that want to use AI properly (- et al., 2024). In line with this sentiment, Bankins and Formosa (2023) describe the importance and significance of ethics in artificial intelligence, hence how ethical frameworks can assist in the decision-making process of AI. Nevertheless, studies examining these ethical issues or features within the project management field are limited, creating a research gap that needs to be filled.

Further, comparative studies of the outputs generated by AI and human experts' respective assessments are scarce. Studies are needed to compare AI-based results with conventional human assessments, although AI output is skilled in forecast and risk analysis. For instance, Alhasan and Alawadhi (2024) used both quantitative and qualitative methods to compare whether an AI was used or not in the projects to establish the difference in the results of the projects. However, more extensive empirical comparisons are required to find out the circumstances that suggest that AI may be superior to or inferior to human judgment.

The results presented by Čančer et al. (2023) contribute to the understanding of the topic and confirm the need for more studies. They performed a multi-dimensional evaluation of AI assistance in project management and cited the shortcomings of the research in addressing the other aspects of AI adoption. The systematic literature review of Taboada et al. (2023) revealed that AI is used in project management progressively and urged to direct more studies toward sectoral contexts' issues.

In general, AI has great potential to enhance project management's efficiency and decision-making processes, but writing a literature review to explore this topic has highlighted certain significant research deficits to consider. The absence of collected primary data, few qualitative findings referring to the organizational and human aspects, and the absence of comparative data of the AI results with those earned during the human evaluation point to the challenges of using AI in project management. More secondary research is needed to develop a framework for standard measures, set ethical concerns, and conduct solid empirical research to increase knowledge about AI system applications in project management.

2.3. Theoretical Frameworks

The use of Artificial Intelligence in risk management within project management draws the need for a good theoretical framework that can explain the decision-making process and risk assessment models. This study uses decision-making theories and risk evaluation models in the context of advanced risk management with the support of AI. Also, it highlights the Info-gap decision theory, which is relevant when approaching projects and

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addressing uncertainty.

2.3.1. Decision-Making Theories and Risk Assessment Models

Risk management theories provide information on how decisions are made by the project managers, given the risks involved as well as the various possible choices available. Two theoretical frameworks relevant in this respect include the Prospect Theory and Bounded Rationality Theory. Accordingly, the theory of prospect, as developed by Kahneman and Tversky, states that people respond in an inclined manner about risks of loss at one time and the likelihood of gain at another; they act rather prudently when it comes to gains and less so when it comes to loss (Ahmad & shah, 2020). Firstly, in the field of project risk management, cognitive bias can be minimized through the assistance of AI, which allows for data-driven decisions as opposed to decisions based on human perception (Shick et al., 2023). Data mining and machine learning can help in analyzing the data collected in the past to detect risk factors that are likely to affect rational and well-thought-out decisions in the organization (Weiser & Krogh, 2023). According to the Bounded Rationality Theory by Herbert Simon, people involved in the decision-making process are bound by characteristics of limited information, limited cognitive ability, and limited time (Davidson, 2024). This theory is most appropriate in large-scale projects, where the manager may find it cumbersome to decipher large chunks of information on risks. Its ability to analyze large data sets, identify concealed relationships between risks, and present the best course of action is remarkable (Das, 2022). Thus, risk management using AI mitigates cognitive differences in decision-making, augmenting the efficiency and effectiveness of high-risk decisions (Kim, 2020).

Risk assessment models are one of the significant parts of project management apart from decision-making theories. FMEA and Monte Carlo Simulation are two of the most used tools. FMEA is a risk assessment tool that identifies prospective points of failure in a project, with a focus on the severity and likelihood of these failures (Weiser & Krogh, 2009). AI improves FMEA through the automation of both failure identification and maintenance activities, which contributes to its effectiveness (Shick et al., 2023). Likewise, Monte Carlo Simulation uses probability distributions to predict different risk outcomes, and Big Data can modify probability parameters using live project info (Das, 2022).

2.3.2. Info-Gap Decision Theory in Project Uncertainty

Risk is an inherent part of project management, and under such conditions, Info-gap Decision Theory (IGDT) would fit appropriately. IGDT origin was established by Ben-Haim, and it is a method that is designed to cater for decision-making under conditions of high risk where the likelihood of risk occurrence is either unknown or unreliable, as aptly described by Weiser and Krogh (2023). While Probabilistic models are less effective in situations with incomplete information about the characteristics that define a decision, IGDT puts more emphasis on robustness. IGDT in AI-integrated risk management offers a strong context. IGDT can be used in an AI system to assess the worst-case situation and to develop better approaches to overcome it. For instance, in construction or IT projects with potential risks that are likely to affect and alter the progress plan and schedule, the AI models trained with IGDT help the manager develop a backup plan in case of any eventuality (Weiser & Krogh, 2023). The integration of IGDT with AI allows organizations to design preventive and protective mechanisms against unfavorable disruptions. Decision-making and risk assessment theoretical frameworks also support the importance of AI in improving project risk. The combination of Prospect Theory, Bounded Rationality, and risk assessment frameworks with AI fosters more objective, data-driven decision-making. IGDT also provides step-by-step guidance for addressing deep uncertainties in projects that enhance the ability of AI to provide sound risk management solutions. Thus, further developments in AI are expected to revolutionize the processes that underpin those theoretical approaches to risk identification, evaluation, and management in projects.

3. Method and Instruments

This study adopts an exploratory research method using interviews with experts with previous experience using AI in risk management in project management. In this study, interpretivism forms the epistemological ground since it holds that knowledge is constructed via individuals, and reality is the construction of human beings (Manata et al., 2021). This perspective supports the goal of the study to provide an understanding of project managers' subjective experiences, attitudes, and difficulties regarding the application of AI to risk management.

In addition, the selection of qualitative research is useful in this study as it allows for an examination of the contexts and various factors that are peripheral to the integration of AI in project risk management (Gyamfi, 2024). While

quantitative research focuses on creating hypotheses and models that can be applied to various settings, qualitative research allows for understanding the processes and changes that take place in relation to AI in project management systems (Lahiri & Saltz, 2022). The use of exploratory research to identify new trends, threats, and new additions to organizational structures, which this kind of research allows without the restriction of variables derived from previous studies (Stampfl et al., 2023). The use of both semi-structured interviews and focus groups is a methodology that incorporates the advantage of forming set questions while at the same time being able to diverge into new topics that might come up among the participants (Ali & Haapasalo, 2023).

3.1. Sampling Strategy

The study employs purposive sampling to obtain 15 project managers and risk managers from industries currently using or potentially using AI in risk management. This sampling technique is appropriate since it creates a pool of participants with first-hand knowledge of risk management involving AI (Almarzooqi et al., 2023). The selection criteria include:

1. Requires at least five years of project management experience to avoid a lack of sensitivity about risk management.
2. Direct engagement in the AI risk management process to capture adequate insights into the matter.
3. Diverse participants from different sectors of business (construction, IT, finance) in order to get as big a picture as possible of AI.

Though the choice of the sample may seem limited to 15 participants from the quantitative perspective, the qualitative research targets density rather than an extension. The notion of thematic saturation, which describes a point beyond which data collection does not generate new themes or codes, determines the sample size adequacy. Entice and Morse (2022) stated that 12-15 interviews are adequate for purposeful sampling because they provide enough themes for constructing the ground for saturation among homogeneous populations.

3.2. Data Collection Methods

Data collection involves conducting semi-structured interviews with the participants either through a teleconference or a face-to-face interview. Semi-structured interviews offer an organized pattern for interviewing the participants but allow them to speak about their experiences, issues, and how organizations cope with AI risk management (Lahiri & Saltz, 2022). The advantage of using open-ended questions is that such questions allow for gaining deeper insights and identifying emergent themes. Every interview conducted is audiotaped, and the recordings are thereafter transcribed word by word to avoid distortion of the participants' accounts.

3.3. Data Analysis

The study adopts thematic analysis based on Braun and Clarke's six phases of analysis: getting to know your data, forming initial codes, identifying themes, reviewing themes, defining further themes with more precision, and reporting. The constant comparative method enables the comparison of the responses across industries and experience levels to reveal AI's role and importance in various industries (Stampfl et al., 2023; Ali & Haapasalo, 2023). This approach would help me gain a broad understanding of AI.

3.4. Validity and Reliability Measures

The study uses various factors to enhance the credibility of the study findings. Member checking, which is the act of presenting research findings to the participants for validation of interpretations; audit trail, which documents data collection and coding decisions as well as the development of themes and subthemes; and lastly, triangulation, which is the cross-checking of data sources (Almarzooqi et al., 2023; Lahiri & Saltz, 2022; Ali & Haapasalo, 2023). These methods involve a much deeper analysis of the application of AI in risk management within project management.

4. Results

4.1. Themes Extraction

The bar graph presented in Figure 01 indicates the frequencies from each of the themes extracted; the most frequently mentioned topic was the identification of risks by AI, with 12 mentions. Next are the roles of AI in decision-making and issues related to the adoption and implementation of AI, with 10 and 9 mentions, respectively, indicating their importance. Reviewing the concepts of human and artificial intelligence working together (7 times) and ethics (6 times) revealed concerns about using AI when making decisions. Lastly, technical infrastructure needs have been mentioned five times, implying that perhaps there is growth in AI adoption, but the infrastructure is a constraint. A strong emphasis on

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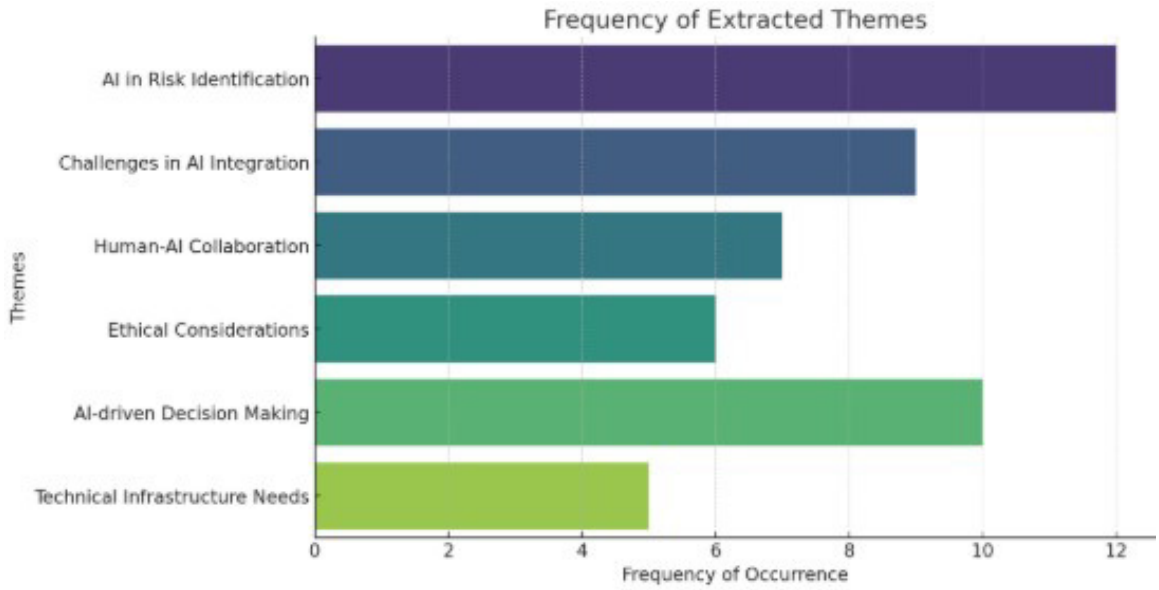

Figure 1 Extracted Themes

AI is presented with the problems of its application and interaction with people.

The cluster dendrogram presented in Figure 02 helps to depict associations between various themes where similar concepts belong to the groups shown in the figure. The two most interrelated concepts are decision-making and risk identification due to their association with AI. Two related subcategories of ethical issues are also defined, including the focus on fairness and dependence on collaboration with the AI system. Relations between implementation difficulties and technical requirements

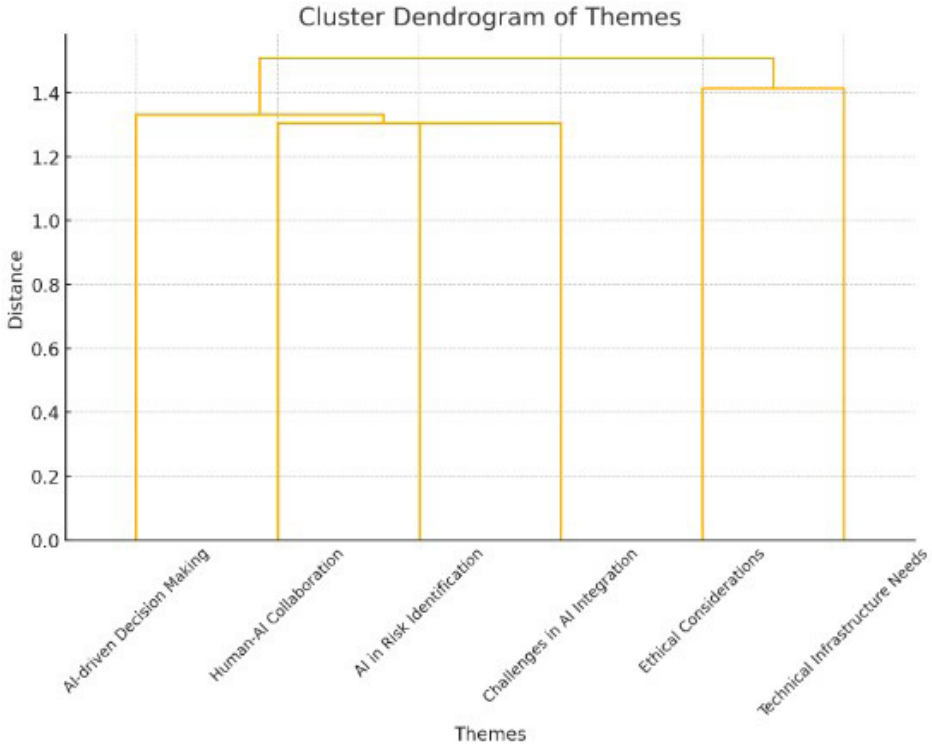

Figure 2 Cluster of Extracted Themes

are intermingled, which proves that barriers depend on organizational preparedness. The dendrogram also supports these relationships, which indicate that ethical, technical, and collaborative dimensions of AI must be integrated optimally to enhance project risk management.

The word cloud in Figure 03 shows an overview of thematic analysis by displaying the most used words across the two films. Big fonts depict the words AI, risk, identification, project, and management, among other words that are frequently used. This implies that there is much emphasis on AI in assessing and addressing risks within project contexts. Other words include 'Decision making,' 'Automation,' 'Trust,' and 'Ethics'; topics regarding AI and its application in the decision-making process are also captured in the list. The two points marked as "Infrastructure" and "Adoption" suggest the continued integration issues. This word cloud complements the bar graph by identifying the key themes.

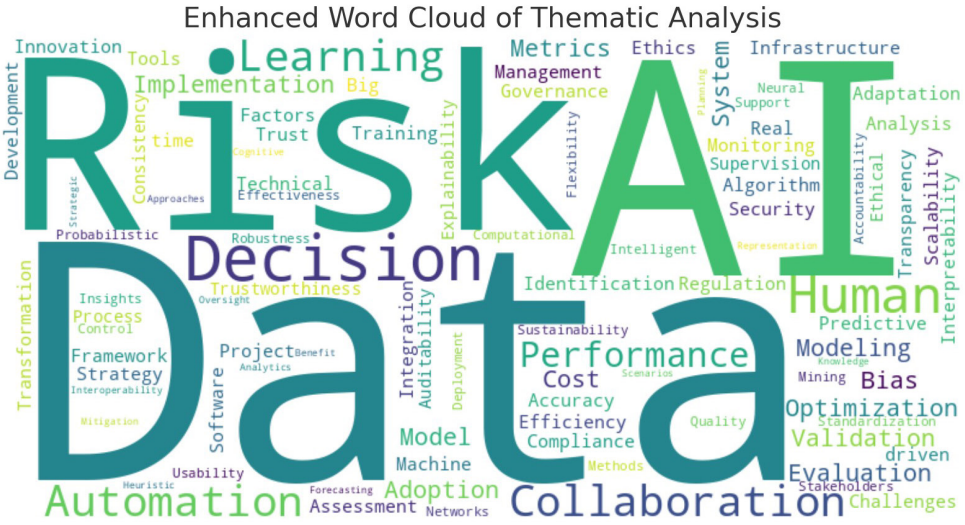

Figure 3 Top 100 Words in Extracted Themes

4.2. Theme 01: AI in Risk Identification

Risk management in project management is facilitated by AI as it ascertains and prevents risks by learning from past failures and risks through the implementation of machine learning and some kind of analytics. Participant 1 said, "It is, however, noticeable that AI has enhanced the chances of risk identification at an early stage through such features as predictive models of previous project failures." Participant 5 further noted that 'Much as we used to guess previous risks, now, machine learning shows true outcomes. Specifically, Participant 8 stated, "We have an AI system that informs us if there are trends that pose risks in our project in terms of budget, which has helped prevent cost overruns."

Additionally, Participant 11 said, 'Through risk identification using AI, we reduce the chances of coming across extra hitches in a project.' For example, it found out in advance that it was not possible to schedule an operation at the specified time. Participant 6 also explained, "More so, AI analytics are able to identify minute relationships in project factors, hence enabling management to avoid possible issues before they become huge." Participant 13 stated, "They pointed out risks that we never thought of, therefore enhancing the effectiveness of risk identification within the model." Participant 3 summed up his thoughts in the following words: "AI is imperative when it comes to the identification of risks." It offers a level of precision that is usually not typical with human performance appraisals only." In general, the participant responses indicate that AI allows the project manager to notice the repeated risk patterns so that they can address them adequately.

4.3. Theme 02: Challenges in AI Integration

Implementing AI in risk management is not without its challenges, including technical issues, change management, and ethical issues. According to Participant 2, the main hindrance was the deficiency of the knowledge on how to properly incorporate AI into operations. Significant training was required in the team to make better use of AI tools and techniques. Participant 9 said, "Lack of finance is a key reason why many organizations shy away from integrating artificial intelligence." The costs

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also include initial high capital investment, which poses a major challenge to the adoption of the system. Moreover, Participant 4 said, "AI systems need good data." Therefore, full and unbiased data is essential in order to avoid errors in risk assessments.

Also, Participant 12 said, "Some of the challenges we encountered include lack of support from higher authorities who are inclined towards conventional risk management techniques over the AI-supported ones." Participant 7 also noted that 'AI integration implies that the organization's technical foundations need to be strengthened.' The major obstacle that we faced for not being able to better implement AI for risk management was our old systems. Participant 10 said, "The first of the issues that were raised for discussion was the issue of ethical consideration in AI decision-making. "Who bears the blame when the predictions of artificial intelligence are off?" Finally, Participant 14 noted, "The lack of set AI models is still unhelpful when it comes to establishing uniformity in PM frameworks."

4.4. Theme 03: AI-Human Collaboration

AI should not replace human expertise but should work in harmony with human beings, especially in the case of risk management, to balance decisions made. Participant 5 said, "While AI is useful for getting information, it is still very important to use our experiences and feelings." Participant 3 said, "The output of the model is the risk rating, but the decision is always made after a human intervention." Participant 8 said, "On the one hand, AI brings effectiveness in its recommendations, but human intervention is crucial in evaluating AI's suggestions for the project. Discussing the position in detail, participant 6 pointed out, "Risk management is data-driven but, at the same time, should also be adaptable to change, the reason why it is crucial to approach it with the help of artificial intelligence as well as involve professionals."

Furthermore, Participant 11 mentioned, "AI allows quick data analysis, while the human element refines the risk assessment." Participant 9 put it by saying, 'Yes, we use AI models to analyze all data we compile, but we normally compare the result with our team experience.' Participant 2 then said, "In my opinion, AI should mainly be an accompaniment so that it cannot interfere with the outcome of crucial decisions." The final call should always involve human reasoning."

4.5. Theme 04: Ethical Considerations

AI-assisted decision-making has become an issue of ethical concern in scenarios such as bias, transparency, and accountability on the aspects of risk management. Participant 1 said, "This is because the algorithms used in Rio can be prejudiced from the input data fed into it." Participant 7 said, "It is necessary that the AI decision-making process should be transparent." In the absence of detailed information provided by IT, it is challenging to rely on risk evaluations based on AI. Participant 10 also pointed out, 'Accountability is something that has been enhanced.' Who is to blame if the consequences of such a strategy become disastrous due to an error in AI's risk assessment?

Moreover, Participant 12 noted, "Some of them are efficient designs for risk management but are unethical in a way because they are unfair." Moreover, Participant 4 mentioned, "There should be regulation measures put in place to enhance the proper use of AI and also its non-use in prejudiced ways." Participant 14 suggested, "It would be useful for AI systems to be checked regularly for ethical compliance to ensure trust." Finally, the last sentiment that was expressed by Participant 5 is as follows: 'The use of AI in risk management should be coordinated with automation but also with control over it being maintained by a human being.

4.6. Theme 05: AI in Decision Making

AI is effective in working with big data since it helps in making better risk analysis and risk management decisions. As Participant 3 pointed out, "That is why decision-making is made easier through AI since multiple risks are considered at once." Participant 6 described, "We were able to decide on risk and its mitigation, and this aspect has significantly dampened human interference, leading to the much-enhanced project outcome." Participant 11 said, "It also highlighted that through the help of AI, decision-making is made in real-time, thereby keeping projects on track.

Participant 9 stated, "Some of the benefits of the proposed AI model was the ability to identify otherwise unseen financial risks, which helped prevent losses." According to Participant 13, AI always adapts and evolves as it improves the risk assessment models that it utilizes. Participant 8 also contributed by stating that with AI, one is able to prevent jeopardy before it starts. Participant 2 summed up their thoughts and said, "AI offers us more profound insights; human intelligence makes sure the extracted insights are

feasible for implementation."

4.7. Theme 06: Technical Infrastructure Needs

Successful integration of AI in risk management depends on sufficiently strong IA processing and linking between systems. For example, Participant 4 said, 'As far as the experience of working with organizations is concerned, many of them cannot introduce necessary IT support for using AI-driven risk management tools.' Participant 7 pointed out that "there was a need to integrate better data storage systems to cater for the humongous information that AI conducts." Moreover, Participant 10 also postulated that "AI's usefulness lies in access to real-time data." It indicated that its predictions became less accurate until its components were integrated.

Additionally, Participant 12 stated that "there is limited compatibility and integration of AI tools with a project management software." Moreover, Participant 1 said, "It is important that AI implementation must secure data contained in the project." Participant 14 further opined that cloud-based AI solutions have cut constraints on infrastructure, but the latter demand constant updates. Lastly, Participant 5 summed up by stating, "In my final thoughts, technical availability is crucial." Thus, it can be concluded that continued advancement of AI technologies is unattainable without proper supporting IT infrastructure.

5. Discussion

This study explains the use of AI in project risk management and formulates objectives and research questions relevant to the current market environment. It discusses how AI is used to identify, assess, and manage risks, which is relevant to the present-day context of project management and integration of AI technologies (Lawal et al., 2024). The participants were recruited via purposeful sampling and reached thematic saturation with 15 participants. However, increasing the participants' number would increase the variation and generalizability of the findings across industries (Friðgeirsson et al., 2023). In addition, the study used thematic analysis identifying patterns in participant responses, but integrating other methods, for instance, sentiment analysis or AI text analytics, might provide a more detailed insight into managerial thinking about AI implementation (Steyvers & Kumar, 2023).

The results support the previous work that also points to the potential for AI to improve risk detection. Respondents suggested that AI models provide forecasts on possible project failures, as observed by Friðgeirsson et al. (2023), where the use of AI was found to bring increased effectiveness on early risk assessment in project management environments (Friðgeirsson et al., 2023). The study also strengthens the assertion made by Nahar et al. (2024) about the advancement of AI in decision-making and eradicating the possibility of wrong scheduling, which enhances the integration of AI in project management practices (Lawal et al., 2024).

In contrast, the study's result differs from the view of Balbaa and Abdurashidova (2024), who argue that ethical issues and challenges of transparency are fundamental impediments to the implementation of AI. Although participants pointed to these ethical issues, the study could further explore the consequences of bias in AI risk assessment and decision-making responsibility (Balbaa & Abdurashidova, 2024). The debate on AI and human interaction can be connected with Raisch and Krakowski's view (2021) that AI can complement, but not replace, human discretion. While the study succeeds in establishing this balance, it could examine other cases where AI decisions were different from human judgment and provide valuable information about the human-AI interaction (Raisch & Krakowski, 2021).

Furthermore, categorizing infrastructure and technical constraints as meaningful barriers reflects Busari et al.'s (2022) argument for strong data support for AI approaches (Busari et al., 2022). However, there is no detailed review of AI model validation techniques, which Steyvers & Kumar (2023) identified as crucial when using AI in risk management contexts. As a result of the skill gap, organizations have to sponsor structured training programs that would help improve AI literacy and data sense-making and promote human-artificial interaction. The research shows that top project managers struggle to integrate AI into their projects due to a lack of proper knowledge of IT solutions.

Additionally, the success of AI can only be achieved with an appropriate equalizer integrated into the system to complement human skills. In order to do this, project managers' knowledge should expand toward AI fundamentals, which include machine learning, predictive analytics, and AI-based decision-making systems. It also addresses some issues related to risks with AI, the proper use of AI, eliminating biases in artificial intelligence, and practical scenarios and cases (Lawal et al., 2024). These programs will provide the participants with knowledge of how to evaluate and validate such AI risk assessments,

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as well as consider measures to address the lack of transparency and responsibility and how to avoid bias in AI decisions. Such integrated programs shall enhance the application of such programs within professional certification training in order to maximize the use of AI with corresponding control over risk assessments (Bankins et al., 2022).

In addition, the study emphasized on the need for an effective AI governance structure, decision-making structures with human and artificial intelligence, promoting human-machine interaction, and moral use of AI. It underlines the significance of human checking on the risk assessments made by AI tools, integrating them with managerial hunches, exercising customized AI skepticism, and identifying and distinguishing between responsibility, intelligibility, and bias prevention in the work of AI risk management applications. Thus, by following these research directions, scholars can advance AI implementation knowledge about how AI must not merely optimize risk management but also integrate ethical concerns (Bankins et al., 2022).

In general, the study stresses the need for further research on AI performance measurement and future studies providing a framework for AI metrics comparison and the investigation of the effect of AI on organizations over time. It also suggests the exploration of AI applications across industries, the problem of AI model interpretability, and the influence of AI on reducing bias. These areas will assist in determining the effectiveness of AI in managing risks, comparing the risks identified and evaluated by AI and human beings, and exploring some of the ethical issues of using AI in making decisions. However, the generalisability of this study is limited by the overreliance on qualitative data collection techniques that involved the administration of semi-structured interviews. A quantitative study of AI risk management effectiveness in the company appended with a survey might strengthen the research findings (Friðgeirsson et al., 2023).

6. Conclusion

This study explored the application of AI in risk management in project management, focusing on the benefits it affords to the process. The study findings showed that AI has predictive power, but there are some threats like integration issues, ethical questions, and the need for human supervision. The research stressed that while AI is a useful tool, it should not replace human decision-making by providing its structured approach. Addressing the existing gap through training interventions and increasing the use of standard measures for AI assessment will aid in promoting its use. Further research should be conducted on enhancing AI validation models, eradicating bias, and investigating multidisciplinary AI programs. In essence, this study establishes that risk management in collaboration with AI has to consider both technological, ethical, and organizational conditions to provide the best results.

References

Adebiyi, O. (2023). Exploring the impact of predictive analytics on accounting and auditing expertise: a regression analysis of LinkedIn survey data. Asian Journal of Economics Business and Accounting, 23(22), 286–305. https://doi.org/10.9734/ajeba/2023/v23i221153

Ahmad, M. and Shah, S. (2020). Overconfidence heuristic-driven bias in investment decision-making and performance: mediating effects of risk perception and moderating effects of financial literacy. Journal of Economic and Administrative Sciences, 38(1), 60-90. https://doi.org/10.1108/jeas-07-2020-0116

Alhasan, A. and Alawadhi, E. (2024). Evaluating the impact of artificial intelligence in managing construction engineering projects. مجلة العلوم الهندسية و تكنولوجيا المعلومات, 28-38 ,(8)3. https://doi.org/10.26389/ajsrp.k090724

Alhasan, A. and Alawadhi, E. (2024). Evaluating the impact of artificial intelligence in managing construction engineering projects. مجلة العلوم الهندسية و تكنولوجيا المعلومات, 28-38 ,(8)3. https://doi.org/10.26389/ajsrp.k090724

Ali, F. and Haapasalo, H. (2023). Development levels of stakeholder relationships in collaborative projects: challenges and preconditions. International Journal of Managing Projects in Business, 16(8), 58-76. https://doi.org/10.1108/ijmpb-03-2022-0066

Aljohani, A. (2023). Predictive analytics and machine learning for real-time supply chain risk mitigation and agility. Sustainability, 15(20), 15088. https://doi.org/10.3390/su152015088

Almarzooqi, S., Alkamali, W., Khatib, M., Talib, M., & Alteneiji, R. (2023). Project quality and project risk management: correlations and interdependencies. International Journal of Business Analytics and Security

(Ijbas), 3(1), 137-153. https://doi.org/10.54489/ijbas.v3i1.208

Alotaibi, E. (2023). Risk assessment using predictive analytics. International Journal of Professional Business Review, 8(5), e01723. https://doi.org/10.26668/businessreview/2023.v8i5.1723

Balbaa, M. and ABDURASHIDOVA, M. (2024). The impact of artificial intelligence in decision making: a comprehensive review. Epra International Journal of Economics Business and Management Studies, 27-38. https://doi.org/10.36713/epra15747

Bankins, S. and Formosa, P. (2023). The ethical implications of artificial intelligence (AI) for meaningful work. Journal of Business Ethics, 185(4), 725-740. https://doi.org/10.1007/s10551-023-05339-7

Bankins, S., Formosa, P., Griep, Y., & Richards, D. (2022). Ai decision making with dignity? contrasting workers' justice perceptions of human and ai decision making in a human resource management context. Information Systems Frontiers, 24(3), 857-875. https://doi.org/10.1007/s10796-021-10223-8

Čančer, V., Tominc, P., & Rožman, M. (2023). Multi-criteria measurement of AI support for project management. Ieee Access, 11, 142816-142828. https://doi.org/10.1109/access.2023.3342276

Cui, H., Xu, C., & Sun, K. (2024). Unveiling the future of engineering management: the role of artificial intelligence and big data.. https://doi.org/10.4108/eai.17-11-2023.2342763

Das, D. (2022). Understanding the choice of human resources and artificial intelligence: "strategic behavior" and the existence of industry equilibrium. Journal of Economic Studies, 50(2), 234–267. https://doi.org/10.1108/jes-06-2021-0305

Davidson, S. (2024). The economic institutions of artificial intelligence. Journal of Institutional Economics, 20. https://doi.org/10.1017/s1744137423000395

Edilia, S. and Larasati, N. (2023). Innovative approaches in business development strategies through artificial intelligence technology. Iaic Transactions on Sustainable Digital Innovation (Itsdi), 5(1), 84-90. https://doi.org/10.34306/itsdi.v5i1.612

Friðgeirsson, Þ., Ingason, H., Jónasson, H., & Gunnarsdottir, H. (2023). A qualitative study on artificial intelligence and its impact on the project schedule, cost and risk management knowledge areas as presented in pmbok®. Applied Sciences, 13(19), 11081. Retrieved from: https://www.mdpi.com/2076-3417/13/19/11081

Guerra, R. (2024). Enhancing risk management in hospitals: leveraging artificial intelligence for improved outcomes. Italian Journal of Medicine, 18(2). https://doi.org/10.4081/itjm.2024.1721

Gyamfi, N. (2024). The nature and practices of the use of machine learning and deep learning frameworks to assist software project management: a developing country context. jes, 20(5s), 849-856. https://doi.org/10.52783/jes.2332

Hashfi, M. and Raharjo, T. (2023). Exploring the challenges and impacts of artificial intelligence implementation in project management: a systematic literature review. International Journal of Advanced Computer Science and Applications, 14(9). https://doi.org/10.14569/ijacsa.2023.0140940

Holzmann, V., Zitter, D., & Peshkess, S. (2022). The expectations of project managers from artificial intelligence: a Delphi study. Project Management Journal, 53(5), 438-455. https://doi.org/10.1177/87569728211061779

Hossain, M., Hasan, L., Dewan, M., & Monira, N. (2024). The impact of artificial intelligence on project management efficiency. IJMISDS, 1(05), 1-18. https://doi.org/10.62304/ijmisds.v1i05.211

Hossain, M., Hasan, L., Dewan, M., & Monira, N. (2024). The impact of artificial intelligence on project management efficiency. IJMISDS, 1(05), 1-18. https://doi.org/10.62304/ijmisds.v1i05.211

Kim, D. (2020). Bounded rationality in a p2p lending market. Review of Behavioral Finance, 13(2), 184–201. https://doi.org/10.1108/rbf-10-2019-0141

AI and Machine Learning Advances
Volume 2, Issue 1
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Lahiri, S. and Saltz, J. (2022). The risk management process for data science: gaps in current practices.. https://doi.org/10.24251/hicss.2022.147

Lawal, Y., Ayanleke, A., & Oshin, I. (2024). The impact of ai techniques on human-ai interaction quality in project management: a mixed-methods study. Organization and Human Capital Development, 3(2), 1-17. Retrieved from: https://journals.researchsynergypress.com/index.php/orcadev/article/view/2307

Manata, B., Miller, V., Mollaoglu, S., & Garcia, A. (2021). Documenting the interactive effects of project manager and team-level communication behaviors in integrated project delivery teams. Project Management Journal, 53(1), 33-48. https://doi.org/10.1177/87569728211047296

Nahar, J., Hossain, M., Rahman, M., & Hossain, M. (2024). Advanced predictive analytics for comprehensive risk assessment in financial markets: strategic applications and sector-wide implications. GMJ, 3(4), 39-53. https://doi.org/10.62304/jbedpm.v3i4.148

Nzeako, G., Akinsanya, M., Popoola, O., Chukwurah, E., & Okeke, C. (2024). The role of AI-driven predictive analytics in optimizing industry supply chains. International Journal of Management & Entrepreneurship Research, 6(5), 1489-1497. https://doi.org/10.51594/ijmer.v6i5.1096

Raisch, S. and Krakowski, S. (2021). Artificial intelligence and management: the automation–augmentation paradox. Academy of Management Review, 46(1), 192-210. https://doi.org/10.5465/amr.2018.0072

Raisch, S. and Krakowski, S. (2021). Artificial intelligence and management: the automation–augmentation paradox. Academy of Management Review, 46(1), 192-210. https://doi.org/10.5465/amr.2018.0072

Shick, M., Johnson, N., & Yang, F. (2023). Artificial intelligence and the end of bounded rationality: a new era in organizational decision making. Development in Learning Organizations an International Journal, 38(4), 1-3. https://doi.org/10.1108/dlo-02-2023-0048

Stampfl, R., Fischer, J., & Palkovits-Rauter, S. (2023). Experiences with lessons learned method in its projects. Map Education and Humanities, 4(1), 51-64. https://doi.org/10.53880/2744-2373.2023.4.51

Steyvers, M. and Kumar, A. (2023). Three challenges for ai-assisted decision-making. Perspectives on Psychological Science, 19(5), 722-734. Retrieved from: https://journals.sagepub.com/doi/full/10.1177/17456916231181102

Sturm, T., Fecho, M., & Buxmann, P. (2021). To use or not to use artificial intelligence? A framework for the ideation and evaluation of problems to be solved with artificial intelligence.. https://doi.org/10.24251/hicss.2021.023

Taboada, I., Daneshpajouh, A., Toledo, N., & Vass, T. (2023). Artificial intelligence-enabled project management: a systematic literature review. Applied Sciences, 13(8), 5014. https://doi.org/10.3390/app13085014

Tominc, P., Oreški, D., Čančer, V., & Rožman, M. (2024). Statistically significant differences in AI support levels for project management between SMEs and large enterprises. Ai, 5(1), 136-157. https://doi.org/10.3390/ai5010008

Weiser, A. and Krogh, G. (2023). Artificial intelligence and radical uncertainty. European Management Review, 20(4), 711-717. https://doi.org/10.1111/emre.12630

Zhao, Y. (2024). Empowering sustainable finance: the convergence of AI, blockchain, and big data analytics. Advances in Economics Management and Political Sciences, 85(1), 267–273. https://doi.org/10.54254/2754-1169/85/20240925