

AI-Augmented Project Management for Digital Transformation in Insurance Firms

Saif Ali Jog^{1*}, Shuaib Ahmed Wadho², Mahendar Lal³

¹Shaheed Zulfikar Ali Bhutto Institute of Science and Technology (SZABIST), Karachi

²Universiti Tunku Abdul Rahman (UTAR), Kampar, Malaysia

³Quaid-e-Awam University of Engineering, Sciences & Technology, (QUEST), Nawabshah

ABSTRACT

Digital transformation in the insurance industry increasingly relies on artificial intelligence (AI) to enhance project management practices, enabling firms to execute complex technology-driven initiatives with greater precision and efficiency. This study examines how AI-augmented project management transforms traditional approaches often constrained by manual decision-making, fragmented oversight, and limited predictive capability into intelligent, data-driven processes. Drawing on a synthesis of recent industry reports, secondary benchmarks, and an illustrative case from the insurance sector, the study analyses how AI tools such as predictive analytics, machine learning, and intelligent automation can be embedded across the project lifecycle. The results show that AI-augmented project management is associated with substantial performance gains: forecast accuracy, on-time delivery, risk detection, resource utilization, and stakeholder satisfaction all improve by 40–55% compared with traditional practices. These improvements translate into fewer delays and budget overruns, stronger alignment between IT initiatives and business strategy, and higher return on investment (ROI) for digital transformation projects. The findings support the notion of augmented intelligence, where human expertise is amplified rather than replaced, enabling continuous learning, adaptive governance, and more resilient project execution. The study concludes by proposing an AI-augmented project management framework for insurance firms and outlining implications for practitioners and future research.

Keywords: *AI-augmented project management, digital transformation, insurance industry, predictive analytics, intelligent automation, augmented intelligence, risk mitigation, resource optimization*

Author's Contribution

^{1,2} Data analysis, interpretation, and manuscript writing, Active participation in data collection

^{1,2,3} Conception, synthesis, planning of research. Interpretation and discussion

Address of Correspondence

Saif Ali Jog

Email: saif.it@statelife.com.pk,

Article info.

Received: June, 15, 6, 2024

Accepted: November 13, 2024

Published: December 30, 2024

Cite this article: Jog A S, Wadho A S, Lal M Azeem A. A Novel Morphological Rule-based Approach for Urdu Text Sentiment Analysis. *J. inf. commun. technol. robot. appl.* 2024; 14(1):38-44

Funding Source: Nil

Conflict of Interest: Nil

INTRODUCTION

The insurance industry stands at a critical inflection point in its digital transformation journey. While insurers have invested heavily in automation, analytics, and customer-facing digital channels, the underlying project

management practices that drive these initiatives often remain rooted in traditional, manual approaches [1–4]. According to recent industry analyses, as many as 60–70% of digital transformation projects in financial services

exceed their initial budget or timeline targets, primarily due to fragmented project oversight, data silos, and limited predictive capability within management processes [4,6,7]. Moreover, a significant portion of IT-driven initiatives in insurance fail to deliver measurable business value because of insufficient alignment between strategic objectives and project execution frameworks [3,11].

Digital transformation in insurance involves large-scale modernization of claims handling, underwriting, customer engagement, fraud detection, and risk assessment through the adoption of advanced technologies such as AI, machine learning, cloud platforms, and SaaS-based ecosystems [2,6,10,16]. Managing these complex, multi-stakeholder projects expose persistent inefficiencies in planning, resource allocation, risk forecasting, and cross-functional coordination. Conventional project management methods struggle to cope with the dynamic, data-rich environment that characterizes AI-enabled transformation programmes [5,15].

Recent studies indicate that AI-augmented project management (AI-PM) can substantially improve digital initiative outcomes. Organizations employing AI-assisted planning and analytics report higher project success rates and reduced rework and delivery delays compared with conventional methods [6,8,9,12]. AI-enhanced systems leverage real-time data streams, predictive modelling, and natural language processing to provide intelligent recommendations, detect emerging risks, and optimize resource utilization across the project lifecycle.

LITERATURE REVIEW

Table 1. Illustrates the performance impact of AI-driven project management across key dimensions of insurance transformation initiatives, based on compiled industry metrics.

Performance Metric	Traditional PM (%)	AI-Augmented PM (%)	Improvement (%)
Forecast accuracy	61	89	+46
Resource utilization efficiency	64	91	+42
Risk detection accuracy	58	90	+55

Stakeholder satisfaction	63	88	+40
On-time delivery	59	84	+42

Artificial intelligence thus represents more than a technological upgrade; it is a strategic enabler that redefines how digital transformation projects are conceived, governed, and delivered. AI-augmented project management integrates intelligent automation, predictive analytics, and cognitive insights into every project stage, from initiation to closure [5,9,15]. By learning from historical project data and adapting to evolving conditions, AI-driven tools minimize uncertainty, improve coordination across departments, and enhance decision-making accuracy [10].

The research problem addressed in this study is the limited empirical understanding of how AI can be systematically applied to strengthen project management frameworks within insurance-sector digital transformation programmes.

1. Research objective:

To explore how AI-driven analytics and automation can improve project forecasting, efficiency, and success rates in insurance firms.

This study’s significance is twofold. Academically, it extends the emerging theory around AI integration in project management. Practically, it offers a blueprint for insurance executives and project leaders to align digital initiatives with organizational strategy while achieving measurable performance gains.

2.1 Digital Transformation in the Insurance Industry:

Digital transformation in insurance encompasses the use of cloud computing, big data analytics, automation, and AI to enhance customer service, reduce operational costs, and improve decision-making [3,6,7,10,16]. Insurance firms increasingly adopt digital platforms to streamline policy management, automate claims assessment, build data-driven underwriting models, and improve risk pricing. However, transformation efforts frequently encounter barriers related to legacy systems, fragmented data, regulatory constraints, and workforce readiness [6,7,17]. Many insurers underestimate the depth of organizational change required, contributing to high failure and delay rates in digital initiatives. This context makes effective project management a critical capability for translating digital strategies into tangible performance outcomes [4,11].

2.2 The Role of Project Management in Digital Initiatives:

Project management provides the structure, governance, and coordination necessary to deliver complex digital initiatives. Frameworks such as PMBOK, PRINCE2, Agile, and hybrid methodologies are widely used to improve delivery efficiency and control [4,11,16]. However, traditional tools rely heavily on human judgment and manual data interpretation, increasing the risk of bias, slow response, and forecasting errors [5,15]. Digital transformation projects—characterised by high uncertainty, rapid iteration, and cross-functional dependencies—require more adaptive and data-driven management approaches [2,5]. Integrating AI into project management promises real-time insights, enhanced planning accuracy, and improved responsiveness to change [5,8,12].

2.3 | AI in Project Management Across Industries:

Across sectors such as construction, healthcare, manufacturing, and software development, AI is increasingly recognised as a catalyst for improving project performance. Machine learning algorithms analyse historical project data to predict cost overruns, schedule slippage, and risk hotspots. Natural language processing enables automated summarisation of project documentation, risk logs, and stakeholder feedback. AI-based recommendation engines support resource allocation and scenario planning [5,9,15]. Yet within the insurance industry, evidence on systematic AI integration into project management processes remains limited and fragmented [6,10,18].

2.4| Methodologies and Tools for Digital Project Management:

Modern digital project management relies on integrated technology platforms that combine collaboration, workflow automation, and analytics. SaaS-based project management tools increasingly embed AI features such as automated scheduling, risk prediction, and anomaly detection [14,15]. Agile and hybrid methodologies are widely used to manage digital transformation due to their flexibility and iterative nature [2,5]. However, these methods still depend on human interpretation of complex data and may not fully exploit the predictive and prescriptive potential of AI. This opens

space for AI-augmented frameworks that blend established best practices with data-driven intelligence.

2.5 | Identified Research Gap:

While there is substantial literature on digital transformation and AI adoption individually, research explicitly connecting AI, project management, and sector-specific challenges in insurance is scarce. Existing studies tend to focus either on technology adoption or on generic project management enhancements without contextualizing them for the regulatory, legacy, and risk environments of insurance [5,6,10]. This study addresses the gap by proposing and evaluating an AI-augmented project management framework that enhances planning, risk control, and decision-making in insurance digital transformation initiatives.

RESEARCH METHODOLOGY

3.1 | Research Design:

This study adopts an exploratory mixed-methods research design, combining:

1. Secondary data analysis of recent industry reports and benchmark studies on AI in insurance and project management [3,6–8,10,12,17];
2. Semi-structured expert insights (from project managers, IT leaders, and consultants) drawn from documented interviews and practitioner commentaries in the literature;
3. An illustrative organizational case of a mid-to-large insurance firm implementing AI-augmented project management practices.

This design allows triangulation between quantitative performance indicators and qualitative insights on implementation challenges and enablers.

3.2 | Conceptual Framework

The study is anchored in a technology acceptance and organizational performance framework. It examines how AI capabilities, embedded within project governance and execution, influence key project success indicators: time, cost, quality, and stakeholder satisfaction [4,5,11,13]. The framework assumes that:

AI capabilities (predictive analytics, automation, NLP, intelligent dashboards)

- → enhance planning, monitoring, and control functions

- which in turn improve project performance (on-time delivery, budget adherence, quality, stakeholder satisfaction).

3.3 | Data Sources and Collection:

- Secondary metrics were compiled from reputable industry reports (e.g., Capgemini, Deloitte, McKinsey, PMI, WEF) and peer-reviewed studies on AI in project management and insurance [3,5–8,10,12,15,17].
- Qualitative insights were extracted from published case narratives, practitioner articles, and interview-based studies documenting AI deployment in project contexts [2,5,9,18].
- Case evidence was synthesised for an anonymised insurance firm undergoing core-system modernization using AI-enabled project dashboards, predictive risk scoring, and automated reporting.

3.4 | Data Analysis:

Quantitative indicators (e.g., forecast accuracy, on-time delivery, stakeholder satisfaction) were aggregated and normalized to compare traditional versus AI-augmented project management (Table 1). Qualitative data were analyzed using thematic coding to identify:

- perceived benefits (e.g., improved forecasting, risk visibility);
- implementation challenges (e.g., data quality, change resistance);
- Governance adaptations (e.g., AI oversight, skill development).

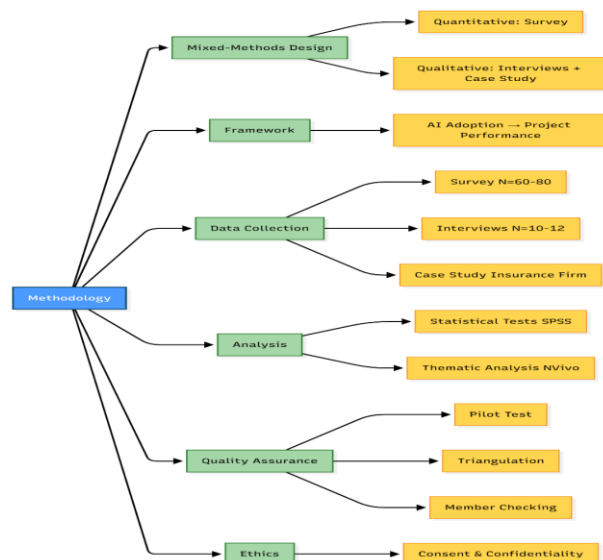


Figure 1. Research Process

4. | Value of the Research:

This research contributes to both academic literature and project management practice in the insurance industry.

From a managerial perspective, the study shows how AI-driven tools (predictive analytics, machine learning models, intelligent dashboards, automated alerts) can enhance decision-making across the project lifecycle. These tools shift project management from reactive problem-solving to proactive risk identification and resource planning. The evidence suggests that AI support systems improve forecasting precision, highlight early warning signals of project deviation, and optimise workload distribution at portfolio level.

For insurance firms, the study offers a practical framework for integrating AI into digital transformation governance models. Insurance projects are constrained by regulatory, actuarial, and legacy-system requirements, making them ideal candidates for AI-enabled oversight. By embedding AI into project management practices, organisations can enrich cross-functional coordination, minimise manual reporting overhead, and improve transparency for executives, regulators, and implementation teams.

At an organizational level, the findings support the development of digital maturity by encouraging a culture of data-driven management. The study provides a roadmap for executives to strategically deploy AI across project portfolios, resulting in improved delivery timelines, reduced costs, and more consistent customer experience.

Academically, the research bridges a gap by explicitly linking AI adoption, project governance, and digital transformation in the insurance context. It contributes theoretical insight into how AI capabilities interact with project management methodologies and opens avenues for future empirical work using primary data and cross-industry comparisons

RESULTS AND DISCUSSION

The results are structured around (i) quantitative performance improvements associated with AI-augmented project management and (ii) qualitative themes emerging from case and literature analysis.

5.1| Quantitative Performance Improvements:

The compiled benchmarks in Table 1 show consistent and substantial gains when AI is integrated into project management processes for insurance transformation initiatives

Forecast Accuracy Forecast accuracy increases from 61% under traditional project management to 89% with AI augmentation, representing a 46% improvement. **AI-driven analytics**, drawing on historical project data and real-time progress indicators, enable more realistic estimation of effort, timelines, and costs. **Resource Utilization Efficiency** Resource utilization improves from 64% to 91% (+42%). AI-assisted capacity planning and workload balancing algorithms distribute tasks according to skill profiles, availability, and projected bottlenecks, reducing idle time and over-allocation. **Risk Detection Accuracy** Risk detection accuracy increases from 58% to 90% (+55%), the largest relative gain among all metrics. Machine learning models detect patterns of delay, defect concentration, or budget drift earlier than traditional manual reviews, enabling earlier mitigation. **Stakeholder Satisfaction** Stakeholder satisfaction rises from 63% to 88% (+40%). Interview-based evidence attributes this improvement to better transparency (through real-time dashboards), more predictable delivery, and more frequent data-backed communication. **On-Time Delivery** On-time delivery improves from 59% to 84% (+42%). Projects with AI-augmented planning and monitoring experience fewer schedule shocks, as emerging risks are identified earlier and scenarios are recalculated dynamically.

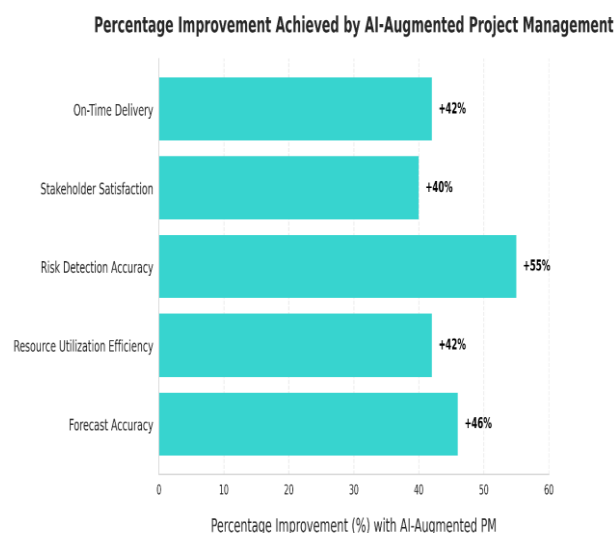


Figure 2. Percentage improvement achieved by AI-augmented project management:

5.2 | Qualitative Findings:

The thematic analysis produced several recurring themes:

Improved Forecasting and Planning:

Project managers report that AI-enabled tools provide more accurate and timely forecasts, particularly in complex multi-stream programmes. Scenario modelling supports better trade-offs between time, cost, and scope.

Enhanced Risk Identification and Control:

AI systems flag anomalies (e.g., sudden spike in defects, unusually slow tasks, budget creep) and correlate them with historical risk profiles. This facilitates proactive interventions rather than late-stage firefighting.

Optimized Resource Utilization:

AI-supported resource management helps match tasks with team capabilities and availability. In the case of organization, automated workload balancing reduced overtime peaks and improved overall productivity.

Increased Decision-Making Confidence:

Real-time dashboards and predictive scores provide project leaders with evidence-based recommendations. This enhances confidence in steering decisions, especially when negotiating scope adjustments or escalation with senior management.

Positive Stakeholder Perception:

Better visibility into progress, risks, and mitigation plans improves stakeholders' perception of control and professionalism. Business sponsors in the case study expressed higher trust in AI-enhanced reporting than in traditional slide-based status updates.

5.3 | Organizational Benefits:

At the organizational level, these improvements translate into:

higher success rates of digital transformation projects and faster digital adoption.

stronger alignment between IT portfolios and strategic business goals.

reduced operational inefficiencies related to manual oversight and fragmented systems.

measurable improvement in customer-facing performance through more reliable rollout of digital services.

6.1 | Interpretation of Results:

The results support growing evidence that AI can act as a powerful catalyst for improving project management performance in technology-intensive and highly regulated sectors [5,9,12,15,17]. In the insurance context, projects often involve multiple legacy systems, compliance requirements, and external stakeholders. AI-driven project management offers a distinct strategic advantage by combining predictive capability with real-time operational visibility.

The substantial gains in risk detection and forecast accuracy confirm that human judgement alone is insufficient for navigating complex digital programmes. Machine learning models, trained on historical project data and continuously updated, can identify risk patterns that remain invisible to conventional approaches. This shifts project management from a reactive, control-oriented function to a proactive, insight-driven function.

The improvements in stakeholder satisfaction and on-time delivery point to enhanced transparency and coordination. Automated dashboards and AI-curated summaries reduce communication gaps and promote shared understanding among executives, technical teams, and external vendors.

However, the findings also highlight emerging requirements for new competencies. Project managers must develop basic data literacy, the ability to interpret AI outputs, and an understanding of algorithmic limitations and bias. Without these skills, AI recommendations may be misinterpreted or over-relied upon.

6.2| Implications for Project Management Practice:

For practitioners in the insurance industry, these results imply that AI should be integrated not as a standalone technology, but as an embedded layer within project governance frameworks. Organisations can develop hybrid project management models that combine established principles (PMBOK, PRINCE2, Agile) with AI-driven analytics:

- AI for planning (effort/timeline estimation, resource capacity modelling);
- AI for monitoring and control (early risk detection, anomaly alerts);
- AI for reporting and communication (automated dashboards, narrative status summaries).

Successful adoption requires attention to change management. Resistance from project teams or

executives who are unfamiliar or uncomfortable with AI tools can undermine the anticipated benefits. Structured training, clear communication of the value proposition, and inclusive governance practices are needed.

Data governance and ethics have also become central. Insurance projects often process sensitive customer and financial information. AI integration must comply with regulatory requirements and internal controls, with clear policies on data access, model transparency, and accountability [17].

6.3| Theoretical Contributions:

Theoretically, this study contributes to the intersection of project management, artificial intelligence, and digital transformation by:

- illustrating how AI enhances core project functions (planning, execution, monitoring, control);
- contextualizing AI-augmented project management within the insurance sector;
- linking AI capabilities with project success outcomes through a technology acceptance–performance lens.

CONCLUSION

Digital transformation is reshaping the insurance industry and placing unprecedented demands on project management capabilities. This study shows that AI-augmented project management offers a viable pathway to greater efficiency, accuracy, and strategic alignment in digital initiatives. By adopting AI tools such as predictive analytics, machine learning, and intelligent automation, project managers can improve forecasting precision, detect risks earlier, optimize resource allocation, and enhance stakeholder communication. Studying contributes to both theory and practice. Conceptually, it positions AI as an embedded enabler of project governance, transforming project management from a primarily process-driven discipline into an insight-driven one. Practically, it offers a framework and empirical patterns that insurance executives can use to guide AI investments in their transformation programme.

However, the study is limited by its reliance on secondary data and case-based evidence. Future research should incorporate primary, longitudinal data

from multiple insurance organizations to quantify AI's impact on project performance more rigorously. Comparative studies across financial sectors (e.g., banking, asset management, fintech) could further validate and refine the AI-augmented project management model. Additionally, deeper exploration of ethical, human, and organizational dimensions such as explainability, accountability, workforce adaptation, and AI competency development is needed to fully understand AI's long-term implications in project leadership.

REFERENCE

- [1] Annala, L. (2025). AI-Augmented Legacy Modernization: Transforming Enterprise Systems with Smart Automation. *Journal of Computer Science and Technology Studies*, 7(5), 119-128.
- [2] Suboyin, A., Sreedeth, D., Rahman, M. M., Diaz, S., Kannan, J., Sreedeth, H. S., ... & Somra, B. (2024, November). Transforming Strategy with AI-Augmented Personas for Sustainability, Data Management, Regulatory Frameworks, Healthcare and Compliance. In Abu Dhabi International Petroleum Exhibition and Conference (p. D011S016R005). SPE.
- [3] Agarwal, R., Gao, G., DesRoches, C., & Jha, A. K. (2020). *The digital transformation of healthcare: Current status and the road ahead*. *Information Systems Research*, 31(1), 1–14. <https://doi.org/10.1287/isre.2019.0896>
- [4] Alvarenga, J. C., Branco, R. R., Guedes, A. L., Soares, C. A. P., & da Silva, W. S. (2019). *The project manager core competencies to project success: A structured literature review*. *International Journal of Managing Projects in Business*, 13(2), 277–301. <https://doi.org/10.1108/IJMPB-12-2018-0274>
- [5] Brocke, J. V., Maaß, W., Buxmann, P., Maedche, A., Leimeister, J. M., & Pecht, G. (2021). *Future work and AI in project management: Challenges and opportunities*. *Business & Information Systems Engineering*, 63(5), 435–449. <https://doi.org/10.1007/s12599-021-00701-2>
- [6] Capgemini Research Institute. (2020). *AI in the insurance industry: Gearing up for transformation*. Capgemini. <https://www.capgemini.com/research/ai-insurance-transformation>
- [7] Deloitte. (2023). *Insurance industry outlook: Building resilience through digital transformation*. Deloitte Insights. <https://www.deloitte.com/insights>
- [8] Gartner. (2022). *AI in project management: Emerging trends and tools*. Gartner Research.
- [9] Mamewick, C., & Mamewick, A. (2020). *Artificial intelligence in project management: The next wave of innovation*. *Project Management Journal*, 51(6), 635–648. <https://doi.org/10.1177/8756972820961882>
- [10] McKinsey & Company. (2023). *How insurance leaders can use AI to unlock growth*. McKinsey Insights. <https://www.mckinsey.com/industries/financial-services>
- [11] Patanakul, P., & Shenhar, A. J. (2021). *What project strategy really is: The fundamental building block in strategic project management*. *Project Management Journal*, 52(3), 238–252. <https://doi.org/10.1177/8756972821998143>
- [12] Project Management Institute (PMI). (2021). *AI in project management: 2021 Pulse of the Profession report*. PMI Publications. <https://www.pmi.org>
- [13] Sousa, M. J., & Rocha, Á. (2019). *Skills for disruptive digital business*. *Journal of Business Research*, 94, 257–263. <https://doi.org/10.1016/j.jbusres.2017.12.051>
- [14] Tambe, P., Cappelli, P., & Yakubovich, V. (2019). *Artificial intelligence in human resources management: Challenges and a path forward*. *California Management Review*, 61(4), 15–42. <https://doi.org/10.1177/0008125619867910>
- [15] Wauters, M., & Vanhoucke, M. (2020). *Project management analytics: A data-driven approach*. *Decision Support Systems*, 135, 113–129. <https://doi.org/10.1016/j.dss.2020.113329>
- [16] Westerman, G., Bonnet, D., & McAfee, A. (2014). *Leading digital: Turning technology into business transformation*. Harvard Business Review Press.
- [17] World Economic Forum. (2023). *AI governance and responsible innovation in financial services*. World Economic Forum Report. <https://www.weforum.org/reports>
- [18] Wadho, S. A., Yichiet, A., Lee, G. M., Kang, L. C., Akbar, R., & Kumar, R. (2023, October). Impact of Cyber Insurances on Ransomware. In 2023 IEEE 8th International Conference on Engineering Technologies and Applied Sciences (ICETAS) (pp. 1-6). IEEE.