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Organisational Readiness for the Adoption of AI-Powered PRM Tools in the Mauritian Construction Sector: Development and Comparison of a Conceptual Model

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Abstract: **The application of AI (Artificial Intelligence) powered PRM (Project Risk Management) tools holds much promise towards improving the ability to predict, make decisions and perform better in the construction industry. This research study looks into the issue of organisational readiness for the adoption of AI powered PRM tools in the Mauritian construction industry through a systematic literature review (SLR), qualitative data collection from ten construction companies, and Reflexive Thematic Analysis (RTA). Findings reveal four main dimensions of organisational readiness – human capital development, financial readiness, leadership and strategy, and implementation planning. The study results suggest that the adoption of AI is still at a nascent stage since organisations opt for simpler digital tools instead of AI driven PRM solutions. An organisational-readiness model specific to the context is developed to guide further efforts to ensure successful and sustainable adoption of AI powered PRM in Mauritius.**

Keywords: **Artificial Intelligence (AI); Project Risk Management (PRM); Organisational Readiness; Construction Industry; Mauritius.**

1. INTRODUCTION

Construction projects occur in complex and uncertain environments where the results of the project can be influenced by a variety of factors, such as technical, operational, financial, social and environmental. Numerous activities, stakeholders, and sub-projects interrelate and contribute to the complexity of the modern construction projects. Larger and high tech projects require more coordination, and uncertainties can result in uncertain project conditions, delays, budget overruns and other performance problems (Abioye, 2021). Thus, there are great project management and financial risks in the construction industry and project managers must complete projects on time, within budget and scope of the stakeholders' expectations. PRM (Project Risk Management) is one of the essential aspects of construction project management. PRM involves the identification, assessment, reaction to, tracking and management of risks that might negatively affect project success in a systematic way. Being prone to uncertainties at all stages of the lifecycle, with proper PRM construction project teams can assess the likelihood and impact of risks on the project, develop a mitigation/response plan and regularly monitor project conditions (Adamantiadou and Tsironis, 2025). Therefore, PRM allows maintaining project performance through reducing the impact of risks on cost, schedule, quality, safety and other goals of the project. The study is focused on the potential of systematic PRM to reduce project uncertainty and treatment of risks at individual and cumulative project levels in a proactive manner (Adebayo et al., 2025).

However, traditional construction risk management approaches have their disadvantages. Traditional risk management processes tend to be highly dependent on historical experience, human judgment and qualitative analysis (Buschmeyer et

al., 2023). They can be reactive as the risks may receive a lot of attention once becoming real. Human judgment can cause inconsistencies and bias, thus making the process slow and complicated. On the other hand, although the structured information can be obtained from the traditional risk management tools, such as risk registers, probability-impact matrices, simulations or spreadsheet assessments, they do not necessarily reflect the dynamic and interrelated nature of the construction risks (Zhang and Jiang, 2026). The static approach does not consider changes to the labor market, regulations, climate conditions and others.

In construction project management, artificial intelligence (AI) technologies seem to become increasingly linked to risk management, resource management, scheduling, and decision making. The predictive nature of AI fits very well with PRM, as construction projects tend to generate enormous amounts of data throughout their entire lifecycle. Historical project data, costing data, project schedules, and other project data can be used to detect patterns, including project risks such as negative project events, schedule delays, cost overruns, and others, using machine learning (ML) and other types of AI technologies. The authors mention that AI predictive analytics can access enormous datasets about projects and help detect potential issues, including costs, quality and schedule issues.

Thus, shifting to AI-driven risk management approaches means shifting from experience-based and reactive approach to data-driven, predictive and continuously changing decision-making systems. In turn, the advantages of AI-driven PRM depend not only on the analytical capabilities of the technology, but also on whether construction companies are ready to implement it, and are able to implement the technology.

2. LITERATURE REVIEW

This review of the literature deals with the role of artificial intelligence in project risk management, AI adoption in the construction industry and the factors that can affect it in an organisation. Six studies were selected for the literature review, as they provided evidence on risk management enabled by AI technologies, organisational preparedness, skills of workers, leadership, financial capacity and implementation structures. The findings form the basis for the development of a context-specific conceptual model for AI-powered PRM adoption in the Mauritian construction industry.

Table 1. Summary of Key Literature.

No.	Study	Research focus / Method	Key findings relevant to the present study	Relevance to present research
1	Tian et al. (2025); Razi et al., (2026)	Bibliometric analysis and systematic literature review of 84 peer-reviewed studies on AI and construction risk management.	AI may be used in construction PRM by applying machine learning (ML), natural language processing (NLP), knowledge-based reasoning (KBR), optimization algorithms (OA) and computer vision (CV). Machine learning may help in predicting risks; NLP may help in assessing document and compliance risks; knowledge-based reasoning is used for providing decision support; optimization techniques may help in cost, schedule and resource planning; computer vision helps in real-time safety monitoring.	This is the technological platform on which AI-driven PRM is built upon, thereby proving the theory, that AI can play a role in all aspects of risk management – from identification through to monitoring. It also highlights the importance of data and workforce capability.
2	Tjebane, Musonda and Okoro (2022)	Quantitative survey of 169 construction professionals, using exploratory and confirmatory factor analysis.	Fourteen organizational elements were found and divided into four components, such as innovative organizational culture, competence based development, collaborative decision making, and strategic analysis. Some of the important factors include top-management competencies, decision support, organizational costs, innovation	Especially pertinent in this regard is the fact that the use of AI in the construction sector is influenced by organizational, not merely technological, factors. This supports the notion of exploring workforce capability, leadership, organizational culture, and

			attitude, working culture, collaboration, organizational readiness, and knowledge & competencies.	strategic alignment in Mauritius.
3	Taboada et al. (2023)	Systematic literature review examining AI applications across project-management performance domains.	This article has found that AI is increasingly being used in project management and that machine learning is very useful for construction and information technology projects, especially in planning, performance measurement, risk management, forecasting, and decision-making.	It complements the overall connection between AI, project management and uncertainty reduction. It is a justification of the importance of integrating predictive AI capabilities in PRM and strengthens the necessity of exploring ways in which organizations can be prepared to utilize these capabilities.
4	Wang (2023)	Examines the integration of AI with engineering/building project management and intelligent decision-support systems.	The use of data-driven models in engineering project management systems that employ AI is becoming commonplace, as they help increase data understanding and make decisions quickly and effectively. This paper presents the role played by intelligent decision support in project management.	Relevant to the decision support aspect of AI-based PRM. Serves to prove that the implementation of artificial intelligence in PRM is not only about automation but about delivering valuable data-based information to managers for decision-making.
5	Tominc et al. (2024)	Survey of 473 Slovenian SMEs and large enterprises, with statistical comparison using the Mann–Whitney U test.	The research identified significant differences in the use of AI to support project management among small and medium-sized enterprises and large companies, which demonstrated greater usage of AI within the considered dimensions of AI application.	Very important to the Mauritian case since many Mauritian construction companies tend to be smaller in size. It will be very helpful to investigate financial readiness, infrastructure, skills and organization rather than to assume that all companies are equally capable of adopting AI technology.
6	Vial et al. (2023)	Exploratory case study of an AI consulting firm examining how AI projects are managed.	For the successful deployment of AI, it is necessary to integrate project management, agile methodologies, and AI processes. The research reveals problems related to experimentation, data-science activities, business relevance, and alignment between technical and business people. It suggests approaches such as preliminary evaluation of the project, iterative approach, and cooperation between business and data-science teams.	It directly reinforces the significance of implementation planning and coordination, leadership, and business alignment. It is especially helpful in describing why adopting artificial intelligence involves organizational change, not just acquiring a product.

Currently, the research has been done on AI usage in construction risk management and organisational factors that may influence AI adoption; however, there is lack of research on organisational preparedness to use AI-driven PRM tools in the Mauritian construction industry. This topic has been chosen as the Mauritian construction industry is in the early stage of adopting advanced AI-driven PRM technologies; at the same time, companies face certain difficulties with regard to competencies, financial resources, leadership support and preparedness to adopt such technology. Thus, creating a customised preparedness framework will help the companies understand the key requirements for the successful implementation of AI-driven PRM.

3. RESEARCH METHODOLOGY

Research Design

The present research adopted a qualitative exploratory method involving Systematic Literature Review (SLR), primary qualitative data collection, Reflexive Thematic Analysis (RTA), and conceptual models development and comparison. SLR provided a wealth of information on the subject of organisational preparedness for AI-driven PRM, whereas the primary data provided the specific perspectives of the construction companies in Mauritius. The comprehensive method was intended to identify the elements of organisational preparedness and develop a conceptually sound framework concerning the Mauritian construction industry. For carrying out the systematic literature review, the methodology PRISMA 2020 was adopted, while qualitative theme analysis was applied to derive answers to major questions. The study covered research articles released within 2020-2025 and, thus, focused on recent studies on AI, PRM, construction, and organisational readiness.

Primary Data

The primary qualitative data were collected from 10 construction companies in Mauritius. The subjects selected for this research were senior or professional staff, and most of the answers reflected the views of the senior management. Self-reported asynchronous written interviews were held via Microsoft Forms. The questionnaire was distributed to more than 500 construction companies listed in the CIA and resulted in ten firms providing a valid response. Most of the respondents' companies had less than 50 employees.

Data Analysis

Reflexive Thematic Analysis (RTA) was applied to analyse qualitative responses. First, the responses were cleaned and reviewed, followed by coding and categorisation of relevant statements. Related codes were then grouped into more general themes, which served as the base for conceptual model development.

4. RESULT ANALYSIS AND DISCUSSION

Current Level of AI-Powered PRM Adoption

It is revealed that the usage of AI-powered Project Risk Management (PRM) in the examined construction companies in Mauritius is still at its early stage. While the respondents acknowledged the ability of artificial intelligence to enhance monitoring, decision-making, and prediction of risks, the application of complex AI-powered PRM solutions found in SLR was not mentioned. The respondents only referred to the digitalisation process within their organisations as related to basic software, such as Microsoft Office and AutoCAD. Thus, there is a lack of evidence that the potential benefits of AI are exploited in the companies in question.

Human Capital Development

The development of human capital became a key component of organizational readiness. Training, qualified professionals, technical knowledge, computer skills and employee willingness to adopt innovations were mentioned by participants as important aspects for adopting AI. The findings demonstrate that having AI technology is not enough if employees are not able to work with it due to lack of necessary knowledge and competence.

Table 2. Cleaned data, generated codes, and constructed themes of organisational readiness.

Cleaned Response	Generated Code	Constructed Theme
Training	Staff Training	Human Capital Development
Professional Personnel	Technical Expertise	Human Capital Development
Employee Readiness to embrace new technologies	Digital skills Readiness	Human Capital Development
Budget	Financial Investment	Financial Preparedness
Trial Period	Pilot Testing	Structured Implementation Planning
We need to assess	Implementation planning	Structured Implementation Planning
Scalability	Implementation capacity	Structured Implementation Planning
Strong leadership support	Leadership endorsement	Leadership and Strategic Alignment
Clear Strategic goals	Strategic clarity	Leadership and Strategic Alignment
Change in IT systems	Technological change	Leadership and Strategic Alignment

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Financial Preparedness

Financial readiness became an important unique factor facilitating the process of preparation. It was explicitly stated in the results that financial and budgetary investments were important prerequisites for implementation. This finding should be distinguished from cost as a barrier to adoption. Even though financial constraints were noted as barriers to adoption in other parts of the study, organisational readiness assessment demonstrates that having enough money will enable companies to implement AI.

Leadership and Strategic Alignment

Another important aspect of readiness was leadership and strategy alignment. Participants paid much attention to strong support from leaders, presence of clear strategies, and willingness to change IT systems. Such results show that being ready to implement AI involves not only capabilities but also needs management engagement and strategic planning.

Structured Implementation Planning

Finally, structured implementation planning becomes a very important context-specific finding of Mauritian framework. Testing processes, evaluation of implementation, and scalability were mentioned by the participants as a way of implementation. Pilot testing became an approach that will allow firms to test AI products before implementing them.

Proposed Mauritian Organisational-Readiness Model

As a result of the research, an organisational readiness framework for the implementation of AI-driven PRM was developed, which takes into account the four identified themes. These are Human Capital Development, Financial Preparedness, Leadership and Strategic Alignment, and Structured Implementation Planning – these factors represent the basis of Successful Adoption of AI-Enhanced PRM Tools.

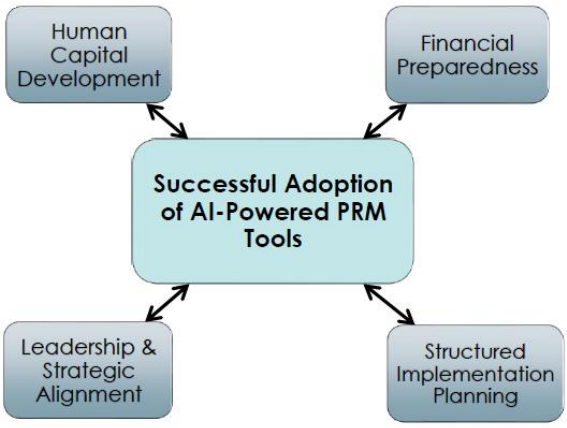


Figure 1. Conceptual model of organisational readiness for AI-powered PRM tools in Mauritian construction sector.

Comparison with TOE Framework

Table 3. Comparison table.

TOE Dimension	Generic TOE Perspective	Mauritian Findings
Technological	Infrastructure, compatibility, complexity	Less prominent in primary findings
Organisational	Skills, leadership, financial capability	Strongly represented
Environmental	Regulation, competition, external support	Limited emphasis
Context-specific extension	—	Pilot testing, phased implementation

Comparison of the model under discussion and the SLR model reveals some common points – workforce capability/human capital development and leadership and strategic alignment. However, in the Mauritian model, more attention is paid to financial preparedness, pilot testing, staged implementation and organisational implementation capability. In contrast,

digital infrastructure and data governance are somewhat underrepresented among primary findings. As compared to the TOE framework, the Mauritian model seems to reflect more the organisational aspects of AI-powered PRM tools implementation, including skills, leadership and financial readiness, whereas technological and environmental factors are less considered. Therefore, the Mauritian model can be regarded as a contextualised modification of TOE rather than its replacement, being related to the environment and specifics of Mauritian construction organisations. The findings show that organisational readiness represents a complex and interconnected condition in which skills need funding, funding needs leadership, leadership is based on workforce capability and organisational readiness itself requires structured implementation planning in order to mitigate risks of adoption.

5. CONCLUSION

Thus, organisational readiness plays a very important role in the successful implementation of AI-powered tools for project risk management in Mauritian construction industry, as this research shows. Four interconnected factors have been revealed by the study – human capital development, financial preparedness, leadership and strategic alignment and structured implementation planning. Organisational readiness framework proposed in the study is an extension of TOE framework with a focus on pilot testing, staged implementation and organisational readiness. Improving employee competencies, resources and strategic management will lead to the improvement of the readiness to use AI tools for risk management in construction companies. The study provides guidelines for future research and progressive adoption of AI-powered PRM systems in Mauritius.

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