

Strategic Integration of AI-Driven Project Management Systems in Public Sector Development Projects: A Comparative Study of Emerging and Advanced Economies

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ABSTRACT

The study explores strategic integration of AI-driven project management systems in public sector development projects, comparing both emerging and advanced economies. It specifically examines the impact of adopting AI in the public sector in both advanced and emerging economies. While AI has notable advantages in government projects, the study outlines the constraints of AI integration into public projects (World Bank, 2021). A desktop review research design has been adopted to synthesize empirical data and literature from both economic contexts. The main findings of the research reveal significant differences in AI adoption between emerging and advanced economies. The study evaluates common barriers, assesses the scalability of AI tools across diverse settings, and showcases the need for context-specific policy and regulatory frameworks. This research offers recommendations suggesting metrics for standardization and advancing comparative empirical research to inform the successful adoption of AI in the public sector.

Keywords: Advanced Economies, Artificial Intelligence, Emerging Economies, Project Management, Public Sector Projects.

INTRODUCTION

Public sector development projects are mostly designed to address the needs of society while improving the quality of life for citizens by promoting economic growth and job creation (Al-Raei, 2025). Such services are focused on areas such as health, education, and transportation. Public sector project management involves structured planning, implementation, and oversight of projects financed by public resources to deliver value to the citizens. In other words, it is the application of methodologies and tools to ensure government initiatives are well-planned, executed, and completed (Saini et.al., 2023).

A report by McKinsey & Company (2018) projected that AI could contribute approximately \$13 trillion to the world's economy by 2030 if many governments incorporate AI in their systems. Unlike the private sector, the public sector deals with projects characterized by high-impact objectives and affects communities at a large scale. Currently, the increased growth of the world digitally calls for increased accountability in public administration (OECD, 2021). To meet evolving citizen needs, governments are embracing the technology world to streamline their processes and prioritize transparency.

The uniqueness of public service project management includes: several stakeholder involvements across all sectors of the government, stringent regulatory compliance requirements, high-level public scrutiny and accountability, intricate approval and documentation processes, long-term considerations for social impact, and budgetary constraints and upholding fiscal responsibility (Alsaid & Ambilichu, 2024). AI-driven project management systems help extend beyond traditional project management software through task automation, data analysis, and provision of insights. Adoption of such systems helps in analyzing historical and current data to forecast possible holdups, budget overruns, and resource constraints while enhancing project efficiency, accuracy, and decision-making through a project's life (Ahmed, Jannat & Tanim, 2024). A study by Wu (2022)

notes that the current demands in the project management space include quick decision-making, effective allocation of resources, and effective communication across the team. In efforts to keep up with a revolutionized world, artificial intelligence (AI) steps in, in sectors such as project initiation, execution, and monitoring. An AI-driven system comprises several subsets, such as Machine Learning, Natural Language Processing, and Robotic Process Automation. Machine Learning (ML) allows a system to read historical data and forecast the future. Natural Language Processing (NLP) promotes communication and documentation processes in the management of projects. Robotic Process Automation (RPA) is responsible for task automation in project management through the employment of robots to automate recurring tasks, releasing human resources for higher-value strategic tasks. Finally, there are artificial intelligence-powered systems for data analytics for informed decision-making through analysis of project metrics such as cost, project, quality, and risks (Shoushtari, Daghighi & Ghafourian, 2024).

Problem statement

As AI continues to rapidly define project management, there are some notable key benefits, including automation of routine tasks that handle repetitive tasks like scheduling, resource allocation, and status reporting (Manduva, 2024). Predictive analysis is another benefit of artificial intelligence that enables the prediction of future trends and any likely issues. Effective resource management, which determines project success, is also optimized by AI through the matching of team members to responsibilities according to their skill set (Raharjo & Santoso, 2022). AI also improves risk management systems by analyzing data from many sources and identifying potential risks. The Project Management Institute's report of 2024 on AI and Project Management highlights the main impact of AI in project management falls mostly in four sectors: effective allocation of resources and distribution of tasks, comprehensive risk management, organized project scheduling, and effective communication and teamwork (PMI, 2024). Despite the advantages of AI in project management, numerous challenges such as the quality of data and integrity can be easily compromised, incorporation with existing structures can be complex, existence of skills gaps in the workforce, and ethical and legal considerations particularly in regards to data privacy and algorithmic bias (Hashimzai & Mohammadi, 2024). Additionally, AI models face challenges such as bias and fairness, the absence of human judgment, performance inconsistencies, potential financial risk for enterprises, and threats of job displacement (PMI, 2024).

The implementation of AI in project management transforms how government developments are implemented from the first phase to the last phase. The disparity between the gains and constraints of adopting AI in public developments with emerging economies not only affects the effective deployment of AI tools but also intensifies global development disparities (Challoumis, 2024). Additionally, there is limited comparative research that evaluates how different economic contexts enhance the success or failure of AI-driven developments in the public sector, mainly in comparatively real-world context. Further, there is limited empirical research that tests how AI-driven project management systems perform, evolve, or are institutionalized in diverse economic settings.

Notably, there are fewer comparative study that evaluates the outcomes, challenges, and strategic alignment process linked with AI-driven project managing tools in public developments. As a result, the sector lacks measurable evidence on whether such technologies are equally scalable, effective, or sustainable across emerging and advanced economies. Without such understanding, policymakers and project managers may continue to implement strategies that are not contextually responsive or sustainable (Oyekunle, Darkwah & Olusesi). There exist several gaps in AI-driven project management systems across public sector systems. This research seeks to explore the strategic integration and performance of AI-driven project management systems in public sector development projects in emerging and advanced economies. The study will empirically assess key indicators such as system adoption, project delivery timelines, cost efficiency, risk responsiveness, and user readiness; contributing to new understandings of contextual elements that facilitate or deter the success of AI in government-led development efforts (Kulal et. al., 2024).

Research Questions

This paper is guided by three research questions;

- How effective are AI-driven project management systems in public sector development projects across emerging and advanced economies?
- How does economic context influence the adoption, performance, and outcomes of AI-driven project management systems in the public sector?
- Are AI-driven project management systems scalable and sustainable across emerging and advanced economies?

LITERATURE REVIEW

Incorporation of AI into the public projects is not a new concept, however, the scope and manner of implementation suggest a trend that only beginning to unfold. Such a trend is set to control and redefine how public projects are managed at national and local government levels while causing an influence from resource allocation to policy development and service delivery (Anshari et. al., 2025). Developments in machine learning and big data analytics have been at the forefront of scalable AI solutions that process complex amounts of data and extract valuable analytical solutions that were previously unachievable. AI applications are now used in predicting and managing public health crises and streamlining public education and service delivery, which shows the potential of scalable solutions in project management (Achanta, 2025). Scaling AI offers a benefit in managing the scope and difficulty of public schemes that often span different sectors of the government (OECD, 2021). Additionally, the use of AI can enhance risk assessment significantly, improving the decision-making process through prediction of potential drawbacks and suggesting measures in real time. As the potential for personalized public services grows, scaling AI systems would transform citizen interactions with government services dramatically (Poudel, 2024). The World Bank 2021 Report states that integration of AI public developments faces several challenges, such as limited knowledge on AI potential, insufficient digital infrastructure, shortage of digital competencies, and limited availability and quality of data. It further notes that there is a lack of a suitable policy and legal environment in which AI exists today. This, therefore, has led to a digital divide across nations in fulfilling the fundamentals for the deployment of AI (World Bank, 2021).

Many developing countries have realized the potential of adopting AI systems in their projects. The recent advancements in technology and a growing awareness of AI's impact on addressing critical issues have contributed to the embracing of AI technologies in emerging nations (Mhlanga, 2021). There is notable integration of AI in developing economies across numerous industries, including healthcare, education, and agriculture. An example, Kenya, the agriculture industry utilizes machine learning algorithms to assess crop health, soil quality, and weather trends, giving useful information that helps in increasing yield (Sitieni, 2024). In nations like South Africa and Nigeria, AI algorithms improve healthcare services by analyzing biometric data and providing insights into the individual's health status (Nnaji, 2024). Telemedicine platforms are equally emerging in rural areas, enabling patients to remotely access healthcare services. In countries like Ghana and Rwanda, learning has been customized depending on each need using AI-driven systems (Gikunda, 2023). Though the adoption of AI is encouraging, there are still several barriers that prevent these technologies from being widely used in underdeveloped countries.

The adoption of AI in advanced economies has been widely accepted in comparison to its adoption in emerging economies. AI has been used to leverage the efficiency of internal operations in public sector projects, according to the OECD Digital Government Index (OECD, 2021). An example is France, which has been implementing generative AI (known as Albert) to rationalize the daily tasks of France advisors in public services. Canada uses Robotic Process Automation (RPA) to automate tedious tasks such as streamlining internal operations, increasing efficiency of workflows, and transferring information between systems. The United Kingdom has a framework for promoting productivity in the delivery of public sector projects. This has also helped in addressing challenges in public projects (WHO, 2024).

Organizational culture also harms adoption of AI in public projects, both in advanced and emerging economies. An organization's culture largely affects the productivity and morale of employees. Data intelligence on the other side affects the decisions made within an organization, which impacts the culture of

the organization as well. Culture translates to work satisfaction and overall employee motivation. A study by Behl et al. (2021) showed that there was a significant difference between the organizational culture of private and public organizations concerning AI adoption.

The regulatory framework plays a big role in both advanced and emerging economies adopting AI into their projects. A report by the World Bank titled Artificial Intelligence in the Public Sector suggests that governments can implement policies and governance frameworks that promote human-centric approaches and maximize their opportunities. This is better achieved through the provision of guiding principles and the development of AI policies that are anchored and geared towards specific institutional settings. Public projects are also characterized by many stages of implementation, and the government needs to identify such risks during the adoption of AI into such projects. This can be done through the promotion of transparency and accountability by inclusion and multistakeholder engagement in AI policy design. Management of contrary ethical implications of AI through broader economic policies relies heavily on the regulatory frameworks that are in place. There is a need to prioritize regulatory frameworks in public sectors by establishing agency mandates to monitor policy compliance and stop misinformation to stakeholders of public projects.

Empirical Review

The study analyzed the various literature on the topic. Some of the relevant literature is as shown;

A study by Wirtz, Weyerer & Geyer (2019) on Artificial Intelligence in Public Administration found that incorporation of AI in public administration promoted risk management and efficiency in making decisions. The research outlined challenges in the integrity of data, bias in algorithms, and the need for regulatory frameworks. The study relied on the theoretical framework and lacked comparative insights in examining the differences between emerging and advanced economies.

Gartner reports of 2020 indicated that through forecasting, scheme management systems will be mechanized by 2030. The reports highlight that there is the incorporation of AI into frameworks of agile management frameworks and emphasize the potential gain. The report provides quantitative projections based on current trends. The study, however was limited in that it had futuristic data based on market projections. The study focused more on future projects with limited validation of the current trends in diverse economic settings.

Research by Deloitte (2019) on AI in Government: Modernizing Public Services for the Digital Age suggested that developed nations ' adopted systems were in line with public policies and had scalability potential. The report highlighted improvement in service delivery and efficiency in routine automation of tasks. The study was strongly based on a theoretical overview but lacked empirical comparison between the two economies. The study focuses on advanced economies and leaves a gap in applicability and performance in emerging economies, where setups are different.

A study by McKinsey & Company (2018) on Reinventing Government with AI highlights that the adoption of AI in government projects improves efficiency in operations by streamlining processes and reducing project timelines and costs. The research showcased the advantages of adopting AI in advanced economies, with limitations in emerging economies. The research also highlighted predictive advantages without addressing the complexities in the implementation process and contextual challenges.

METHODOLOGY

This research has adopted a desktop review research design by leveraging secondary data to conduct a wide-ranging, comparative study of strategic incorporation of AI-driven project management systems in public sector projects. Desktop research design allows for in-depth analysis of data without the need to collect data directly from the field (Wahid et. al., 2025). The methodology is suitable for the study as it relies on secondary information such as published literature, government reports, policy documents, and industry reports. The research applied a systematic search strategy to compile relevant literature and reports. The study also utilized inclusion and exclusion criteria of the literature based on significance to the topic, type of publications,

publication date, language, geographical context, and data quality. The inclusion and exclusion criteria were employed to ensure there is high quality and focused review. The study utilized qualitative analysis, specifically thematic analysis, to identify recurring themes, frameworks, and case-specific insights. The study also employs dual-level analysis to ensure the analysis is thorough, unbiased, and replicable; a micro-level investigation of project-specific outcomes and a macro-level contextual evaluation of institutional factors.

FINDINGS

The study found that there are several implications for using AI in publicly governed projects across all economies. The implications go beyond efficiency and public governance. Reports indicate that the implications of AI in public developments include programming simple tasks and guiding decisions, making the government more effective (OECD, 2021). AI helps the government reduce repetitive tasks and focus on basic to impactful tasks. Advanced economies have utilized AI in public schemes like healthcare, transportation, security, regulation, and implementation of SDGs. The study, through a desktop review, highlighted differences in how developing countries and developed countries integrate AI-driven systems in project management systems in public sector projects. The study notes that both benefits and challenges have a difference across the economies. Gartner (2017) surveyed 3000 top management executives in the public sector of 10 countries and noted that only 20% used AI technologies for business purposes. This shows a huge disparity in the public sector developments concerning the adoption of AI.

Advanced economies in North America, led by the United States, dominate the global AI market, backed up by the presence of companies such as Microsoft Corp, which have the agility and financial muscle to upgrade their AI technologies. Canada similarly shows strong growth in AI, with much of its support being backed by the government, talent development, and research (PMI,2024). In Asia, AI technology adoption is driven by the synergy of governmental strategies and regional cooperation. Adoption of AI in the public sector is lowest in Africa, as most of the continent's countries are to limited statistical capacity, inadequate infrastructure, and weak governance frameworks that are crucial for AI adoption, as implied through a report by Oxford Insights (2022). Additionally, the continent registers the lowest digital skills, with only 11% of African tertiary education graduates having formal digital training.

Advanced economies, for example, have successfully adopted AI in the promotion of operational efficiency. AI has helped government projects automate tasks, resource allocation, and report public project status. Advanced economies such as Estonia as leveraged AI to promote public services, streamline operations, and increase citizen engagement, setting a benchmark for digital governance. Such economies can identify risks, allowing the concerned parties to take precautionary measures. AI adoption in advanced economies such as Europe is on the rise, especially in countries such as Luxembourg, the Netherlands, Denmark, Finland, and Portugal. In the public sector, however, Western Europe ranks as the second highest globally in the adoption of AI as per the 2022 Government AI Readiness Index (Oxford Insights, 2022). Emerging economies, on the other hand, have reported challenges in their digital readiness. There are limited technological investments that hinder the full integration of AI into public projects (Merhi, 2023). In comparison to digital readiness and institutional capacity, the advanced economies have a high level of institutional capacity with comprehensive digital infrastructure. This supports the rapid adoption of AI in public projects. In contrast, emerging economies register several barriers such as inadequate budgets, disjointed digital infrastructure, and unskilled professionals in AI (Jha & Singh, 2025). In advanced economies, the adoption of AI in the management of public sector developments is in line with public administration goals such as transparency, accountability, and proactive risk management, which shows strategic alignment and scalability. In developing countries, there is a strain on scalability. Pilot projects show potential advantages; however, when widespread, there is limited integration as there are infrastructural limitations and uncertainty in regulations (Krystallis, Laraqli & Di, 2024).

Table 1 summarizes the key differences of AI-driven project management tools in emerging and advanced economies.

Table 1: Illustrative Differences of AI-Driven Project Management Systems in Emerging and Advanced Economies

Indicator	Emerging Economies	Advanced Economies
AI system integration level	Most countries are at the pilot stage of implementation/partially incorporated	Institutionalized across various departments
Budget application efficiency	Constrained by funding gaps	Closely monitored and well-financed
Project delivery timeliness	Limited in tech, therefore leading to delays	Often aligned with projected timelines
Risk detection capabilities	There is limited forecasting and automation due to inadequate skills	Advanced analytics and forecasting
Alignment with the policies	Fragmented or no structured framework in place	Supported by governments and in line with public administration

CONCLUSIONS & RECOMMENDATIONS

In conclusion, the study demonstrated that AI-driven project management had a significant influence on projects and presented a huge opportunity for promoting efficiency, transparency, and responsiveness in public projects, even though there is disparity between emerging and advanced economies. A notable difference between the two economic contexts is a limitation on standardized metrics. There is an absence of unified performance indicators across the reviewed literature. Such metrics include cost efficiency, timelines, and risk mitigation in public projects, which limits cross-context comparisons. Such a reason limits the evaluation of the scalability and sustainability of AI-driven project management systems.

The research highlights that the reliance on theoretical literature had implications for practical insights. The reviewed literature acknowledged the presence of bias and data integrity; however, only limited research has analyzed deeply how such concerns are uniquely addressed. The findings underline the need for context-sensitive AI integration strategies based on the case settings of public projects in emerging and advanced economies. Furthermore, there is a need to invest in digital infrastructure, promoting collaborations and building technical skills across government agencies. In policies, a clear national AI strategy that aligns with public project goals is needed. Both emerging and advanced economies need to address regulatory economies as a sustainable way to address data protection issues and accountability. The disparities between both economies critically need to be addressed through international cooperation and sharing of best strategies to accelerate the use of AI globally.

Acknowledging the limitations in the existing literature, the study recommends the necessity for further studies. There is a need for conducting comparative empirical research that directly compares emerging and advanced economies using the same metrics in the enactment of AI adoption in government projects. This can ease the comparisons if there are existing standardized performance metrics. Additionally, researchers and policymakers should consider a common benchmark when evaluating AI adoption in public sector projects using indicators such as public investment, resource utilization efficiency, adherence to timelines, and risk responsiveness. Using such indicators strengthens future comparative research and promotes consistency of analysis, as well as providing practical relevance of the findings. The study also recommends exploring experimental approaches to validate the findings from secondary data, focusing on scalability, sustainability, and ethical governance in different economies.

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