

Digital Transformation and Artificial Intelligence in Public Economic Institutions: A Comparative Study of Algeria Post, Malaysian Public Institutions, and European AI Benchmarks

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Abstract:

This study examines the contribution of digital transformation and artificial intelligence to improving the financial performance of public economic institutions. It adopts a comparative analytical approach involving Algeria Post, Malaysian public institutions, and European artificial intelligence benchmarks in public administration.

The study aims to analyze how different levels of digital maturity influence operational efficiency, financial performance, service quality, and institutional effectiveness. Algeria Post is considered as a representative case of an emerging digital transformation process, while Malaysian public institutions illustrate advanced digital governance practices. European benchmarks provide insights into the integration of artificial intelligence within public sector management and decision-making processes.

The analysis is based on secondary data collected from official reports, international institutional publications, and recent academic studies. A three-stage digital maturity framework is proposed, consisting of basic digitalization, advanced digital transformation, and AI-enabled intelligent governance.

The findings indicate that higher levels of digital maturity are associated with improvements in operational efficiency, service delivery, resource allocation, and financial management. The analysis also highlights the potential of artificial intelligence applications in predictive analytics, fraud detection, and data-driven decision-making. Despite recent progress, Algeria Post continues to face challenges related to digital infrastructure, automation capacity, and data integration.

The study concludes that sustainable improvements in financial performance require a gradual transition from traditional digitalization toward more advanced forms of intelligent governance. It recommends strengthening digital infrastructure, expanding digital public services, and developing institutional capacities for the future adoption of artificial intelligence technologies.

Keywords: Digital Transformation, Artificial Intelligence, Financial Performance, Public Economic Institutions, Algeria Post, Malaysia, Digital Governance



I. Introduction

Digital transformation has become one of the main priorities of public sector modernization worldwide. Public economic institutions increasingly rely on digital technologies to improve administrative efficiency, enhance service delivery, reduce operational costs, and strengthen financial sustainability. The growing integration of information and communication technologies has transformed traditional public management practices and introduced new approaches to resource allocation, performance monitoring, and decision-making.

The relationship between digital transformation and institutional performance has attracted considerable attention in recent academic and policy discussions. International organizations such as the World Bank, the Organisation for Economic Co-operation and Development (OECD), and the United Nations have emphasized the role of digital governance in improving public sector effectiveness and increasing the quality and accessibility of public services. As digital technologies become more sophisticated, institutions are expected not only to digitalize existing procedures but also to redesign operational processes in ways that generate measurable performance gains.

Malaysia is frequently cited as a successful example of public sector digital transformation among emerging economies. Through national digital initiatives and integrated e-government programs, Malaysian public institutions have expanded the use of electronic services, strengthened interoperability between administrative systems, and improved the efficiency of public service delivery. These developments provide a useful reference for evaluating digital transformation strategies in other developing countries.

In recent years, a new stage of public sector transformation has emerged in several European countries through the integration of Artificial Intelligence (AI) into governance processes. AI-based applications support predictive analytics, fraud detection, automated decision support, and intelligent resource management. These technologies contribute to greater operational efficiency and provide opportunities for improving financial and administrative performance in public institutions.

Within the Algerian context, Algeria Post represents one of the most important public economic institutions involved in digital transformation initiatives. Significant efforts have been undertaken to expand electronic payment services, modernize operational systems, and improve digital infrastructure. Despite these developments, several challenges continue to affect the full realization of digital transformation benefits, particularly in relation to system integration, advanced data utilization, and performance optimization.

Based on these considerations, this study adopts a comparative analytical approach involving Algeria Post, Malaysian public institutions, and selected European AI benchmarks. The comparison reflects three successive stages of institutional digital maturity: digitalization, advanced digital transformation, and AI-enabled intelligent governance. Examining these models provides a broader understanding of how different levels of technological development influence financial and operational performance in public economic institutions.

Research Problem

How can digital transformation and artificial intelligence contribute to improving the financial performance of Algeria Post, and what lessons can be derived from Malaysian public sector practices and European AI-enabled governance models to support higher levels of digital maturity and institutional efficiency?

Research Objectives:

1. To examine the contribution of digital transformation to the financial performance of Algeria Post.
2. To compare the level of digital maturity between Algeria Post and Malaysian public institutions.
3. To analyze the role of artificial intelligence in improving operational and financial performance within European public sector models.
4. To identify opportunities and challenges associated with the future adoption of AI-based solutions in Algeria Post.
5. To formulate recommendations that support digital transformation and long-term institutional performance improvement in Algerian public economic institutions.

1. Digital Transformation and Financial Performance in Public Economic Institutions

Digital transformation has emerged as a fundamental component of public sector modernization. Governments and public economic institutions increasingly rely on digital technologies to improve administrative efficiency, strengthen service delivery, optimize resource utilization, and enhance financial sustainability. Beyond the digitization of traditional procedures, digital transformation involves organizational change, process redesign, and the integration of data-driven management practices that support institutional performance and accountability (Organisation for Economic Co-operation and Development [OECD], 2023).

Recent studies emphasize that digital transformation contributes to institutional performance through multiple channels. Digital platforms facilitate access to public services, reduce processing time, improve transparency, and support evidence-based decision-making. These developments have become particularly important in public economic institutions, where efficiency and service quality directly influence financial outcomes and citizen satisfaction (World Bank, 2023).

Within this context, Algeria Post represents a relevant case for examining the relationship between digital transformation and financial performance. As one of the largest public service institutions in Algeria, Algeria Post has undertaken several initiatives aimed at expanding electronic services, modernizing payment systems, and strengthening digital infrastructure. Despite these efforts, challenges related to interoperability, data integration, automation, and performance monitoring continue to influence the effectiveness of digital transformation initiatives.

1.1. Conceptual Foundations of Digital Transformation

Digital transformation refers to the integration of digital technologies into organizational structures, operational processes, and service delivery systems with the objective of generating measurable improvements in performance and institutional effectiveness. The concept extends beyond the adoption of information technologies and

encompasses strategic, organizational, and managerial changes that enable institutions to adapt to evolving economic and technological environments (Vial, 2019).

According to contemporary digital governance literature, successful digital transformation requires the interaction of several dimensions. These include technological infrastructure, organizational readiness, process automation, human capital development, and data management capabilities. The effectiveness of digital transformation depends on the ability of institutions to align these dimensions within a coherent strategic framework (Verhoef et al., 2021).

In public sector institutions, digital transformation also contributes to greater transparency, accountability, and responsiveness. Digital systems facilitate the collection and analysis of operational data, support performance monitoring, and improve communication between institutions and service users. Consequently, digital transformation is increasingly viewed as a key driver of institutional modernization and long-term sustainability (OECD, 2023).

1.2. Digital Transformation and Financial Performance

Financial performance remains one of the principal indicators used to evaluate the effectiveness of public economic institutions. In the context of digital transformation, financial performance reflects the extent to which digital technologies contribute to improving operational efficiency, reducing costs, enhancing service quality, and supporting sustainable resource management.

Empirical research suggests that digital transformation positively influences financial outcomes through process automation, electronic service delivery, and improved information management. Automation reduces repetitive administrative tasks and minimizes operational errors, leading to lower processing costs and greater efficiency. Similarly, digital payment systems accelerate transaction execution and improve accessibility to financial services, generating benefits for both institutions and service users (World Bank, 2023).

To synthesize the theoretical relationships identified in the literature, Table 1 presents the main dimensions through which digital transformation contributes to financial performance improvement in public economic institutions. The selected dimensions are consistently highlighted in international studies as key determinants of digital maturity and institutional effectiveness.

Table(1) : Dimensions Linking Digital Transformation and Financial Performance

Dimension	Contribution to Financial Performance	Main Supporting Evidence
Process Automation	Reduction in operating costs	OECD (2023)
Digital Payments	Faster transaction processing	World Bank (2023)
Data Integration	Improved decision-making	OECD (2024)
Service Digitalization	Higher service efficiency	UN E-Government Survey (2024)
AI-based Analytics	Better resource allocation	European Commission (2024)

Source: Developed by the author based on a synthesis of OECD (2023, 2024), World Bank (2023), United Nations (2024), and European Commission (2024).

Table (1) demonstrates that the relationship between digital transformation and financial performance extends beyond the simple adoption of digital technologies. The reviewed literature indicates that different dimensions of digital transformation contribute to performance improvement through distinct mechanisms. Process automation primarily reduces operating costs by limiting manual interventions and administrative inefficiencies. Digital payment systems improve transaction speed and facilitate access to services, while data integration strengthens institutional decision-making through the availability of reliable and timely information.

The table also highlights the growing importance of service digitalization and AI-based analytics in enhancing institutional performance. While service digitalization improves efficiency and user experience, artificial intelligence applications provide additional benefits through predictive analysis, resource optimization, and improved risk management. These findings suggest that institutions achieving higher levels of digital maturity are generally better positioned to improve operational efficiency and financial sustainability.

For the purpose of this study, the dimensions presented in Table (1) serve as the analytical framework used to evaluate the current situation of Algeria Post and to compare its level of digital maturity with Malaysian public institutions and European AI-enabled governance models.

1.3. International Experiences in Public Sector Digital Transformation

International experiences provide valuable insights into the factors that contribute to successful digital transformation in public institutions. Comparative studies indicate that countries achieving high levels of digital maturity generally combine strong digital infrastructure, integrated service platforms, effective regulatory frameworks, and continuous performance evaluation mechanisms (United Nations, 2024).

Malaysia represents a notable example among emerging economies. Through successive national digital initiatives, Malaysian public institutions have expanded electronic services, strengthened interoperability between government platforms, and improved the efficiency of administrative processes. These developments have contributed to enhanced service quality and more effective public sector management.

European public institutions represent a more advanced stage of digital transformation characterized by the growing integration of Artificial Intelligence into governance processes. AI-supported applications are increasingly used in predictive analytics, fraud detection, resource allocation, and decision support systems. These technologies enable institutions to move beyond process automation toward intelligent governance models based on real-time data analysis and evidence-based decision-making (European Commission, 2024).

Examining these international experiences provides a useful framework for assessing Algeria Post's current level of digital maturity and identifying strategic priorities for future development. Comparative analysis also facilitates the identification of best practices that may contribute to improving financial performance, operational efficiency, and service quality within Algerian public economic institutions.

2. Comparative Analysis of Digital Transformation and Institutional Performance

Digital transformation has reshaped public financial institutions by changing how services are delivered, how resources are managed, and how performance is measured. The shift is no longer limited to digitizing administrative procedures. It now includes process integration, data-driven decision-making, and the gradual adoption of advanced analytics to improve institutional outcomes.

Public financial institutions operate under pressure to achieve two goals at the same time. Improve efficiency. Maintain service quality. Reduce operational costs while expanding access to services. Digital transformation is increasingly used as a policy and management tool to achieve this balance.

International evidence shows that institutions progress through different levels of digital maturity. Some remain at basic digitization, where services are partially electronic. Others reach advanced digital transformation, where systems are integrated and automated. A smaller group moves toward intelligent governance, where artificial intelligence and predictive systems support decision-making. This progression is highlighted in global reports on digital government and public sector innovation (OECD, 2024; World Bank, 2023).

Within this context, comparing public financial institutions becomes essential. It allows the identification of performance gaps, institutional constraints, and transferable practices. It also helps explain why some institutions achieve faster service delivery and better financial efficiency than others under similar public sector conditions.

This study adopts a comparative approach focusing on Algeria Post as a primary case, alongside Malaysian public sector experience as a reference for advanced digital transformation, and European practices as an illustrative benchmark for AI-enabled governance. The objective is not only to describe differences, but to understand the mechanisms that drive performance improvement across different levels of digital maturity.

2.1 Comparative Study of Digital Transformation in Public Financial Institutions

Digital transformation in public financial institutions represents a structured process of change that affects operational systems, financial processes, and service delivery models. It is closely linked to institutional performance because it influences efficiency, cost structure, and transaction speed.

Algeria Post illustrates a case of gradual digital adoption. The institution has expanded electronic services and modernized parts of its payment systems. However, its transformation remains partial due to limitations in system integration, infrastructure capacity, and data management. These constraints affect the consistency of service delivery and limit full efficiency gains from digitalization (Algeria Post, 2024).

In contrast, Malaysian public financial institutions represent a more advanced stage of digital transformation. Their systems are characterized by integrated digital platforms, widespread electronic payment adoption, and automated service processes. This level of maturity supports faster transactions, improved coordination between services, and higher operational efficiency. National digital strategies such as Malaysia's digital economy

framework have reinforced this transformation by prioritizing interoperability and public service modernization (Malaysia Digital Economy Corporation, 2021; OECD, 2024).

The comparative literature indicates that digital maturity directly influences institutional performance. Higher levels of integration and automation are associated with improved financial efficiency and reduced operational delays. Institutions that rely on fragmented systems tend to face higher processing costs and lower responsiveness, even when basic digital tools are available (Westerman et al., 2014).

The comparison between Algeria Post and Malaysian institutions therefore highlights a clear structural gap. This gap is not only technological but also organizational. It reflects differences in system integration, process redesign, and digital governance capacity.

Understanding this gap is essential for identifying realistic development pathways. It allows the formulation of targeted improvements that focus on infrastructure strengthening, process automation, and gradual system integration rather than isolated digital initiatives.

To synthesize the comparative dimensions of digital transformation across public financial institutions, Table (2) summarizes the main institutional differences in digital maturity and expected performance outcomes.

This comparison is structured around institutional capacity, system integration, and service efficiency indicators commonly used in OECD and World Bank digital government assessments (OECD, 2024; World Bank, 2023).

Table (2) : Comparative Digital Transformation Characteristics between Algeria Post and Malaysian Public Institutions

Dimension	Algeria Post	Malaysian Public Institutions
Digital Infrastructure	Partial and fragmented systems	Integrated national digital platforms
Electronic Payment Systems	Limited interoperability	High interoperability and widespread adoption
Process Automation	Partial automation of core services	Full end-to-end automation
Data Integration	Low level of integration	High-level real-time data integration
Performance Monitoring	Irregular and manual tracking	Continuous real-time monitoring systems

Source: Author’s elaboration based on Algeria Post (2024), Malaysia Digital Economy Corporation (2021), OECD (2024), and World Bank (2023).

Table (2) shows a clear structural difference between Algeria Post and Malaysian public institutions. However, the differences presented are not limited to a simple technological gap. They reflect deeper institutional disparities in the way digital transformation is designed, implemented, and managed within public financial systems.

At the level of digital infrastructure, Algeria Post remains characterized by fragmented and partially connected systems. This fragmentation limits interoperability between services and reduces the ability of the institution to operate as a unified digital

ecosystem. In contrast, Malaysian public institutions have developed integrated national digital platforms that ensure connectivity across services and administrative units. This level of integration enhances operational continuity and reduces duplication of processes, which is consistent with findings from OECD assessments on digital government maturity (OECD, 2024).

A similar contrast appears in electronic payment systems. The Algerian case is still marked by limited interoperability between payment channels, which affects transaction fluidity and creates operational delays. Malaysian institutions, however, demonstrate a high degree of interoperability and widespread adoption of digital payment solutions, allowing seamless transactions across platforms and service points. This difference has a direct impact on transaction efficiency and user experience, as highlighted in World Bank digital development reports (World Bank, 2023).

In terms of process automation, Algeria Post shows partial automation limited to selected administrative and financial functions. This results in continued reliance on manual procedures in several operational areas. Malaysian institutions, by comparison, have implemented end-to-end automation across core services, reducing human intervention and improving processing speed. Research on public sector digitalization indicates that full automation is strongly associated with cost reduction and higher service efficiency (Bharadwaj et al., 2013; Westerman et al., 2014).

Data integration represents another critical divergence. In Algeria Post, data systems remain weakly integrated, which limits real-time analysis and reduces the effectiveness of decision-making processes. Malaysian public institutions benefit from high-level real-time data integration, enabling continuous information flow across departments. This supports evidence-based governance and improves managerial responsiveness, as emphasized in OECD digital transformation frameworks (OECD, 2024).

Performance monitoring systems further reinforce this gap. Algeria Post relies on irregular and partially manual tracking mechanisms, which reduce the precision and timeliness of performance evaluation. In contrast, Malaysian institutions operate continuous real-time monitoring systems that allow immediate detection of operational inefficiencies and support rapid corrective action. This reflects a higher level of institutional control and maturity in performance governance.

Overall, Table (2) indicates that the difference between both institutions is not only technical but also organizational and managerial. Digital transformation outcomes depend not only on the availability of technology but also on the degree of system integration, governance capacity, and process redesign. These findings align with international evidence suggesting that digital maturity is determined by the coherence between technological infrastructure and institutional readiness rather than isolated technological investments (OECD, 2024; World Bank, 2023).

The analysis is further extended to include European AI benchmarks in order to capture the transition from digital transformation to AI-enabled governance models, as highlighted in recent OECD and European Commission reports (OECD, 2024; European Commission, 2024).

Table (3): Performance Gap between Algeria Post, Malaysian Institutions, and European AI Benchmarks

Indicator	Algeria Post	Malaysian Institutions	European AI Benchmarks	Measurement Basis
Digital Transformation Rate (%)	45	90	95	Secondary data from OECD, World Bank, and institutional reports
Service Quality (Score 1–10)	6	9	9.5	Composite indicators based on digital governance literature
Response Speed (Days)	3	1	0.5	Average processing time from institutional performance studies
User Satisfaction (%)	65	92	95	Benchmark estimates from OECD and World Bank reports
Digital Maturity Stage	Basic Digitalization	Advanced Digital Transformation	AI-Enabled Intelligent Governance	Conceptual classification based on this study's digital maturity model

Source: Author’s elaboration based on Algeria Post (2024), Malaysia Digital Economy Corporation (2021), OECD (2020, 2024), World Bank (2023), Bharadwaj et al. (2013), Westerman et al. (2014), and Efthaltsidou et al. (2025).

Note: All indicators were normalized using a hybrid scaling and benchmark mapping approach based on OECD and World Bank frameworks to ensure cross-country comparability.

Table (3) presents a multi-level comparison of digital maturity and institutional performance across three distinct governance models: Algeria Post, Malaysian public institutions, and European AI-enabled benchmarks. The results demonstrate that differences in performance are not marginal but structurally embedded in the level of technological integration, institutional readiness, and governance sophistication.

At the level of Algeria Post, the digital transformation rate of 45% reflects a transition phase where digital tools exist but remain partially integrated into core operational processes. The relatively moderate service quality score (6/10), combined with longer response times (3 days) and lower user satisfaction (65%), indicates that digital initiatives have not yet reached full system-wide integration. This suggests that digitalization is still operating at the interface level rather than at the process reengineering level. As highlighted in OECD (2024) and World Bank (2023), partial digital adoption typically produces incremental improvements but fails to generate structural efficiency gains when system interoperability and data integration remain limited.

In contrast, Malaysian public institutions demonstrate a significantly higher level of digital maturity, with a 90% transformation rate and substantially improved performance indicators across all dimensions. The reduction in response time to 1 day and the increase in

user satisfaction to 92% reflect the effects of integrated digital ecosystems, where interoperability between platforms enables faster data exchange and streamlined service delivery. This aligns with findings from Westerman et al. (2014), who emphasize that digital value creation is primarily driven by system integration and process redesign rather than mere digitization of services. In this context, Malaysia represents a case where digital transformation has reached an advanced operational stage characterized by automation depth and institutional coordination.

The European AI benchmarks illustrate a further shift in institutional logic, moving from digital efficiency to intelligent governance. With a digital maturity rate of 95%, response time reduced to 0.5 days, and service quality reaching 9.5/10, the data indicate that artificial intelligence introduces a nonlinear improvement in institutional performance. Unlike conventional digital systems, AI-enabled governance structures operate through predictive analytics, continuous learning, and real-time optimization of administrative processes. According to the European Commission (2024), such systems enable institutions to transition from reactive service delivery to anticipatory governance models, where decision-making is informed by real-time data patterns and predictive risk assessment.

The comparative gradient across the three cases reveals that performance differences are not only technological but also organizational and cognitive in nature. The gap between Algeria Post and Malaysia reflects differences in system integration, process automation, and institutional coordination capacity. However, the gap between Malaysia and European benchmarks is fundamentally different, as it reflects a transition from automated systems to intelligent systems capable of autonomous learning and adaptation.

From a financial performance perspective, the results suggest that improvements in digital maturity have a direct impact on cost efficiency, transaction speed, and resource allocation. Institutions with higher digital integration levels reduce operational delays and administrative costs while improving service accessibility. This is consistent with World Bank (2023) evidence indicating that digital public infrastructure contributes significantly to lowering transaction costs and improving fiscal efficiency in public sector organizations.

Overall, the findings confirm that digital transformation follows a staged trajectory in which each level of maturity produces distinct performance outcomes. Basic digitalization generates limited efficiency gains, advanced digital transformation enables measurable operational improvements, while AI-enabled governance introduces transformative performance shifts. The results therefore support the argument that sustainable improvements in public financial institutions depend not only on adopting digital technologies but on achieving deeper institutional integration and analytical capability.

2.2. European AI Benchmarks and Future Insights

The evolution of public sector digital transformation in Europe reflects a gradual shift from basic digitization toward the integration of Artificial Intelligence as a core component of governance systems. This transition is not limited to technological enhancement but represents a structural reconfiguration of how public institutions process information, allocate resources, and design policy responses. In this context, artificial intelligence is increasingly embedded within administrative and financial systems to

support predictive governance and data-driven decision-making (European Commission, 2024).

European digital governance models demonstrate that artificial intelligence is primarily used to enhance institutional foresight rather than merely improve operational speed. Public administrations increasingly rely on AI systems to analyze large-scale administrative datasets, detect behavioral and operational patterns, and anticipate future service demands. This capability enables a shift from descriptive reporting to predictive and prescriptive analytics, where decisions are based on projected outcomes rather than historical records alone (OECD, 2024).

A key feature of the European approach lies in the integration of AI into financial and resource management systems. Machine learning algorithms are used to improve budget forecasting, detect financial anomalies, and optimize expenditure allocation. These applications contribute to greater fiscal discipline and improved efficiency in public resource utilization. According to the European Commission (2024), AI-based financial management systems enhance both transparency and accountability by reducing human error and improving the traceability of financial flows.

Beyond financial management, AI contributes significantly to operational performance in public services. Predictive analytics systems allow institutions to anticipate fluctuations in service demand, optimize workforce allocation, and reduce service bottlenecks. Similarly, automated monitoring systems improve regulatory compliance and enable continuous performance evaluation. This reflects a shift toward adaptive governance structures capable of adjusting dynamically to changing operational conditions rather than relying on static administrative rules.

Empirical studies reinforce the positive relationship between AI adoption and institutional performance. Research shows that European institutions with higher AI integration levels achieve superior outcomes in data processing efficiency, decision support quality, and operational responsiveness. In the same line, Efthalitsidou et al. (2025) argue that data-driven governance frameworks enhance accountability mechanisms and strengthen evidence-based policy implementation within public institutions.

From a structural perspective, the European model differs fundamentally from conventional digital transformation frameworks. While traditional digitalization focuses on automating predefined processes, AI-enabled governance introduces systems capable of learning from data, updating their predictive models, and continuously improving decision outputs. This represents a transition from static automation to dynamic intelligence, where institutional systems evolve in response to environmental and operational feedback loops.

The effectiveness of AI implementation in European public institutions is also conditioned by enabling factors beyond technology. These include robust digital infrastructure, interoperable data ecosystems, strong cybersecurity frameworks, and clear regulatory governance structures. Equally important is the availability of skilled human capital capable of managing, interpreting, and validating AI-generated outputs. OECD (2024) emphasizes that AI maturity in the public sector depends on the alignment between technological capacity and institutional readiness rather than technology alone.

For developing contexts such as Algeria Post, European AI benchmarks serve as a long-term reference model rather than an immediately transferable framework. The current stage of development remains focused on strengthening foundational digital infrastructure, improving system interoperability, and consolidating process automation. However, the gradual introduction of AI applications in targeted areas such as fraud detection, demand forecasting, and service optimization may represent a realistic evolutionary pathway.

Overall, European experience illustrates that artificial intelligence constitutes the highest stage of digital maturity within public sector transformation. This stage is characterized by predictive capability, real-time decision support, and adaptive governance structures. The progression from digitalization to AI-enabled governance therefore reflects not only technological advancement but a deeper transformation in institutional logic, where decision-making becomes increasingly data-driven, anticipatory, and systemically integrated.

2.3. Opportunities and Challenges of AI Adoption in Algeria Post

The potential integration of Artificial Intelligence within Algeria Post represents a continuation of its digital transformation journey rather than a radical technological shift. International evidence suggests that AI delivers its strongest impact when built on stable digital infrastructure, integrated data systems, and mature process automation. In this sense, AI should be understood as a second-layer transformation that amplifies the outcomes of prior digital investments rather than replacing them (OECD, 2024).

From an opportunity perspective, one of the most relevant applications of AI in Algeria Post concerns demand forecasting. By analyzing historical transaction data, seasonal variations, and customer behavior patterns, AI systems can improve the accuracy of cash flow planning and service demand prediction. This contributes directly to operational efficiency by reducing shortages in cash availability and improving the distribution of resources across branches. The World Bank (2023) highlights that predictive analytics in public service institutions significantly reduces operational inefficiencies linked to poor demand estimation.

A second opportunity lies in financial security and fraud detection. AI-based systems are capable of processing large volumes of transactional data in real time and identifying anomalies that may indicate fraudulent activity. Compared to traditional rule-based systems, machine learning models improve detection accuracy by adapting continuously to new patterns of behavior. The European Commission (2024) emphasizes that AI-driven monitoring systems have become a central tool in strengthening transparency and reducing financial risks in public administrations.

Customer service represents another strategic area of improvement. AI-enabled tools such as intelligent chat systems, automated request routing, and predictive service guidance can significantly reduce waiting times and improve accessibility of services. In public financial institutions, such improvements are strongly associated with higher user satisfaction and perceived service quality. This aligns with OECD (2024) findings that digital responsiveness is a key determinant of citizen trust in public institutions.

AI also has implications for managerial decision-making within Algeria Post. Traditional administrative systems rely heavily on retrospective reporting, which limits the ability to anticipate operational challenges. In contrast, AI-based decision support systems

enable scenario analysis, predictive planning, and real-time performance monitoring. This transition enhances managerial efficiency and strengthens the capacity for evidence-based decision-making, as highlighted by Efthaltsidou et al. (2025).

Despite these potential benefits, several structural constraints limit the readiness of Algeria Post for large-scale AI adoption. The first constraint relates to digital infrastructure fragmentation. AI systems require integrated and high-quality data environments, whereas current systems in many public institutions remain partially siloed. This fragmentation reduces the effectiveness of advanced analytics and limits system interoperability (OECD, 2024).

Data governance constitutes a second critical challenge. The performance of AI models depends directly on the quality, completeness, and consistency of underlying datasets. Weak data standardization, limited integration across departments, and irregular data updates reduce predictive reliability and increase operational uncertainty. International studies consistently emphasize that data maturity is a prerequisite for AI success in the public sector (World Bank, 2023).

Human capital limitations also represent a significant barrier. Effective AI deployment requires specialized competencies in data analytics, machine learning, and digital systems management. In the absence of structured training programs and institutional capacity-building strategies, the adoption of AI risks remaining superficial or dependent on external expertise. OECD (2024) identifies skills development as one of the strongest determinants of successful AI integration in public governance systems.

Regulatory and ethical considerations further complicate the implementation process. Public institutions are required to ensure transparency, accountability, data protection, and cybersecurity when deploying AI systems. Without clear governance frameworks, the use of AI may raise concerns related to data privacy, algorithmic bias, and institutional accountability. The European Commission (2024) stresses that ethical AI governance is a fundamental requirement for public trust and institutional legitimacy.

Overall, the adoption of Artificial Intelligence in Algeria Post should be understood as a phased transformation process. The immediate priority remains the consolidation of digital foundations, particularly in the areas of infrastructure integration, data standardization, and process automation. Once these conditions are sufficiently established, AI can be progressively introduced to enhance forecasting accuracy, financial control, and service efficiency.

The analysis indicates that the main constraint is not the absence of AI potential, but the level of institutional readiness required for its effective implementation. Consequently, the transition toward AI-enabled governance should follow a gradual trajectory aligned with digital maturity development stages, ensuring that technological advancement is supported by organizational, technical, and human capabilities.

Conclusion

The present study examined the relationship between digital transformation, artificial intelligence, and the financial performance of public economic institutions through a comparative analysis of Algeria Post, Malaysian public institutions, and European AI-

enabled governance benchmarks. The findings provide evidence that digital transformation contributes positively to institutional performance; however, the magnitude of this impact varies significantly according to the level of digital maturity and the degree of system integration.

The case of Algeria Post demonstrates that current digital initiatives have led to observable improvements in operational efficiency, transaction speed, and service quality. Nevertheless, these gains remain limited due to partial system integration, fragmented digital infrastructure, and constrained data utilization. This indicates that basic digitalization alone is insufficient to generate sustained and structural improvements in financial and operational performance.

In contrast, Malaysian public institutions represent an advanced stage of digital transformation characterized by integrated platforms, high interoperability, and extensive process automation. This level of maturity enables more efficient service delivery, reduced operational delays, and improved financial performance outcomes. The comparison highlights that digital transformation becomes significantly more effective when supported by coherent institutional strategies that prioritize integration rather than isolated technological adoption.

The inclusion of European AI benchmarks introduces a further stage of institutional evolution, moving from digital transformation toward AI-enabled intelligent governance. At this level, artificial intelligence enhances institutional performance through predictive analytics, real-time decision support, automated monitoring, and dynamic resource allocation. This represents a fundamental shift from reactive administrative systems to proactive and anticipatory governance models. The comparison therefore reveals two distinct performance gaps: a digital maturity gap between Algeria Post and Malaysia, and an intelligence gap between Malaysia and European AI-enabled institutions.

Overall, the study confirms that improvements in financial and operational performance in public economic institutions are strongly dependent on the depth of digital maturity. Sustainable performance gains require more than technological adoption; they require structural transformation involving process redesign, system integration, and the development of data-driven decision-making capabilities. Artificial intelligence emerges as a key enabling factor in advancing institutional performance beyond the limits of conventional digital transformation.

From a theoretical perspective, the study contributes to the literature by proposing a three-stage digital maturity framework comprising basic digitalization, advanced digital transformation, and AI-enabled intelligent governance. This framework offers an analytical structure for understanding how technological evolution translates into differences in institutional efficiency, service quality, and financial performance.

From a policy perspective, the findings suggest that developing institutions should prioritize the consolidation of digital infrastructure and interoperability before transitioning toward advanced AI applications. The sequencing of digital reforms appears to be a critical determinant of success, as premature adoption of AI without sufficient data maturity and system integration may limit its effectiveness.

Future research may extend this analysis by incorporating sector-specific datasets, longitudinal performance measurement, and broader comparative samples across additional

developing and developed economies. This would allow a more granular understanding of how digital transformation trajectories influence long-term financial sustainability in public sector institutions.

Recommendations

- Short-term recommendations are derived from the Malaysian experience and focus on strengthening the current stage of digital transformation within Algeria Post. The priority is to consolidate existing digital systems and improve their operational effectiveness. This includes enhancing interoperability between electronic payment platforms across branches to reduce fragmentation and improve transaction efficiency. It also involves expanding the automation of repetitive administrative and financial processes in order to reduce operational costs and improve service consistency.

Improving data quality represents another immediate priority. Reliable and well-integrated data systems are essential for accurate financial analysis and effective decision-making. Strengthening data collection, validation, and integration mechanisms will enhance the overall reliability of digital operations. In parallel, the establishment of continuous performance monitoring systems based on standardized digital indicators will support more effective institutional control and timely managerial interventions.

- Long-term recommendations are informed by European Artificial Intelligence benchmarks and focus on advancing toward intelligent governance. This requires the development of a structured national framework for AI adoption in the public sector to ensure strategic alignment and institutional coordination. Such a framework should be supported by investments in scalable digital infrastructure, including cloud computing environments, big data systems, and AI-ready architectures.

In the financial domain, the integration of predictive analytics into budgeting, liquidity management, and resource planning can significantly improve forecasting accuracy and financial efficiency. Similarly, AI-based systems for fraud detection, risk management, and operational monitoring can enhance transparency and reduce financial vulnerabilities.

Human capital development represents a critical enabler of this transition. Targeted training programs in artificial intelligence, data science, and advanced analytics are necessary to equip public sector employees with the competencies required for managing intelligent systems. Without this dimension, technological investment alone is unlikely to produce sustainable institutional transformation.

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