

AI Integration in Project Management
for
Digital Transformation

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Abstract

This research examines the barriers to effective artificial intelligence (AI) adoption in project management within the United Arab Emirates (UAE). While organizations increasingly invest in AI to drive project performance and digital transformation, many fail to realize expected outcomes due to gaps in understanding how to apply AI effectively rather than limitations of the technology itself. Existing AI adoption frameworks are largely derived from North American and European contexts and do not account for regional organizational, regulatory, or cultural conditions. This study aims to identify key barriers to AI adoption, assess the impact of AI knowledge gaps on project outcomes, evaluate the relevance of existing frameworks to the UAE context, and propose a regionally-adapted framework for AI integration in project management. The research will be expected to contribute both to academic understanding of regional AI adoption and to practical guidance for organizations pursuing AI-enabled project management transformation in the UAE.

Introduction

Artificial intelligence (AI) is transforming how organizations manage projects and pursue digital transformation. In today's fast-paced AI landscape, organizations must invest not only in AI capabilities but also in workforce development to remain competitive. Unlike previous decades, where industrial change unfolded over many years, the same changes now take place within a few months, placing pressure on project management practices to adapt quickly. Despite this urgency, AI adoption in project management does not automatically translate into better outcomes. Many organizations invest heavily in AI yet fail to realize its expected benefits, largely due to gaps in understanding how to apply the technology effectively rather than limitations of the technology itself. This proposal investigates these adoption barriers within the UAE project management context, where research remains limited compared to Western regions, and proposes a regionally-adapted framework to close this gap.

Background

Artificial intelligence has increasingly become part of how modern project management functions, supporting tasks such as automating resource allocation, monitoring risks, forecasting timelines, and generating performance statistics. Sayed (2022) notes that while digital systems can automate specific management processes, final decision-making remains the responsibility of the project manager, meaning AI adoption changes *how* project management is performed rather than *who* performs it. At the organizational level, Wamba-Taguimdje et al. (2020) found that AI improves firm performance across financial, marketing, and administrative dimensions,

but only when organizations reconfigure their processes to take advantage of AI's capabilities rather than simply layering AI onto existing workflows.

The UAE government has positioned AI as a national priority. Launched in 2017, the National Strategy for Artificial Intelligence 2031 aims to establish the UAE as a global leader in AI, with objectives including building AI competitive assets in priority sectors, developing a fertile AI ecosystem, adopting AI across government services, and attracting and training AI talent (UAE AI Office, 2021). This national-level commitment creates strong institutional pressure for organizations across UAE sectors to adopt AI, making the country a relevant and timely context for studying AI adoption challenges in project management.

Despite this national ambition, national-level strategy does not guarantee successful adoption at the organizational or project level. Bharadiya (2023) found that AI adoption challenges often stem not from the technology itself but from organizations' limited understanding of how to apply it effectively — a gap likely to be even more pronounced in regions such as the UAE, where AI adoption research remains concentrated in North American and European settings (Al Sulaity et al., 2025). This proposal addresses that gap.

Problem Statement

Problem Statement: AI Integration in Project Management for Digital Transformation: A UAE Perspective

AI integration in project management and its impact on digital transformation has become a critical focus for organizations (Sayed, 2022). In today's fast-paced AI landscape, organizations must invest not only in AI capabilities but also in workforce development to remain competitive. In the past decades, industrial organizations needed many years to adapt to change; however, currently, the same changes take place within a few months.

Despite significant investment in AI, many organizations fail to achieve the expected project outcomes. Bharadiya (2023) found that this shortfall is not caused by the AI technology itself, but by organizations' lack of understanding of how to apply AI effectively. As a result, organizations that adopt AI without addressing this knowledge gap risk failing to realize AI's benefits in project management.

Addressing this gap is significant because organizations that fail to bridge the AI knowledge gap risk losing competitive advantage to firms that adopt AI more effectively. Conversely, Jiang et al. (2024) found that successful AI transformation significantly enhances overall business performance, highlighting the potential gains for organizations that close this gap.

Several studies propose frameworks to address AI adoption challenges. Alet (2024) identifies four critical dimensions for effective AI business strategy, while Wamba-Taguimdje et al. (2020) emphasize that organizations must reconfigure their processes to fully benefit from AI.

While these frameworks offer valuable general guidance, they remain broad and not specific to project management contexts. Al Sulaity et al. (2025) highlight that AI implementation research is predominantly focused on North America and Europe, leaving regional contexts such as the UAE under-explored. This research therefore aims to address this gap by proposing a regionally-adapted framework for AI adoption in project management.

Research Objective

Research Objectives

1. To identify the key barriers to effective AI adoption in UAE project management.
2. To assess the impact of AI knowledge gaps on project outcomes.
3. To evaluate existing AI adoption frameworks for their relevance to project management in the UAE.
4. To propose a regionally-adapted framework for AI integration in project management.

Research scope

This study is geographically bound to the United Arab Emirates and focuses on organizations across sectors that use structured project management practices, including but not limited to construction, oil and gas, government/public sector, and IT-driven digital transformation initiatives. The unit of analysis is the organization and its project management practitioners (project managers, program managers, and PMO staff) involved in AI-enabled or AI-adjacent projects. The study focuses specifically on adoption barriers and organizational readiness factors; it does not evaluate the technical performance, accuracy, or algorithmic design of specific AI tools or platforms. Findings are intended to be relevant across UAE industries rather than limited to a single sector.

Literature Review

Paper1: Influence of artificial intelligence (AI) on firm performance: the business value of AI-based transformation projects

The main purpose of our study is to analyze the influence of Artificial Intelligence (AI) on firm performance, notably by building on the business value of AI-based transformation projects. This study was conducted using a four-step sequential approach: (1) analysis of AI and AI concepts/technologies; (2) in-depth exploration of case studies from a great number of industrial sectors; (3) data collection from the databases (websites) of AI-based solution providers; and (4) a review of AI literature to identify their impact on the performance of organizations while highlighting the business value of AI-enabled projects transformation within organizations

Paper2: The Impact of Digital Transformation on Project Management and Business Development

The purpose of the study is to determine the impact of digitalization on modern project management and, in general, on the development of modern business. To achieve this goal, a set of general scientific methods was used, including analysis, synthesis, generalization, systematization, induction and deduction. The study proves that modern project management is characterized by the active development and implementation of innovative digital technologies that allow team members to focus on the result and quality performance of their functions, while routine tasks can be performed using automated systems and artificial Intelligence.

Papaer3: The impact of artificial intelligence on business processes

The purpose of the study is to examine the challenges faced by businesses in integrating and effectively utilizing artificial intelligence (AI) technology. It aims to provide a comprehensive understanding of how AI technologies generate business value and the anticipated benefits they offer. The study also seeks to identify the facilitators and inhibitors of AI adoption and usage, explore different types of AI use in the organizational environment, and analyze their first-and second-order impacts

Paper4: Driving digital transformation in oil and gas sector: unlocking AI's potential in the UAE

This study aims to examine the implementation of artificial intelligence (AI) in the UAE oil and gas sector, focusing on operational, project management and executive-level challenges. It addresses gaps in existing research, which predominantly originates from North America and

Europe, and provides a regional perspective on the practical challenges of AI adoption. The study aims to guide future AI implementation projects in the UAE by offering a structured framework

Paper5: Effective integration of artificial intelligence: key axes for business strategy

This paper aims to explore the dimensions that foster the effectiveness of artificial intelligence (AI) within a business strategy.

Paper6: Unlocking innovation potential: the impact of artificial intelligence transformation on enterprise innovation capacity

Building upon the resource-based view (RBV) and related research, this paper empirically examines the impact and specific mechanisms of artificial intelligence transformation on corporate innovation capabilities. It provides micro-level evidence of AI's influence on innovation behavior

Here are the 4 new studies formatted the same way as your original Paper1–6 briefs, followed by rewritten Critical Analysis and Connections sections incorporating all 10 studies.

Paper7: Application of Artificial Intelligence in Project Management: Challenges and Solutions to Integration

This mixed-methods study examines current AI adoption patterns, implementation challenges, and evidence-based solutions in project management, drawing on survey data from 368 project management professionals and focus group insights from 7 implementation experts across diverse industries. The findings reveal that while the majority of organizations have initiated AI adoption, only a minority achieve comprehensive integration, with skills gaps, internal resistance, and ROI uncertainty identified as the primary barriers, despite reported benefits in decision-making speed, cost savings, and quality.

Paper8: The Role of Artificial Intelligence in Aviation Construction Projects in the United Arab Emirates: Insights from Construction Professionals

This study investigates the integration of AI within aviation construction projects in the UAE, based on a survey of 101 engineering professionals with experience in aviation-related construction. While the UAE has advanced significantly in applying AI to airport security and operations, the study finds that AI use in the design and construction phases of aviation projects

remains limited, with mixed professional confidence in AI's ability to support project management decision-making specifically, despite stronger support for its use in planning and safety.

Paper9: Artificial Intelligence in Construction Project Management: Trends, Challenges and Future Directions

This literature synthesis examines the state of AI adoption in construction project management, moving beyond purely technical applications to address organizational and cultural dimensions of adoption. The study identifies resistance to change, skill gaps, and ethical concerns as key non-technical barriers, and calls for empirical validation of AI tools in live project environments, sector-specific adoption frameworks, and workforce upskilling initiatives.

Paper10: Prospects, Drivers of and Barriers to Artificial Intelligence Adoption in Project Management

This study employs quantitative and qualitative approaches to identify the drivers of, barriers to, and general perception of project management professionals in the building and environment industry toward AI adoption. It finds that Industry 4.0 pressures and post-COVID disruption have increased urgency for AI adoption, while proposing strategies and recommendations to address the barriers identified, based on local PM professionals' attitudes and receptiveness.

Critical Analysis:

In the current fast-paced world of AI, organizations and companies must pay full attention and invest heavily by planning for the future — not only by funding AI capabilities, but also by investing in the change management of their workforce in order to cope with the fast-moving pace of technological change. Previously, major industry shifts could take decades; today, comparable shifts happen within months. Organizations must therefore learn from historical cautionary examples such as Nokia and Kodak, where failure to adapt quickly led to competitive decline.

The extended literature reinforces this urgency while adding a project-management-specific dimension. Ajao and Ogu (2025) and Shang et al. (2023) both provide empirical evidence that even when organizations recognize the need for AI adoption, translating that recognition into comprehensive integration remains difficult — fewer than a quarter of organizations in Ajao and Ogu's (2025) sample achieved full integration despite majority initiation. This confirms

Bharadiya's (2023) earlier finding that the barrier is rarely the technology itself, but rather organizational readiness, skills, and change management capacity.

Regionally, Alketbi et al. (2025) offers a striking finding directly relevant to this proposal: UAE professionals expressed notable skepticism specifically toward AI supporting project management decision-making, even while endorsing its value in planning and safety monitoring. This suggests that trust in AI is not uniform across PM functions being more general in scope, did not capture. Savaş (2025) reinforces this by framing AI adoption challenges in construction PM as fundamentally organizational and cultural rather than technical, aligning with Wamba-Taguimdje et al.'s (2020) argument that AI's business value depends on organizational reconfiguration rather than the technology alone.

Taken together, the ten studies suggest that the AI adoption gap in project management is not primarily a technology gap, but a readiness, trust, and change-management gap — one that appears especially pronounced in specific PM functions such as decision-making, and one that remains under-researched in the UAE context outside of oil and gas and, now, aviation construction.

Connections:

Those papers have few focus points in common such as:

1. **Change management:** Organizations must invest in workforce and mindset change to adopt AI successfully, not just technology (Sayed, 2022; Ajao & Ogu, 2025; Savaş, 2025).
2. **Deep analysis of use cases:** Organizations must analyze current situations and identify AI use cases with genuine benefit, rather than adopting AI generically (Alet, 2024; Shang et al., 2023).
3. **Generous, sustained investment:** Meaningful AI transformation requires consistent investment in technology and capability-building, not one-off funding (Jiang et al., 2024; Ajao & Ogu, 2025).
4. **Honest assessment of readiness and trust:** Organizations must honestly evaluate not only ROI, but also internal trust and confidence in AI-supported decision-making — a gap made explicit by Alketbi et al. (2025), where professionals accepted AI in planning and safety but hesitated on AI in PM decision-making itself.

Synthesis matrix for literature review:

Study	Authors	Year	Research Design	Key findings / Results	Methodology	Limitations
Influence of artificial intelligence (AI) on firm performance: the business value of AI-based transformation projects	Samuel Fosso Wamb	2019	Experimental	the results of our study have highlighted such AI benefits in organizations, and more specifically, its ability to improve on performance at both the organizational (financial, marketing and administrative) and process levels. By building on these AI attributes, organizations can, therefore, enhance the business value of their transformed projects. The same results also showed that organizations achieve performance through AI capabilities only when they use their features/technologies to reconfigure their processes	The study has called on the theory of IT capabilities to seize the influence of AI business value on firm performance (at the organizational and process levels). The research process (responding to the research question, making discussions, interpretations and comparisons, and formulating recommendations) was based on a review of 500 case studies from IBM, AWS, Cloudera, Nvidia, Conversica, Universal Robots websites, etc. Studying the influence of AI on the performance of organizations, and more specifically, of the business value of such organizations' AI-enabled transformation projects, required us to make an archival data analysis following the three steps, namely the	This study also allows managers to consider AI not as a single technology but as a set/combination of several different configurations of IT in the various company's business areas because multiple key elements must be brought together to ensure the success of AI: data, talent mix, domain knowledge, key decisions, external partnerships and scalable infrastructure

					conceptual phase, the refinement and development phase, and the assessment phase	
The Impact of Digital Transformation on Project Management and Business Development: Case Studies in Diverse Industries	Ruslan Sayed	2022	Experimental	In a modern project management system, digital systems can automate specific management processes, such as controlling resource allocation, increasing information mobility, monitoring and identifying risk situations in case of deviations from indicators, compiling statistics, forecasting, etc. However, making a specific management decision remains fully within the manager's function, which reduces this trend to the automation and digitalisation of certain processes.	study is aimed at analyzing promising areas for the development of project management using digital transformation tools. The analysis of scientific literature is aimed at systematizing approaches to building a modern project management system at large and small enterprises	The specifics of digital technologies, their rapid progress, high dynamics of change, almost universal spread and impact on all spheres of life require the application of special project management models that reflect a new digital methodology and organization, as well as new approaches to financing
The impact of artificial intelligence on business processes	Jasmin Bharadiya	2023	Experimental	The study revealed several insights regarding the integration and use of AI in businesses. This indicated that organizations struggle with understanding how AI technologies can generate value and how to effectively incorporate them into their operations. Lack of comprehensive knowledge about AI and its value	The study employed the comprehensive literature review research design. The researchers conducted a systematic search using predefined criteria in databases such as Scopus and Web of Science.	The study highlights the need for supportive policies and regulations to foster AI adoption. It suggests creating an enabling environment

				generation processes was identified as a major barrier. Additionally, the study highlighted the facilitators and inhibitors of AI adoption and usage		that promotes AI research and development.
Driving digital transformation in the oil and gas sector: unlocking AI's potential in the UAE	Iman Al Sulaity, Douglas Yourston, Osama Khassawneh, Tamer K Darwish	2025	Experimental	The study identifies the necessity of adopting a lessons-learned approach, reflecting the emerging stage of AI in the sector. It emphasizes the importance of structured change management methodologies to address gaps in digital transformation research.	A three-phase qualitative study was conducted using an interpretivist methodology. Semi-structured interviews were carried out with operational engineers, project managers and senior executives in the UAE oil and gas sector. Data saturation was achieved, and thematic analysis was used to interpret the findings	This study contributes to the literature on AI implementation by providing a region-specific perspective for the UAE oil and gas sector. It identifies key challenges and offers actionable recommendations for practitioners and researchers, highlighting the importance of structured change management and collaboration in overcoming barriers to AI adoption
Effective integration of artificial intelligence: key axes for business strategy	Josep Alet	2024	Experimental	The paper proposes that there are four critical dimensions for developing an effective business strategy with AI. This research finds that AI has the potential to drive significant development when it is	The paper reviews recent contributions to AI and business success and identifies the key pillars that support the	The paper identifies four pillars of AI integration with the development of business

				leveraged along four main axes: a focused strategy for AI, knowledge of the customers, effective interactions with customers and effective implementation of AI	achievement of good results	strategy as areas for further empirical analysis by business researchers
Unlocking innovation potential: the impact of artificial intelligence transformation on enterprise innovation capacity	Liangyu Jiang, Ye Xuan, Kerong Zhang	2024	Experimental	The research reveals that AI transformation significantly enhances the innovation capability of enterprises. Heterogeneity analysis indicates that AI transformation exerts a stronger promoting effect on the innovation capability of non-technology firms, large enterprises and those within the manufacturing sector	Drawing upon data from Chinese listed companies spanning the period from 2011 to 2022, this study employs a dual fixed-effects model and a mediation effects model to empirically analyze the influence of enterprise AI transformation on its innovation capability as well as the specific mechanisms involved	Further examination demonstrates that AI transformation elevates the quality, efficiency and eco-friendliness of enterprise innovation
Application of AI in Project Management: Challenges and Solutions to Integration	Ajao, O.R. & Ogu, R.A.	2025	Mixed methods	56.5% of organizations-initiated AI adoption but only 21.7% achieved comprehensive integration; main barriers were skills gaps (56.5%), resistance/change management (47.8%), and ROI uncertainty (43.5%); benefits included faster decisions (82.6%) and cost savings (56.5%)	Survey of 368 PM professionals + focus groups with 7 implementation experts across industries	Single-country/sample scope not confirmed from abstract; recommend verifying sample demographics in full text
The Role of AI in Aviation Construction Projects in the UAE	Alketbi, M.A., Dweiri, F., & Dalalah, D.	2025	Quantitative survey	AI adoption in UAE aviation construction remains limited despite strong AI use in airport security/operations; professionals see high potential in planning, scheduling, and safety monitoring specifically	Survey of 101 engineering/construction professionals in UAE aviation sector; SPSS analysis (Likert scale, ANOVA, discriminant analysis)	Sector-specific (aviation construction only); limits generalizability to other UAE project types

AI in Construction Project Management: Trends, Challenges and Future Directions	Savaş, S.	2025	Literature review/synthesis	Extends prior technical-focused reviews to organizational, cultural, and strategic dimensions of AI adoption — resistance to change, ethical concerns, and skill gaps	Narrative/synthesis review of construction PM literature	Review-based, not empirical; findings not sector-verified through primary data collection
Prospects, Drivers of and Barriers to AI Adoption in Project Management	Shang, G., Low, S.P., & Lim, X.Y.V.	2023	Mixed-methods (quantitative + qualitative)	Identifies drivers/barriers and PM professionals' perceptions of AI adoption in the building & environment industry; proposes adoption strategies	Survey and qualitative input from local PM professionals in B&E industry	Focused on building & environment industry (Singapore-based); regional context differs from UAE

Research Methodology

This study adopts a qualitative research design, consistent with the approach used by Al Sulaity et al. (2025) in their study of AI adoption in the UAE oil and gas sector. A qualitative approach is appropriate given the exploratory nature of this research: the goal is to understand *why* barriers to AI adoption exist and *how* practitioners experience them, rather than to measure the prevalence of predefined variables.

Data Collection

Semi-structured interviews will be conducted with project management practitioners and decision-makers (project managers, program managers, and PMO staff) working in UAE organizations across the sectors defined in the Research Scope. An interview guide will be developed around the four research objectives, covering: perceived barriers to AI adoption, the effect of AI knowledge gaps on past project outcomes, familiarity with and views on existing AI adoption frameworks, and practitioner recommendations for a UAE-relevant approach. A target sample of 12–15 participants is proposed, consistent with common saturation thresholds in qualitative organizational research.

Framework/Document Analysis

In parallel, the study will conduct a comparative analysis of existing AI adoption frameworks identified in the literature review (e.g., Alet, 2024; Wamba-Taguimdje et al., 2020), evaluating

their applicability to the UAE project management context against the themes emerging from interviews.

Data Analysis

Interview data will be analyzed using thematic analysis, following an inductive coding approach to identify recurring barriers, knowledge gaps, and practitioner recommendations. Themes will then be mapped against existing frameworks to assess gaps and inform the proposed regionally-adapted framework.

Ethical Considerations

Informed consent will be obtained from all participants; interviews will be anonymized, and data stored securely in line with standard research ethics practice.

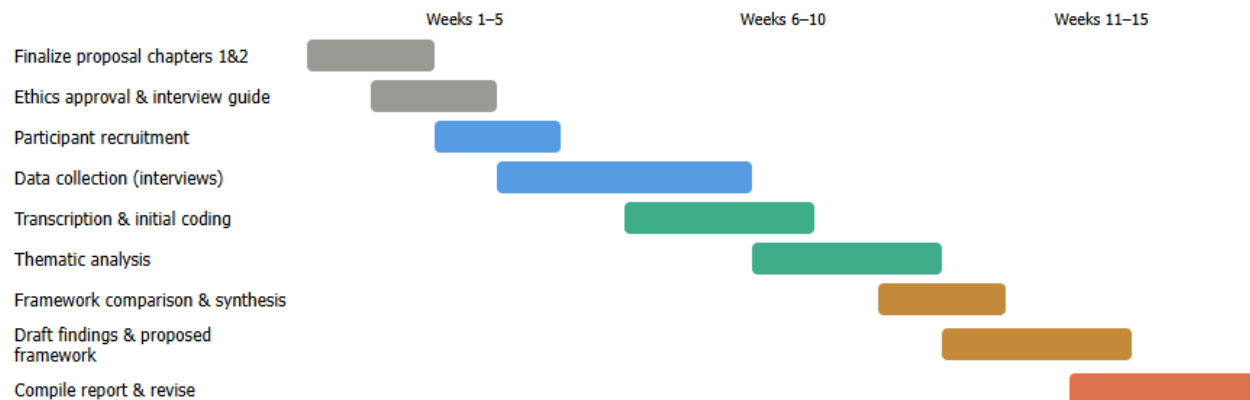
Expected Outcome

This research is expected to produce:

1. An empirically grounded understanding of the specific barriers UAE project management practitioners face in adopting AI, extending beyond general organizational barriers identified in prior literature.
2. Evidence of how AI knowledge gaps have concretely affected project outcomes in UAE organizations.
3. A critical evaluation of existing AI adoption frameworks' relevance (or gaps) when applied to the UAE project management context.
4. A regionally-adapted framework for AI adoption in project management, intended as a practical reference for UAE organizations and a contribution to the limited regional literature on this topic (Al Sulaity et al., 2025).

Gantt Chart

Gantt chart showing a 15-week research timeline across nine phases, from literature finalization to final submission



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