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Building Trust in Public Finance: Digital Transformation and Financial System Integrity in Government

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Abstract- ***This paper advances a rigorous, systems-oriented analysis of how digitized fiscal architectures can transform public financial governance into a corruption-resistant and trust-driven ecosystem. Drawing on contemporary scholarship and global reform evidence, the study demonstrates that the integration of artificial intelligence, blockchain-based auditability, and secure digital payment infrastructures offers a structural deterrent to fraud by integrating transparency, traceability, and automated compliance into the core of government financial operations. The proposed Digital Integrity Framework positions technology beyond an accessory and as an institutional safeguard that reconfigures accountability from discretionary oversight to continuous, data-verified monitoring. The analysis further illuminates the socio-technical and regulatory challenges that constrain adoption, ranging from legacy system inertia and capacity gaps to cybersecurity and privacy risks while outlining a governance model capable of orchestrating multi-stakeholder coordination, standard-setting, and phased implementation. Lastly, the paper argues that a resilient, corruption-resistant public finance environment arises when governments integrate digital trust mechanisms, strengthen policy coherence, and adopt globally aligned performance metrics. In doing so, digital innovation becomes a catalyst for efficiency and institutional legitimacy, fiscal transparency, and sustained public confidence.***

Keywords- ***Digital Public Finance, Corruption-Resistant Systems, AI Auditing, Blockchain Transparency, Public Sector Governance, Digital Integrity Framework, Fiscal Accountability, Secure Government Payments***

I. INTRODUCTION

In recent decades, public finance systems worldwide have faced intensifying scrutiny, making fiscal transparency and accountability increasingly urgent as governments strive to sustain public trust while managing complex, high-stakes financial flows. Across the world, citizens are demanding greater visibility and accountability in how tax revenues are collected, allocated, and spent, recognizing that opaque systems inevitably foster inefficiency, mismanagement, and corruption (Ingrid, 2023). One notable dimension of this challenge is its scale, as corruption erodes government efficiency and weakens state capacity, while significant reductions in corruption can measurably boost revenue collection. Controlling corruption improves the quality and accessibility of public services, while unchecked corruption fosters uncertainty that deters foreign investment, heightens perceived risks, and ultimately undermines economic growth by limiting essential capital inflows for development (Okunlola et al., 2024). At the same time, global inefficiencies and corrupt practices in public financial management are substantial, with IMF models estimating losses of approximately US$ 4.5 trillion, around 5 percent of world GDP, or US$ 1.7 trillion at the budgetary central government level (International Monetary Fund, 2023). These figures show clearly the profound risks posed to government budgets and to the legitimacy of public institutions. This loss of integrity has real consequences for citizen trust. A survey across G20 countries found that since 2019, public trust in actors driving change has generally improved; however, politicians continue to face a net distrust score of 22%, while tax authorities show a net positive trust rating of 15% that conceals polarization, with 43% of respondents expressing trust or high trust and 28% expressing distrust or high distrust (Association of Chartered Certified Accountants [ACCA], 2021). This erosion of trust is more than symbolic, as it undermines tax compliance, weakens social cohesion, and creates systemic threats to governance.

Amid this crisis of confidence, emerging digital technologies offer a promising path forward. Innovations such as blockchain-based audit trails, AI-enhanced fraud detection, and secure real-time payment infrastructures are increasingly being deployed in public finance to strengthen transparency, reduce discretionary risk, and make corruption harder to hide Blockchain systems for instance, enable immutable and traceable records of every transaction,

from budget appropriation to final disbursement, creating a verifiable audit trail that traditional paper-based systems struggled or failed to provide (World Bank, 2025). However, according to the World Bank's GovTech report, greater adoption of digital government capacities correlates with lower perceptions of corruption (World Bank, 2023).

Digital transformation delivers integrity dividends that extend beyond transparency, as research shows government digitalization reduces in-person interactions, which is a common avenue for bribery, and curtails the discretionary power of officials (Santiso , 2022). Integrating checks, automated alerts, and immutable logs within financial systems enables these technologies to re-anchor trust in institutional processes rather than relying solely on rhetoric. Despite their promise, the deployment of digital tools in public finance introduces challenges, including governance risks, cyber vulnerabilities, vendor capture, and unequal access to infrastructure, that demand adoption strategies integrating technology with robust institutional reforms.

This paper seeks to contribute to the rising scholarship on digital public finance reform by examining how blockchain, AI-based auditing, and secure payment systems can improve fiscal transparency, reduce fraud, and rebuild trust in government. The study will analyze global case studies of countries that have introduced or scaled these solutions, evaluate implementation models, and propose a strategic framework for corruption-resistant, digitally enabled fiscal management.

This article combines technological analysis with public finance theory to provide a roadmap for policymakers, international development institutions, and civil society. In environments where public distrust undermines revenue mobilization and effective spending, understanding how digital tools can reinforce integrity is important. As governments worldwide deepen their digital transformation, lessons from both practical deployments of these systems will be important for designing systems that move beyond digitizing bureaucratic inefficiencies to fundamentally transform the governance of public money.

II. THE INTEGRITY CRISIS IN PUBLIC FINANCE

Public financial management (PFM), encompassing the collection, allocation, administration, and accountability of public resources, remains central to effective governance and policy implementation. Yet the complexity of its institutional architecture, the multiplicity of actors involved, and the high concentration of financial decision-making authority make PFM systems structurally vulnerable to corruption, misreporting, procurement fraud, and distortions during budget formulation (Ensa & Abraham, 2025). These vulnerabilities generate inefficiencies, misallocated resources, and systemic governance failures that progressively weaken state capacity and public confidence

Public financial management systems across the world are experiencing a deepening integrity crisis as misappropriation, operational inefficiencies, and entrenched corruption drain public resources and undermine institutional trust, largely perpetuated by fragmented reporting structures, opaque procurement channels, discretionary budgeting, and chronically weak oversight. These structural deficiencies distort core fiscal processes, including procurement, payment systems, accounting, financial reporting, and auditing further magnified by widespread non-compliance with legal frameworks and the persistent absence of credible deterrence mechanisms (Achanya & Varzoa, 2025).

Public procurement is among the most exposed components of PFM. Empirical studies consistently show that procurement processes are susceptible to rent-seeking, conflict of interest, political capture, contract inflation, and diversion of donor-funded resources. Estimates suggest that roughly 10–20 percent of public procurement spending is lost to corruption globally (Adjorlolo et al., 2025). These losses materially affect development outcomes as inflated costs reduce the volume and quality of delivered infrastructure, distort market competition, and weaken value-for-money assessments. Additional evidence that shows the scale of the problem is that in the United Kingdom, nearly all middle-market construction firms report exposure to bribery, anti-money laundering risks, and fraudulent invoicing.

Corruption in the sector inflates project costs by 10–30 percent on average and up to 45 percent in developing countries. The UK alone suffers £1.8 billion in annual losses from invoice fraud in construction (Royal Institution of Chartered Surveyors, 2021). Conversely, Ethiopia's CoST-monitored road project revisions demonstrate that improved transparency and oversight can reduce cost inflation and deliver significant fiscal savings. Without similarly robust interventions, global construction corruption is projected to reach US $5 trillion annually by 2030 (Royal Institution of Chartered Surveyors, 2021). At the macro level, the fiscal losses associated with corruption are enormous. According to the International Monetary Fund (2023), inefficiency and corruption in weak PFM systems drain about US $4.5 trillion annually, 5 percent of global GDP with up to 30 percent lost during budget formulation, where political bargaining, discretionary allocations, and opaque prioritization distort planning, entrench patronage, and undermine allocative efficiency.

Corruption weakens societies and economies by diverting scarce public resources, eroding institutional trust, undermining the rule of law, deepening inequality, deterring investment, and distorting the allocation of national wealth, a processes that collectively fuel social unrest, political instability, and the gradual erosion of democratic norms (Medani, 2023). It further suppresses innovation, discourages both foreign and domestic investment, slows employment generation, inflates prices, expands the informal economy, and burdens taxpayers, while misallocating public funds in ways that deteriorate service delivery and diminish state revenues, making rigorous, cross-country quantitative assessment indispensable for understanding its full macroeconomic impact (Spyromitros & Panagiotidis, 2022).

Systemic Causes

The integrity crisis in public financial management (PFM) is rooted in structural weaknesses that span deficient oversight, limited internal control capacity, fragmented financial architectures, and persistent dependence on manual or semi-manual reporting processes. Weak PFM capacity remains a major challenge, as many governments lack sufficiently robust systems for accurate record-keeping, financial reporting, and accounting. The 2022 PEFA Global Report shows that 80% of assessed countries fail to submit financial reports for external audit within three months after fiscal year end, while countries "struggle in accounting and preparing financial reports." In Nigeria, the House of Representatives has acknowledged that "weak auditing and accounting systems" substantially fuel corruption and hinder effective public financial management (Vanguard News, 2025). Further highlighting the structural weakness, IFAC reports that only 30% of governments worldwide use accrual-based accounting and 40% remain in transition, evidence that many states operate on outdated or incomplete accounting frameworks that limit financial accuracy and transparency (IFAC, 2021). Capacity gaps in staffing, often understaffed, under-trained internal personnel, further constrain the ability to detect or prevent misuse of funds.

The absence of strong internal controls and supervisory mechanisms compounds these vulnerabilities. Without adequate internal checks, public managers may fail to enforce accountability. Sari and Muslim (2023) emphasize that both internal and external auditing practices are indispensable for safeguarding public trust. Transparency, understood as the disclosure of decision-making information that enables external monitoring, has long been promoted by international organizations as foundational to building confidence in government (Alessandro et al., 2021). Ziorklui et al. (2024) similarly argue that strong internal control mechanisms promote accurate financial records, asset protection, and operational efficiency, yet many PFM systems still operate with weak approval processes, insufficient documentation verification, and poor follow-up on anomalies.

Limited internal fiscal transparency heightens governance risks by withholding timely and comprehensive budget and debt data from decision-makers and the public. As Ali-Momoh (2024) stresses, transparent disclosure of public debt composition, risks, and terms is essential for accountability and debt sustainability. Evidence from Eastern Europe shows that fiscal transparency can increase public trust by 10–12% when supported by strong legal frameworks, but in environments with weak institutional checks, even substantial transparency reforms yield only

minimal improvements (Abbasov, 2025), indicating that openness without oversight cannot fully restore trust.

Fragmentation of digital and financial systems represents one of the most profound structural drivers of corruption exposure. Many governments operate siloed platforms for payroll, procurement, tax administration, budgeting, and expenditure tracking, if such platforms exist at all (International Monetary Fund, 2023). This disjointed architecture weakens data reconciliation, creates blind spots exploitable by corrupt actors, and undermines centralized oversight. Transparency International's PFM topic guide similarly highlights system fragmentation as a core corruption risk, as siloed systems enable inconsistencies, unauthorized adjustments, and hidden transactions (Rivero del Paso et al., 2023). At the global level, technological fragmentation is compounded by geopolitical competition as the pursuit of technological dominance has deepened regulatory asymmetries and widened development inequalities, enabling powerful states to shape governance norms in ways that reinforce system imbalances (Li, 2025).

In many jurisdictions, PFM systems are still characterized by manual or paper-based processes that impede real-time monitoring and transparency. Digital automation has proven capable of reducing human error and improving accounting accuracy (Oluka et al., 2024), with paperless systems enhancing data integrity through built-in validation mechanisms (Han et al., 2023). Yet legacy systems persist, slowing approval cycles, increasing error rates, and enabling tampering or fabrication of invoices. Traditional fraud detection methods are increasingly ineffective as fraud schemes evolve faster than manual auditing capacities (Odufisan et al., 2025).

Furthermore, outdated, paper-dependent systems are often incompatible with modern digital platforms introduced by FinTech innovations, creating additional modernization hurdles (Ajiga et al., 2025). These manual and legacy-driven weaknesses allow corruption to thrive, revealing a system that can be overwhelmed even when leaders express reform intentions.

The systemic drivers of corruption extend into broader institutional dynamics. Weak oversight and internal controls are empirically linked to corruption outcomes. Shidqi and Arfiansyah (2025) find that stronger internal audits and improved internal control structures significantly curb corruption, while high capital expenditures tend to increase corruption risks; weak audit capacities exert no meaningful deterrent effect, highlighting the need for internal governance strengthening. This is consistent with findings that fragmented financial systems expose governments to reconciliation challenges and manipulation opportunities (Rivero del Paso et al., 2023).

Procurement processes represent one of the most corruption-prone areas of public finance, given their financial scale and discretion-heavy procedures. OECD (2024) notes corruption risks throughout all procurement stages, from tendering to post-award management. Global research estimates that 10–25% of public contract values are routinely lost to corruption (Adjorlolo et al., 2025). The World Bank similarly reports bribery accounting for 8–25% of contract values and inefficiencies consuming around 18% of project budgets, two-thirds directly tied to corruption (World Bank, 2021). IMF models further demonstrate that procurement corruption risk significantly inflates the prices governments pay for goods and services (IMF, 2022).

Budget formulation and allocation processes also constitute major risk zones. IMF modeling suggests that over 30% of corruption-related losses occur at the budget formulation stage (IMF, 2023), where political actors and vested interests can manipulate allocations to advance personal or political agendas. This aligns with political economy analysis showing that discretionary, poorly monitored budgeting across decentralized systems enhances patronage, increases project costs, and diverts funds from public purposes (Adesheila, 2025).

Institutional culture, informal norms, and principal–agent dynamics further explain the persistence of corruption. According to Kunyeti (2024), bureaucratic corruption emerges when agents prioritize private interests over public mandates, especially in systems defined by weak deterrence and entrenched informal networks. Structural factors such as salary dispersion

and group size can intensify systemic corruption, as demonstrated in agent-based modeling studies (Valverde et al., 2023). Ceschel et al. (2022) note that despite alignment with UNCAC principles, public-sector anti-corruption strategies often overlook risk-based approaches, leaving major vulnerabilities unaddressed.

Finally, enforcement and accountability deficits significantly weaken public financial integrity. Even where supreme audit institutions (SAIs) exist, their influence is often constrained by political interference, limited follow-up capacity, and inadequate technical resources. Internal controls have been shown to significantly reduce financial infractions, while traditional financial audits, without strong internal control support, have negligible effects (Olumoh et al., 2025). Evidence from PFM reform evaluations shows that strengthening budgeting, accounting, and audit systems can reduce corruption, but impact depends heavily on context and institutional readiness (Duri, 2021). These structural weaknesses form a deeply embedded integrity crisis that cannot be resolved without systemic, technology-enabled, and governance-driven reforms.

Empirical Cases of Public Fund Mismanagement

Empirical cases from multiple countries illustrate how systemic weaknesses in public financial management (PFM) manifest in large-scale corruption, financial leakages, and governance failures. In Nigeria, corruption remains deeply embedded across procurement, accounting, payment systems, and auditing functions, with recent research documenting pervasive distortions across these core PFM components (John & Luma, 2025). Analysis by Brookings further estimates that Nigeria loses approximately US$18 billion annually to corruption and financial crime, equivalent to about 3.8% of GDP in 2022, with procurement spending, which represents 10–25% of GDP, being particularly vulnerable (Sope et al., 2023). These losses reflect structural weaknesses in PFM systems rather than isolated criminal acts. Although Nigeria's Integrated Financial Management Information System (IFMIS) has demonstrated measurable positive effects, survey evidence from public sector employees shows a strong association between IFMIS use and reduced fraud risk, indicating a significant contribution to fraud management in government entities (Owolabi et al., 2022), the system's effectiveness remains dependent on adequate training, internal controls, and supportive governance structures. Persistent misallocation and embezzlement remain major challenges; in the petroleum sector alone, substantial portions of revenue continue to be diverted from public accounts, demonstrating how entrenched governance failures undermine economic development (Ladi et al., 2025). More granular auditing continues to expose similar patterns of systematic mismanagement across other sectors of the Nigerian economy.

Evidence from Indonesia reinforces the global linkage between PFM quality and corruption outcomes. A panel co-integration study finds a significant long-run causal relationship between PFM quality, measured through audit opinions and fiscal indicators, and corruption levels, indicating that improvements in PFM systems contribute directly to cleaner government over time (Barrow & Ngong Deng, 2025). This underscores that strengthening PFM is not a purely technical exercise but a core component of institutional integrity and anti-corruption reform.

The Philippines offers a prominent example of how developmental expenditures can be weaponized for political manipulation. In the widely publicized Fertilizer Fund Scam, more than ₱728 million intended for farmer subsidies was allegedly diverted to political campaign activities (The Philippine Star, 2022). This case demonstrates the vulnerability of earmarked funds to political capture when oversight is weak and auditing mechanisms are insufficient.

Moldova's 2014 billion-dollar bank fraud further illustrates the macroeconomic risks of governance failures in financial institutions. Approximately US$1 billion, equivalent to 12 percent of the country's GDP was siphoned from three major banks through shell companies and fraudulent lending schemes, destabilizing Moldova's financial system and exposing deep systemic weaknesses in oversight, regulatory capacity, and institutional integrity (Arnold, 2025). The scale of the scandal demonstrated that financial mismanagement within public and politically connected institutions can threaten national economic stability and public trust.

Theoretical and Governance Implications

The integrity crisis in public finance extends far beyond the enforcement of stricter laws or the punishment of individual offenders; it is rooted in deeper institutional and governance failures that shape how public financial management systems operate. Institutional theory highlights that weak normative and regulatory frameworks, marked by inadequate internal checks, insufficient professional capacity, and limited sanctioning power, create environments where corruption is sustained rather than deterred. Ahinsah-Wobil (2023) emphasizes that when institutions lack credible enforcement mechanisms, particularly in audit and financial oversight, financial discipline becomes difficult to maintain, allowing corrupt practices to flourish even when formal rules exist.

Recent scholarship also reframes corruption through a fiscal space lens. Laing (2025) argues that anti-corruption measures should not be viewed solely as ethical necessities but as fiscal strategies that reclaim resources otherwise lost to leakages, thereby expanding the budgetary space available for development. This framing encourages finance ministries to embed integrity-enhancing reforms directly into budgeting processes, making corruption reduction a functional component of fiscal management rather than a parallel governance initiative.

From a systemic design perspective, the crisis underscores the need for foundational reforms in PFM architecture. Governance and digital transformation research demonstrates that structural redesign, rather than episodic interventions is required to strengthen integrity. Umbet et al. (2025) show that e-government development and anti-corruption measures jointly explain more than 40% of the variance in tax performance across countries. Their cluster analysis reveals a clear divide between digitally advanced, high-compliance states and those with lagging IT integration, underscoring how digitalization reduces human discretion, limits bribery opportunities, automates compliance, and enhances fraud detection. This evidence reinforces that sustainable improvements in fiscal integrity depend on integrated financial information systems, strengthened internal audit and oversight mechanisms, reduced managerial discretion, and the comprehensive digitization of financial processes.

The Importance of Financial Integrity for National Development and Governance Stability

Financial integrity is foundational to national development, public trust, and long-term governance stability because mismanaged funds directly undermine service delivery, weaken the social contract, and erode institutional resilience. Akinninyi et al. (2025) show that forensic accounting is vital in the public sector for detecting and preventing fraud, strengthening oversight, and enhancing financial integrity through evidence-based improvements to internal controls. When corruption distorts procurement, tax administration, or budget execution, essential services deteriorate, infrastructure quality declines, and citizens bear the cost through reduced welfare and widening inequality, particularly among vulnerable groups (GIACC, 2024). The resulting distrust in government suppresses tax compliance, fuels political discontent, and undermines democratic legitimacy, creating a feedback loop in which weak institutions struggle to correct systemic failures. Conversely, safeguarding financial integrity strengthens economic efficiency by redirecting resources from leakage to productive investment in health, education, and infrastructure, thereby expanding long-term growth capacity (Onokevbagbe, 2025). Ultimately, countries that embed transparency, accountability, and disciplined public financial management are better positioned to build resilient institutions, sustain public confidence, and ensure inclusive development.

III. THE ROLE OF DIGITAL TRANSFORMATION IN FISCAL GOVERNANCE

Digital transformation in public finance refers to the systematic integration of digital technologies into government financial systems including budgeting, accounting, procurement, payments, and reporting to strengthen efficiency, transparency, and control. Digitalization improves fiscal integrity by automating core processes, enhancing budget planning and expenditure control, and enabling real-time monitoring of macro-fiscal indicators such as revenue, spending, cash flows, and debt (Sheikhnor, 2024).

Rivero del Paso et al. (2023) further emphasize that digital public financial management (PFM) enhances fiscal operations through automation, supports evidence-based policymaking, strengthens expenditure control, improves risk identification, and expands transparency and accountability across the budget cycle.

Among the core technologies driving this transformation, blockchain stands out for its immutable ledger and smart-contract capabilities, which ensure tamper-proof transaction records and strengthen traceability. Although costly to implement, blockchain enhances transparency and process integrity, and as a World Economic Forum analysis highlights, blockchain-based procurement systems reinforce accountability through permanent records and verifiable reporting (Xanthopoulou, 2022). Its decentralized design reduces discretion, curbs corruption, and supports a citizen-centric model of transparent governance. Sousa (2023) notes that organizations adopting blockchain expect improved networked services, stronger data security, higher operational efficiency, better decision-making, and increased capacity to develop innovative digital public services.

Artificial intelligence also plays a transformative role in fiscal governance by detecting patterns, forecasting trends, and uncovering anomalies in financial data, while automation reduces delays and human error in tasks such as reconciliations, payroll, and reporting. In public financial management, AI acts as both a high-speed assistant for routine activities and a data-driven advisor for macrofiscal analysis, spending decisions, and budget planning, without replacing human judgment (OECD, 2025). Fiscal transparency is dependent on accessibility, quality, frequency, and timeliness of information, and is strengthened through AI-enabled interfaces that streamline data dissemination, integrate diverse sources, and detect irregularities to preserve data integrity (IMF, 2024). Brazil's National Treasury demonstrates the potential of these tools, achieving over 97% accuracy in expenditure classification and reducing workloads from 1,000 hours to just eight (OECD, 2025).

Digital tools fundamentally enhance fiscal governance by widening transparency, accountability, and traceability. Blockchain-based audit systems enable continuous, real-time monitoring of transactions, prevent data manipulation, and provide auditors and citizens alike with ongoing visibility into public financial flows (Marian et al., 2025). Complementing this, AI-driven systems detect fraud, reduce discretionary decision-making, strengthen compliance, and improve user experience, delivering measurable gains in efficiency, transparency, and decision quality (Aldemir & Uçma Uysal, 2025). Digitalized accounting systems replace paper-intensive legacy processes with integrated cloud-based platforms, often consisting of distributed ledger technologies that enhance data integrity and strengthen financial governance (Alassuli et al., 2025).

Despite these advances, several barriers continue to hinder digital adoption in government finance. Legacy IT systems remain a major constraint, with outdated infrastructure, fragmented platforms, and data silos impeding interoperability and slow-ing integration efforts (The Guardian, 2025). Additional barriers include insufficient ICT infrastructure, budgetary constraints, organizational resistance to change, low digital skills, inadequate training, and concerns over data security and privacy (Nwaimo et al., 2024). Experience from Greece shows that organizational culture, employee training, leadership, and access to modern equipment significantly shaped the adoption of blockchain, with public servants themselves determining both the pace and success of transformation (Xanthopoulou, 2022). Regulatory ambiguity surrounding emerging technologies, alongside ethical concerns such as algorithmic bias and data-governance challenges, further complicates adoption and threatens trust in digital fiscal systems (Aldemir & Uçma Uysal, 2025).

IV. BLOCKCHAIN FOR FISCAL TRANSPARENCY AND ANTI-CORRUPTION

Blockchain technology offers a transformative architecture for strengthening fiscal transparency and reducing corruption by providing immutable, decentralized, and auditable ledgers that enhance the integrity of financial records (Ayeboafo et al., 2025). Its core features consist of tamper-proof data structures, distributed validation, and programmable

smart contracts minimize opportunities for unauthorized alteration of financial transactions and reduce discretionary human intervention. Research by Fahdil et al. (2024) found that blockchain improves the trustworthiness and transparency of financial information by significantly reducing data tampering and fraud (85% of surveyed organizations reported declines), simplifying auditing through smart contracts and automated verification (resulting in a 30% reduction in audit time and 20% drop in associated costs), enhancing data accuracy (a 25% increase noted by 70% of organizations), and boosting process efficiency (40% gains reported by 65%). Despite these benefits, adoption remains hindered by integration complexity, regulatory uncertainties (identified by 60% as a major barrier), shortages in specialized skills, and high initial implementation costs (reported by 55%).

In government finance, blockchain strengthens transparency and accountability by recording bids, contracts, and payments on permanent ledgers, enabling real-time visibility into budget flows, and improving expenditure tracking through automated verification and immutable transaction histories (Ongbali et al., 2025). Evidence shows that blockchain-based procurement systems enhance supply chain visibility, reduce information asymmetry, prevent retroactive document manipulation, and provide end-to-end traceability in public contracting, significantly mitigating fraud and counterfeiting risks (Nwani, 2025; Karaduman & Gülhas, 2025; Xanthopoulou, 2022). Estonia and Georgia are global benchmarks for this as Estonia's blockchain-enabled infrastructures, most prominently the KSI Blockchain secure public financial data through real-time audit trails integrated across procurement, taxation, and accounting systems, effectively curbing fraud and preventing unauthorized access (Prokopenko et al., 2025). Also Georgia achieved a comparable landmark by integrating blockchain in its national public registry and subsequently extending similar transparency tools to procurement and public finance, creating verifiable audit trails that reduced opportunities for contract manipulation and document tampering (Zhang et al., 2024). These experiences demonstrate how distributed ledger technologies can modernize public sector governance by strengthening data integrity, automating compliance, and expanding avenues for citizen oversight.

Yet, despite its anti-corruption potential, blockchain adoption in fiscal governance faces structural and practical constraints. High implementation costs driven by infrastructure modernization, the need for specialized technical expertise, and complex integration requirements, continue to impede adoption in many low- and middle-income countries (OECD, 2022; Adegbite, 2024). Scalability challenges related to transaction speed, energy consumption, and the performance limits of permissioned networks further restrict broader deployment in high-volume government financial environments (Dayani et al., 2024). Regulatory gaps are another significant obstacle, many governments lack clear legal frameworks governing blockchain data governance, interoperability, liability, and the legal standing of smart-contract-based fiscal transactions (Takuro, 2024). Without such frameworks, blockchain implementation can introduce operational, cybersecurity, and privacy risks. These limitations emphasize the need for careful architectural design, sustained investment, and strong regulatory governance to ensure that blockchain's promise aligns effectively with fiscal transparency and anti-corruption objectives.

V. ARTIFICIAL INTELLIGENCE AND AUTOMATED AUDITING SYSTEMS

AI is increasingly reshaping public financial oversight, equipping governments with advanced tools to track fiscal activities, uncover fraudulent behavior, and strengthen accountability through intelligent automation reducing the likelihood of fraud (Sun et al., 2025). From a broader standpoint, AI-driven auditing empowers continuous oversight of financial transactions, sharpens risk stratification, and facilitates the early identification of fraud and misstatements (Onyenahazi, 2025). AI-enabled auditing systems enhance public financial management by automating routine verification tasks, improving data quality, and enabling real-time, risk-based supervision of public expenditures. According to the OECD (2025), AI increasingly functions as a high-speed analytical assistant, processing vast volumes of financial data, identifying spending patterns, and supporting macro-

fiscal assessments thereby strengthening transparency and reducing opportunities for discretionary manipulation. Predictive analytics, one of the most powerful AI applications, uses machine-learning algorithms to detect irregularities and identify anomalous transactions that deviate from expected fiscal behavior, enabling early detection of fraud and minimizing fiscal leakages (Compagnino et al., 2025). Recent IMF analysis (2024) shows that AI-driven anomaly detection improves the timeliness and frequency of fiscal reporting by integrating multiple data sources, accelerating verification processes, and ensuring greater accuracy in government accounts.

Continuous auditing, enabled by AI and automation, is another major transformation away from periodic, manual audits toward real-time oversight. Machine-learning models can flag duplicate payments, inflated invoices, procurement irregularities, and suspicious vendor or criminal behavior instantaneously, thereby reducing audit delays and significantly improving compliance (Compagnino et al., 2025). In Brazil, for example, the National Treasury's AI expenditure-classification model has achieved over 97% accuracy, reducing processes that previously required 1,000 hours of manual work to just 8 hours (OECD, 2025). Singapore also offers a global example through its GovTech initiative, which drives whole-of-government (WOG) adoption of data and AI by building in-house expertise, developing data strategies, deploying AI services, and establishing robust infrastructures, while leveraging advanced analytics to detect compliance breaches, uncover procurement anomalies, and guide risk-based audits, contributing to some of the highest public-sector integrity scores worldwide (GovTech Singapore, 2025). In the United States, the Government Accountability Office (GAO) and multiple state treasuries have embraced AI-enabled anomaly detection to monitor improper payments, automate reconciliations, and flag high-risk transactions across Medicaid, federal grants, and procurement, thereby reducing manual workloads and enhancing audit accuracy, with GAO issuing an accountability framework that promotes advanced data analytics to combat improper payments, while the U.S. Department of the Treasury and states such as Colorado actively deploy AI systems for financial monitoring and fraud detection to strengthen fiscal integrity nationwide (GAO, 2025: U.S. Department of the Treasury, 2024: Nwaoko et al., 2024).

Despite these advantages, the deployment of AI in auditing raises important ethical and governance concerns. Algorithmic bias can produce discriminatory outcomes when models are trained on unbalanced or poor-quality historical data (Anirudh & Madhu. 2024). This can potentially misclassify legitimate transactions from certain regions, vendors, or agencies as suspicious. Data governance is another critical challenge as weak data security, inadequate transparency in algorithmic decision-making, and the absence of clear accountability frameworks can undermine trust and legitimacy in AI-driven fiscal oversight (Aldemir & Uçma Uysal, 2025). Ensuring responsible AI in public audits demands clear regulations, transparent design, ongoing validation, and strong safeguards so that its transformative potential in fiscal governance strengthens rather than undermines public trust.

VI. SECURE PAYMENT INFRASTRUCTURES AND DATA PROTECTION

As governments globally embrace cashless operations, payment infrastructures are transforming public finance. The transformation to digital payments enables more efficient, auditable, and accountable fiscal flows by enhancing operational efficiency, reducing costs and processing time, expanding financial inclusion, improving customer satisfaction, accelerating business growth, and minimizing the transparency gaps and risks of cash-based systems (George & Adebis, 2025). Digital payment platforms integrated into government operations span payroll disbursement, welfare transfers, tax collection, and vendor payments, enabling real-time tracking, reconciliation, and oversight of public funds (Visa & Kearney, 2022).

However, the digitization of payments raises critical challenges in data security, identity management, and cybersecurity. Protecting citizen financial data and state transaction records from malicious actors requires strong frameworks for encryption, access control, and threat monitoring. Identity management systems, often underpinned by national digital IDs, are essential to ensure that only verified entities can

initiate or receive state payments (Nweke, 2023). Cybersecurity defenses must continually adapt to counter phishing, malware, distributed denial-of-service (DDoS) attacks, and insider threats, which pose heightened risks when sensitive public financial data is centrally aggregated (Abdullah et al., 2025). Key technical safeguards include encryption, tokenization, and secure cloud architectures. Encryption protects transaction data by converting plaintext into ciphertext, ensuring that even if intercepted, the information remains unreadable to unauthorized parties and accessible only to those with the proper decryption keys (Oduroye & Sarumi, 2024). Tokenization safeguards payment transactions by replacing sensitive data, such as account or card numbers, with unique random tokens that can be validated and processed without exposing or storing the actual values (Stripe, 2025). Also, secure cloud infrastructure offers scalability, resilience, and isolation via secure enclaves or dedicated virtual private clouds, enabling governments to maintain high availability while protecting integrity and confidentiality (SentinelOne, 2025).

A notable illustration of this transformation is India's Unified Payments Interface (UPI), which has revolutionized retail payment with significant impacted transparency in the public sector. UPI enables instant, interoperable, and traceable payments across banks and wallets, and its adoption by state agencies for subsidy disbursement, tax refunds, and social payments has extended visibility into spending flows. The Unified Payments Interface (UPI) has emerged as a leading payment system, processing over 15 billion transactions per month as of November 2024 (Cornelli, 2024). This demonstrates its scale and reach, while independent analyses show that its use in public transactions helps reduce leakage and enhances real-time reporting and reconciliation.

VII. COMPARATIVE INSIGHTS: GLOBAL CASE STUDIES IN DIGITAL FISCAL TRANSFORMATION

Global experiences with digital fiscal reforms reveal how strategic investments in technology can strengthen transparency, improve auditability, and curb corruption in public finance. Although countries differ in institutional capacity and regulatory readiness, their reform trajectories highlight adaptable pathways for developing economies seeking to modernize fiscal governance.

Nigeria's Treasury Single Account (TSA) demonstrates the impact of consolidating government cash flows through digital payment channels. When several government organizations failed to remit the legally required 25% of their estimated yearly revenue to the Treasury, the administration of former President Goodluck Ebele Jonathan introduced the Treasury Single Account (TSA) as a corrective measure. In 2012, about N120 billion was forcibly collected from Ministries, Departments, and Agencies (MDAs), representing 25% of the Treasury's annual revenue, while an additional N34 billion was recovered in 2013. At a gathering of financial experts, Okonjo Iweala emphasized that broader reforms in public financial management would encompass the Government Integrated Financial Management Information System (GIFMIS), the TSA, and the Integrated Payroll and Personnel Information System (IPPIS) to strengthen accountability across all federal MDAs. By integrating electronic payment systems, including GIFMIS and REMITA the TSA reduces leakages, enhances cash visibility, and strengthens commitment controls, offering a compelling model for countries combating revenue fragmentation and off-budget spending (Emovon, & Ozele, 2024).

In the United States, the Digital Accountability and Transparency Act (DATA Act) established one of the world's most comprehensive frameworks for data-driven fiscal oversight. The Governmentwide Spending Data Model (GSDM), created in 2016 by the Office of Management and Budget and the Department of the Treasury, standardizes data across federal activities such as grants, loans, and procurement, giving agencies a unified source for definitions and formats. These standards reduced reporting burdens and enabled public transparency, culminating in the launch of USASpending.gov in 2018 as the DATA Act's official platform for federal spending information. Over the past decade, the DATA Act has further streamlined decision-making by allowing officials to automate analysis, improve performance assessments, and share information across agencies, while giving the public clearer insights into how government funds impact their

communities (GrantSolutions, 2024). Its standardized financial reporting schema and open-data infrastructure enable cross-agency expenditure tracking, fraud analytics, and public scrutiny of federal spending

Observation
Effective digital fiscal transformation relies on clear legal frameworks, interoperable platforms, gradual implementation, and continuous investment in skills for cybersecurity, analytics, and auditing. For developing economies, proven approaches such as Estonia's blockchain integrity systems, Singapore's AI-driven anomaly detection, and Nigeria's unified payment and treasury platforms offer adaptable models. When integrated within regulatory structures designed to local contexts, these tools can drive more transparent, accountable, and resilient public financial management.

VIII. IMPLEMENTATION CHALLENGES AND RISK CONSIDERATIONS

Digital fiscal transformation, while promising, faces significant implementation barriers that shape its effectiveness and long-term sustainability. Organizational resistance and dependency on legacy systems remain widespread, as many public finance institutions continue to rely on outdated, siloed architectures that are costly to modernize and deeply embedded in bureaucratic routines (Odufisan et al., 2025). Xanthopoulou (2022) identifies several inhibitors of digital transformation, including unclear strategic vision, resistance to change, outdated systems, inefficient data processes, weak leadership commitment, misaligned institutional strategies, and top-management fears regarding complexity, uncertainty, and wasted effort. Evidence shows that public-sector digital reforms often fail when legacy systems are not complemented by phased migration models and robust change-management frameworks (Zahir et al., 2023). Resistance is also fueled by concerns over job displacement, diminished discretionary authority, and heightened transparency demands, which can reduce the willingness of some actors to adopt digital systems (Cieslak & Valor, 2024).

Cybersecurity vulnerabilities and data-privacy risks present another major constraint. As governments digitize procurement, payments, and audit trails, the attack surface expands, exposing fiscal data to breaches, ransomware, and insider threats. Rivero del Paso et al. (2023) warn that digital public financial management systems require strong identity governance, encryption protocols, and incident-response mechanisms to prevent data compromise and maintain public trust. This weak privacy safeguards and unclear data-sharing rules further complicate digital adoption, especially in countries lacking comprehensive data-protection legislation.

Regulatory and compliance limitations also pose significant challenges. Many jurisdictions do not yet have clear rules governing digital signatures, blockchain-based financial records, AI-generated audit insights, or interoperability across government systems. Without strong regulatory frameworks, digital fiscal infrastructures risk inconsistency, legal uncertainty, and administrative disputes. Jackson and Allen (2024) emphasize that regulatory fragmentation often slows technology adoption more than technical constraints, particularly where procurement, audit, and financial-reporting laws have not been updated to reflect digital capabilities.

Finally, human-capacity and digital-literacy gaps remain critical obstacles to effective implementation. Public finance institutions in many developing economies face shortages of data analysts, cybersecurity experts, digital auditors, and system-integration specialists. Ricci et al. (2024) find that sub-Saharan Africa continues to lack sufficient intermediate digital skills required to operate modern treasury, audit, and analytics platforms. Without sustained and targeted investments in workforce capacity, digital reforms risk widening institutional disparities between technologically advanced and resource-constrained environments, ultimately weakening the effectiveness of transparency, accountability, and fiscal-governance improvements.

IX. PROPOSED FRAMEWORK FOR DIGITIZED, CORRUPTION-RESISTANT FISCAL MANAGEMENT

This paper proposes a digital integrity framework that synthesizes evidence from global research and case studies to construct a unified ecosystem designed to strengthen fiscal transparency, automate oversight, and reduce corruption risks across the public financial management cycle. Theoretically, the framework builds on the logic that corruption in public finance consists of behavioural issues, an institutional and systems-design failure, requiring structural reforms enabled by digital tools (Ahinsah-Wobil, 2023; Laing, 2025). It integrates three structure pillars which include blockchain for immutable financial records, AI-enabled auditing for predictive oversight, and secure digital-payment infrastructures to form a multilayered integrity architecture that enhances traceability, limits discretion, and enables real-time fiscal monitoring.

The epicenter of this framework is the integration of blockchain, AI auditing, and secure payment systems into a single interoperable platform. Blockchain provides tamper-proof procurement, budgeting, and expenditure ledgers that record government financial transactions in immutable formats, reducing opportunities for manipulation and retroactive document changes (Xanthopoulouw, 2022; Ayeboafo et al., 2025). AI-driven auditing systems complement this by detecting anomalies, predicting fraud patterns, and enabling continuous auditing through real-time data ingestion, as demonstrated in Singapore and U.S. oversight models (Ammar, 2023; Aldemir & Uçma Uysal, 2025). Secure payment infrastructures supported by encryption, identity authentication, tokenization, and cloud-based treasury platforms ensure that disbursements, transfers, and receipts are recorded accurately, reduce leakages, and minimize human discretion (Rivero del Paso et al., 2023). When combined, these technologies create a closed-loop ecosystem where transactions originate, are validated, audited, and stored digitally, leaving minimal space for opacity or unauthorized alterations.

The governance structure of the framework emphasizes oversight, compliance, and multi-stakeholder coordination, recognizing that technology alone cannot deliver integrity without institutional alignment. Oversight bodies including supreme audit institutions, treasury departments, anti-corruption agencies, and data-protection regulators are assigned complementary roles in reviewing digital records, validating AI audit flags, enforcing corrective action, and ensuring ethical data governance. Because organizational resistance and weak leadership commitment can impede reforms, governance structures must institutionalize change-management strategies, leadership accountability, clear digital mandates, and harmonized regulatory standards across agencies (Xanthopoulou, 2022; Jackson & Allen, 2024). Interoperability rules and data-governance protocols ensure consistent cross-agency collaboration, while strong cybersecurity and identity-management systems protect sensitive fiscal data from breaches and misuse (Rivero del Paso et al., 2023).

A stepwise implementation roadmap strengthens the framework's practical feasibility. Phase one focuses on diagnostic assessments to map legacy systems, regulatory gaps, and capacity needs (Odufisan et al., 2025). Phase two introduces foundational infrastructure upgrades such as cloud migration, interoperability standards, identity governance, and data-integration layers, paired with workforce training to address digital-literacy gaps (Ricci et al., 2024). Phase three launches blockchain-based procurement and expenditure tracking pilots alongside AI-assisted audit modules, ensuring phased, low-risk adoption while building institutional familiarity. Phase four fully integrates digital payments into the treasury system and implements real-time monitoring dashboards for auditors, budget officers, and oversight bodies. Final steps institutionalize continuous improvement cycles, regulatory updates, and cross-agency data-governance frameworks to maintain system robustness over time.

The expected outcomes of this integrated digital integrity framework include higher transparency, improved efficiency, enhanced fiscal discipline, and increased public trust. Immutable records reduce opportunities for manipulation, with AI-driven auditing accelerates fraud detection and strengthens compliance, secure digital payments eliminate leakages and increase accuracy, and coordinated oversight deepens accountability. Empirical evidence

examined such as the reports from Estonia's blockchain-based fiscal trust infrastructure to Singapore's AI-enabled oversight and Nigeria's digital treasury reforms demonstrates that such systems can significantly reduce corruption vulnerabilities, streamline fiscal operations, and ensure citizen confidence in public finance. Lastly, the framework positions digital transformation as both technological upgrade and also a governance strategy that fundamentally redesigns fiscal systems to be more transparent, accountable, and resilient.

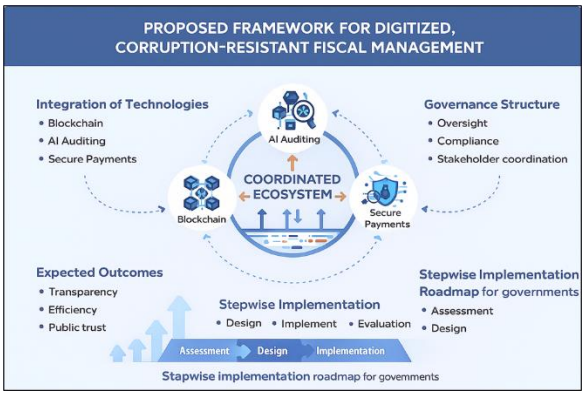

Figure 1: Stepwise Implementation Roadmap for Government For Building Public Trust in Digital Financial System

X. POLICY RECOMMENDATIONS

Governments and policymakers should prioritize secure digital transformation by integrating risk-aware design principles into national digital strategies and mandating interoperable security standards across financial systems. Strengthening public-private partnerships is essential, as technology vendors, fintech innovators, and regulatory bodies each hold complementary expertise needed for sustainable deployment and oversight. At the global level, coordinated frameworks, particularly through multilateral institutions can support harmonized standards for digital financial governance, enabling cross-border accountability and reducing regulatory fragmentation. To ensure lasting impact, governments must adopt clear and transparent metrics for evaluating system integrity, audit performance, and citizen-facing transparency, allowing continuous assessment of digital infrastructure maturity and public-sector accountability.

XI. CONCLUSION

This study establishes that secure digital transformation is no longer optional for modern public finance systems but a structural requirement for safeguarding integrity, enhancing accountability, and strengthening citizen trust. Across the analysis, the findings show that when governments integrate advanced digital tools such as AI-enabled compliance engines, real-time analytics, and automated audit trails, it causes fraud vulnerabilities to shrink, oversight becomes more proactive, and financial governance aligns more closely with global best practices. The transformative potential of digital innovation lies in its ability to redesign public finance from reactive monitoring to predictive, data-driven stewardship, where anomalies are detected early, procurement processes are transparent, and decision-making is grounded in verifiable evidence. Moving forward, building a corruption-resistant and trust-centered fiscal ecosystem will require sustained policy commitment, investment in digital capacity, continuous interagency collaboration, and adherence to interoperable international standards. With these elements in place, governments can evolve into resilient, transparent institutions capable of delivering equitable and trustworthy public financial management.

REFERENCES

[1] Abbasov, R. (2025) How Budget Transparency Affects Public Trust in Government: A Comprehensive Analysis. iBusiness, 17, 124-134. doi: 10.4236/ib.2025.172007.

[2] Abdullah, M., Nawaz, M. M., Saleem, B., Zahra, M., Ashfaq, E. b., & Muhammad, Z. (2025). Evolution Cybercrime—Key Trends, Cybersecurity Threats, and Mitigation Strategies from Historical Data. Analytics, 4(3), 25. https://doi.org/10.3390/analytics4030025

[3] Achanya Julius John & Varzoa Luma. (2025). The Effect of Corruption on Public Financial Management System in Nigeria. KASHERE JOURNAL OF POLITICS AND INTERNATIONAL RELATIONS VOL. 3, ISSUE 1. ISSN Prints: 2616-1264 Online: 3027-1177-1377

[4] Adegbite, Ayodeji. (2024). The Role Of Blockchain Technology In Enhancing Financial Inclusion. 10.9790/5933-1505071928.

[5] Adesheila, Adedayo Samuel (2025). A Critic of Budget Padding in Nigeria: True Meaning of Budget Appropriation (August 18, 2025). Available at SSRN: https://ssrn.com/abstract=5395719 or http://dx.doi.org/10.2139/ssrn.5395719

[6] Adjorlolo, G., Tang, Z., Wauk, G., Adu Sarfo, P., Braimah, A. B., Blankson Safo, R., & N-yanyi, B. (2025). Evaluating Corruption-Prone Public Procurement Stages for Blockchain Integration Using AHP Approach. Systems, 13(4), 267. https://doi.org/10.3390/systems13040267

[7] Ahinsah-Wobil, Isaac. (2023). Corrupt Operations by Government Officials Undermine Good Governance in Ghana. Available at SSRN: https://ssrn.com/abstract=4570142 or http://dx.doi.org/10.2139/ssrn.4570142

[8] Akinninyi, Patrick & Akpan, Dorathy & Christopher. (2025). Forensic Accounting and Financial Integrity in the Nigerian Public Sector. 11. 2025. 10.56201/jafm.vol.11.no3.2025.pg122.145.

[9] Alassuli, A., Thuneibat, N. S., Eltweri, A., Al-Hajaya, K., & Alghraibeh, K. (2025). The Impact of Accounting Digital Transformation on Financial Transparency: Mediating Role of Good Governance. Journal of Risk and Financial Management, 18(5), 272. https://doi.org/10.3390/jrfm18050272

[10] Aldemir, C., & Uçma Uysal, T. (2025). Artificial Intelligence for Financial Accountability and Governance in the Public Sector: Strategic Opportunities and Challenges. Administrative Sciences, 15(2), 58. https://doi.org/10.3390/admsci15020058

[11] Ali-Momoh Betty Oluwayemisi, Ogundele Johnson Olatunde, Adegun Taiwo Joshua, Braimoh Omotola Adejumoke, Ilo Oluwakemi Alice, Bejide Michael Kayode, Fabiyi Adekunle David. (2024). The Influence of Government Expenditure Transparency on Public Trust and Economic Growth in Nigeria: A Business Administration Perspective. ACTA UNIVERSITATIS DANUBIUS Vol 20, No 4, ISSN: 2065-0175

[12] Arnold, Vincient (2025) "Moldova: Consortium of Banks Emergency Liquidity Program, 2014," Journal of Financial Crises: Vol. 7 : Iss. 1, 340-370. Available at: https://elischolar.library.yale.edu/journal-of-financial-crises/vol7/iss1/14

[13] Association of Chartered Certified Accountants. (2021). Public trust in tax. ACCA Global. https://www.accaglobal.com/africa/en/professional-insights/global-economics/public-trust-in-tax.html

[14] Boadu Ayeboafo, Sampson Anomah, Kwaku Amofah. (2025). Leveraging blockchain technology adoption in the fight against corruption: An evaluation of Ghana's readiness. Journal of Economic Criminology, Volume 8, 100158. https://doi.org/10.1016/j.jeconc.2025.100158

[15] Ceschel, F., Hinna, A. & Homberg, F. (2022). Public Sector Strategies in Curbing Corruption: A Review of the Literature. Public Organiz Rev 22, 571–591. https://doi.org/10.1007/s11115-022-00639-4

[16] Christopher, George & Samuel, Adebis. (2025). Digital Payment System Migration Effects. https://www.researchgate.net/publication/395538784_Digital_Payment_System_Migration_Effects

[17] Cieslak, V., & Valor, C. (2024). Moving beyond conventional resistance and resistors: an integrative review of employee resistance to digital transformation. Cogent Business & Management, 12(1). https://doi.org/10.1080/23311975.2024.2442550

[18] Compagnino, A. A., Maruccia, Y., Cavuoti, S., Riccio, G., Tutone, A., Crupi, R., & Pagliaro, A. (2025). An Introduction to Machine Learning Methods for Fraud Detection. Applied Sciences, 15(21), 11787. https://doi.org/10.3390/app152111787

[19] David Iyanuoluwa Ajiga, Oladimeji Hamza, Adeoluwa Eweje, Eseoghene Kokogho, & Princess Eloho Odio. (2025). Enhancing public sector financial operations and inclusion through innovative Fintech solutions. International Journal of Advanced Economics ISSN 2707-2134 (Print), ISSN 2707-2142. DOI URL: https://doi.org/10.51594/ijae.v7i3.1848

[20] Denise Jackson, Christina Allen. (2024). Enablers, barriers and strategies for adopting new technology in accounting. International Journal of Accounting Information Systems, Volume 52, 100666. https://doi.org/10.1016/j.accinf.2023.100666

[21] Emovon, F. O., & Ozele, C. (2024). Treasury Single Account (TSA) in Nigeria. ESUT JOURNAL OF SOCIAL SCIENCES, 8(2). Retrieved from https://esutjss.com/index.php/ESUTJSS/article/view/180

[22] Ensa Barrow & Abraham Ayuen Ngong Deng. (2025). Corruption in Public Financial Management (2014-2024): A Bibliometric Analysis. Accounting and Finance Studies Vol. 5 No. 3. Page 237-253. DOI: https://doi.org/10.47153/afs53.17732025 e-ISSN: 2774 - 4256

[23] Fahdil, Husam & Hassan, Hayder & Subhe, Adel & Hawas, Abdulrazzaq. (2024). Blockchain Technology in Accounting Transforming Financial Reporting and Auditing. Journal of Ecohumanism. 3. 216-233. 10.62754/joe.v3i5.3903.

[24] Farhan Shidqi, Zef Arfiansyah. (2025). Good governance and corruption in local governments: The role of internal control and audit. Jurnal Akuntansi dan Auditing Indonesia, Vol. 29 No. 1. https://journal.uii.ac.id/JAAI/article/view/39727/18421

[25] Giulio Cornelli, Jon Frost, Leonardo Gambacorta, Sonalika Sinha and Robert M Townsend. (2024). The organisation of digital payments in India – lessons from the Unified Payments Interface (UPI). https://www.bis.org/publ/bppdf/bispap152_e_rh.pdf

[26] Global Infrastructure Anti-Corruption Centre. (2024). The cost of corruption. GIACC. https://giaccentre.org/the-cost-of-corruption/

[27] Government Technology Agency of Singapore. (2025). AI and data driven government. GovTech Singapore. https://www.tech.gov.sg/about-us/what-we-do/our-digital-government-efforts/ai-and-data-driven-government/

[28] GrantSolutions. (2024). Ten years of the DATA Act. GrantSolutions. https://home.grantsolutions.gov/home/news/ten-years-of-the-data-act/

[29] Guanglin Sun, Zhencheng Ling, Yanru Li, Chang Xie. (2025). Artificial intelligence and financial fraud. Pacific-Basin Finance Journal, Volume 93, 102830, ISSN 0927-538X. https://doi.org/10.1016/j.pacfin.2025.102830.

[30] Han, H., Shiwakoti, R.K., Jarvis, R., Mordi, C., & Botchie, D. (2023). Accounting and auditing with blockchain technology and artificial Intelligence: A literature review. International Journal of Accounting Information Systems, 48, 100598. Available at: https://doi.org/10.1016/j.accinf.2022.100598

[31] Ingrid Hoem Sjursen. (2023). Accountability and taxation: Experimental evidence. Journal of Economic Behavior & Organization, Volume 216, Pages 386-432, ISSN 0167-2681. https://doi.org/10.1016/j.jebo.2023.10.015.

[32] International Federation of Accountants (IFAC). (2021). Main challenges in public sector accounting reforms and the World Bank's public sector accounting initiative. IFAC. https://www.ifac.org/knowledge-gateway/discussion/main-challenges-public-sector-accounting-reforms-and-world-bank-s-public-sector-accounting-and

[33] International Monetary Fund. (2022). Assessing Vulnerabilities to Corruption in Public Procurement and Their Price Impact: Public investment, natural resources, and fiscal transparency (IMF Working Paper No. 2022/094). International Monetary Fund. https://www.imf.org/en/-/media/files/publications/wp/2022/english/wpiea2022094-print-pdf.pdf

[34] International Monetary Fund. (2023). Costing corruption and efficiency losses from weak PFM systems. PFM Blog. https://blog-pfm.imf.org/en/pfmblog/2023/04/costing-corruption-and-efficiency-losses-from-weak-pfm-systems

[35] International Monetary Fund. (2024). Unleashing the power of AI in public finance. IMF PFM Blog. https://blog-pfm.imf.org/en/pfmblog/2024/06/unleashing-the-power-of-ai-in-public-finance

[36] International Monetary Fund. (2023). Zambia: Request for an arrangement under the extended credit facility and cancellation of the arrangement under the extended fund facility—Press release; staff report; and statement by the Executive Director for Zambia (Country Report No. 2023/001). International Monetary Fund. https://www.imf.org/en/-/media/files/publications/cr/2023/english/1zmbea2023001.pdf

[37] John, A. J. ., & Luma, V. . (2025). The Effect of Corruption on Public Financial Management System in Nigeria. Kashere Journal of Politics and International Relations, 3(1), 137–149. Retrieved from https://journals.fukashere.edu.ng/index.php/kjpir/article/view/425

[38] Jorum Duri. (2021). The impact of public financial management interventions on corruption (U4 Issue 2022:9). Chr. Michelsen Institute (CMI) & U4 Anti-Corruption Resource Centre. https://www.u4.no/api/publications/the-impact-of-public-financial-management-interventions-on-corruption/pdf

[39] Kehinde Ojadamola Takuro. (2022). Assessing the Legal and Regulatory Implications of Blockchain Technology on Smart Contracts, Digital Identity, and Cross-Border Transactions. World Journal of Advanced Research and Reviews, 16(03), 1426-1442. DOI: https://doi.org/10.30574/wjarr.2022.16.3.1350

[40] Kokate, Anirudh & Priya, Madhu. (2024). Bias and Its Consequences: A Study of Machine Learning Performance. International Journal of Scientific Research in Computer Science, Engineering and Information Technology. 10. 290-301. 10.32628/CSEIT241051088.

[41] Karaduman, Ö., & Gülhas, G. (2025). Blockchain-Enabled Supply Chain Management: A Review of Security, Traceability, and Data Integrity Amid the Evolving Systemic Demand. Applied Sciences, 15(9), 5168. https://doi.org/10.3390/app15095168

[42] Ladi, Sule Matinja, Daniel, Hoshen Eugene, Abdulrahman Umar (2025). Corruption as A Barrier to Effective Governance in Key Sectors of Nigeria. International Journal of Research and Innovation in Social Science (IJRISS), 9(04), 4953-4969. https://doi.org/https://dx.doi.org/10.47772/IJRISS.2025.90400356

[43] Laing, A. (2025). Fiscal space and corruption. IMF PFM Blog. https://blog-pfm.imf.org/en/pfmblog/2025/10/fiscal-corruption

[44] Li, J. (2025). Governing High-Risk Technologies in a Fragmented World: Geopolitical Tensions, Regulatory Gaps, and Institutional Barriers to Global Cooperation. Fudan J. Hum. Soc. Sci. (2025). https://doi.org/10.1007/s40647-025-00445-4

[45] Liyuan Zhang, Limian Ci, Yonghong Wu, Benchawan Wiwatanapataphee. (2024). The real estate time-stamping and registration system based on Ethereum blockchain. Blockchain: Research and Applications, Volume 5, Issue 1, 100175, ISSN 2096-7209. https://doi.org/10.1016/j.bcra.2023.100175.

[46] Lopes, Dayani & Castro, Andre & Xander Russo, Letícia. (2024). Blockchain technology: Challenges and opportunities in public finance. RAM. Revista de Administração Mackenzie. 25. 10.1590/1678-6971/eramr240208.

[47] Marian, C. V., Mitrea, D. A., Rusu, D. S., & Vasilateanu, A. (2025). Transparent Digital Governance: A Blockchain-Based Workflow Audit Application. Applied Sciences, 15(21), 11694. https://doi.org/10.3390/app152111694

[48] Martin Alessandro, Bruno Cardinale Lagomarsino, Carlos Scartascini, Jorge Streb, Jerónimo Torrealday. (2021). Transparency and Trust in Government. Evidence from a Survey Experiment. World Development, Volume 138, 105223, ISSN 0305-750X. https://doi.org/10.1016/j.worlddev.2020.105223.

[49] Medani P. Bhandari. (2023). The Corruption a Chronic Disease of Humanity: Causes, Effects and Consequences Scientific Journal of Bielsko-Biala School of Finance and Law Volume 27, No 1, pages 13 https://doi.org/10.19192/wsfip.sj1.2023.1

[50] Nwaimo, Chilaka & Njoku, Charles & Ugwu, Kelechi & Akujor, Jane & Chris-Ejiogu, Uzoamaka & Nwoko, Nnenna & Ozurumba, Benedict. (2024). Overcoming Barriers to Technology Adoption in Nigeria Government

Institutions. Academy of Entrepreneurship Journal. 30. 1-12.

[51] Nwani, Sharon. (2025). Evaluating the impact of Blockchain technology on supply chain transparency and traceability. Gulf Journal of Advance Business Research. 3. 1065-1093. 10.51594/gjabr.v3i6.149.

[52] Nwaoko, Chinyere & Zormelo, Charles & Oduro-Gyan, Joseph & Aboderin, Ezekiel. (2024). Leveraging data analytics and AI to reduce improper payments across U.S. healthcare programs. Computer Science & IT Research Journal. 5. 2780-2794. 10.51594/csitrj.v5i12.2109.

[53] Nweke, Livinus. (2023). National Identification Systems As Enablers of Online Identity. 10.5772/intechopen.1002294.

[54] Obinna Barnabas Onyenahazi. (2025). Integrating Artificial Intelligence in Financial AuditingtoEnhance Accuracy, Efficiency, and Regulatory Compliance Outcomes. International Journal of Advance Research PublicationandReviews Vol 02, Issue 07, pp 23-44. DOI: https://doi.org/10.55248/gengpi.6.0725.2402

[55] Oduroye, Ayorinde & Sarumi, Jerry. (2024). DATA ENCRYPTION: The Definitive Guide to Protecting Your Digital Assets.

[56] OECD (2022), Blockchain at the frontier: Impacts and issues in cross-border co-operation and global governance, OECD Business and Finance Policy Papers, OECD Publishing, Paris, https://doi.org/10.1787/80e1f9bb-en.

[57] OECD (2025), Governing with Artificial Intelligence: The State of Play and Way Forward in Core Government Functions, OECD Publishing, Paris, https://doi.org/10.1787/795de142-en.

[58] Okunlola, O.C., Sani, I.U., Ayetigbo, O.A. et al. (2024). Effect of government expenditure on real economic growth in ECOWAS: assessing the moderating role of corruption and conflict.Humanit Soc Sci Commun 11, 768 (2024). https://doi.org/10.1057/s41599-024-03285-x

[59] Olha Prokopenko, Anzor Devadze, Badri Gechbaia. (2025). Blockchain in Green Supply Chain Management: Comparative Legal Perspectives from Estonia and Georgia. Law, Business& Sustainability Herald 2025 | Volume 5 | Issue 2

[60] Oluka, Alexander & Zungu, Amos & Sheik, Ismail. (2024). Navigating the Digital Shift: An Investigation into the Benefits and Risks of Paperless Accounting. 13. 159-189.

[61] Olumoh, Y. A., Sanni, M., Babalola, K. O., Uthman, F. Z. and Sanni, M. O. (2025). Auditing Systems and Financial Infractions amongst Government Entities in Kwara State. Malete Journal of Accounting and Finance, 5 (2), 153 - 167

[62] Oluwaseun Isaac Odufisan, Osekhonmen Victory Abhulimen, Erastus Olarenwaju Ogunti. (2025). Harnessing artificial intelligence and machine learning for fraud detection and prevention in Nigeria. Journal of Economic Criminology, Volume 7, 100127, ISSN 2949-7914 https://doi.org/10.1016/j.jeconc.2025.100127.

[63] Onokevbagbe, Iguehi. (2025). Addressing Illicit Financial Flows in Nigeria: The Role of AML/CFT/CPF Frameworks (May 09, 2025). It was first published as chapter 9 in the book titled "Resilience of the Nigerian Financial System: Legal Issues, Prospects and Challenges. Essays in honour of Kofo Salam-Alada. ISBN 978 978 695 158 4. SSRN: https://ssrn.com/abstract=5562398 or http://dx.doi.org/10.2139/ssrn.5562398

[64] Organisation for Economic Co-operation and Development (OECD). (2024). Integrity in public procurement. OECD. https://www.oecd.org/en/topics/sub-issues/integrity-in-public-procurement.html

[65] Owolabi Sunday Ajao, Odunlade Olajire Aremu, Izang Julia Ufuoma. (2022). Government Integrated Financial Management Information System and Fraud Prevention in Nigeria. Journal of Finance and Accounting, 10(3), 151-159. https://doi.org/10.11648/j.jfa.20221003.11

[66] Pablo Valverde, Jaime Fernandez, Edwin Buenaño, Juan Carlos González-Avella, Mario Cosenza. (2023). Controlling systemic corruption through group size and salary dispersion of public servants. https://arxiv.org/pdf/2304.02113

[67] Public Expenditure and Financial Accountability (PEFA). (2022). Global report on public

financial management 2022. PEFA. https://www.pefa.org/global-report-2022/en/report/global-pfm-performance

[68] Ricci, L. A., Ahokpossi, C., Quayyum, S. N., Turk, R. A., Belianska, A., Cangul, M., Fuje, H., Lee, S., Li, G. B., Li, X., Mu, Y., Mwase, N., Ree, J. J., Shi, H., & Kramarenko, V. (2025). Digital Payment Innovations in Sub-Saharan Africa. Departmental Papers, 2025(004), A001. Retrieved Nov 22, 2025, from https://doi.org/10.5089/9798400232220.087.A001

[69] Richard Kunyeti. (2024). The Influence of Corruption on Public Sector Accounting in Zimbabwe. International Journal for Multidisciplinary Research (IJFMR) E-ISSN: 2582-2160, Volume 6, Issue 6. https://www.ijfmr.com/papers/2024/6/29412.pdf

[70] Rivero del Paso, L., Pattanayak, S., Uña, G., & Tourpe, H. (2023). Digital Solutions Guidelines for Public Financial Management. Technical Notes and Manuals, 2023(007), A001. Retrieved Nov 22, 2025, from https://doi.org/10.5089/9798400251566.005.A001

[71] Royal Institution of Chartered Surveyors. (2021). The cost of corruption in construction. RICS. https://www.rics.org/news-insights/wbef/the-cost-of-corruption-in-construction

[72] Samson O, Ongbali, Akinbayonle Fasuyi, Enesi Y. Salawu, Sunday A. Afolalu. (2025). Leveraging Blockchain Technology to Enhance Transparency and Efficiency in Public Sector Project Bidding and Award Processes. NIPES-Journal of Science and Technology, Research Vol. 7, Special Issue: Landmark University International Conference, SEB4SDG 2025, pp. 1737–1744

[73] Santiso C. (2022). Govtech against corruption: What are the integrity dividends of government digitalization? Data & Policy. 2022;4:e39. doi:10.1017/dap.2022.31

[74] Sari, Ratna & Muslim, Muslim. (2023). Accountability and Transparency in Public Sector Accounting: A Systematic Review. Amkop Management Accounting Review (AMAR). 3. 90-106. 10.37531/amar.v3i2.1440.

[75] Sousa, M. J. (2023). Blockchain as a driver for transformations in the public sector. Policy Design and Practice, 6(4), 415–432. https://doi.org/10.1080/25741292.2023.2267864

[76] SentinelOne. (2025). Cloud infrastructure security. SentinelOne. https://www.sentinelone.com/cybersecurity-101/cloud-security/cloud-infrastructure-security/

[77] Sheikhnor, Ismail Ali. (2024). Transforming Public Finance: The Effect of Digitization on Government Revenue In Somalia. Available at SSRN: https://ssrn.com/abstract=4977131 or http://dx.doi.org/10.2139/ssrn.4977131

[78] Sope Williams, Adedeji Adeniran, and Aloysius Uche Ordu. (2023). Can we change the narrative on corruption in public procurement in Nigeria? Brookings. https://www.brookings.edu/articles/can-we-change-the-narrative-on-corruption-in-public-procurement-in-nigeria/

[79] Spyromitros, E., & Panagiotidis, M. (2022). The impact of corruption on economic growth in developing countries and a comparative analysis of corruption measurement indicators. Cogent Economics & Finance, 10(1). https://doi.org/10.1080/23322039.2022.2129368

[80] Stripe. (2025). Payment tokenization 101. Stripe. https://stripe.com/en-sg/resources/more/payment-tokenization-101

[81] The Guardian. (2025). Government AI roll-outs threatened by outdated IT systems. The Guardian. https://www.theguardian.com/technology/2025/mar/26/government-ai-roll-outs-threatened-by-outdated-it-systems

[82] The Philippine Star. (2022). Ex-DA exec acquitted in fertilizer scam. Philstar.com. . https://www.philstar.com/headlines/2022/10/02/2213670/ex-da-exec-acquitted-fertilizer-scam

[83] U.S. Department of the Treasury. (2024). Treasury announces enhanced fraud detection processes, including machine learning AI, preventing $180 billion in fiscal year 2024. https://home.treasury.gov/news/press-releases/jy2650#:~:text=Federal%20Government-,Treasury%20Announces%20Enhanced%20Fraud%20Detection%20Processes%2C%20Includi

ng%20Machine%20Learning%20AI,Billion%20in%20Fiscal%20Year%202024&text=WASHINGTON%20%E2%80%93%20Today%2C%20the%20U.S.%20Department,in%20$180%20million%20in%20prevention

[84] U.S. Government Accountability Office. (2024). Artificial intelligence: Key practices to help ensure accountability in federal use (GAO-25-108412). https://www.gao.gov/products/gao-25-108412

[85] Umbet, M., Askarov, D., Rudžionienė, K., Christauskas, Č., & Alikulova, L. (2025). Evaluating the Implementation of Information Technology Audit Systems Within Tax Administration: A Risk Governance Perspective for Enhancing Digital Fiscal Integrity. Journal of Risk and Financial Management, 18(8), 422. https://doi.org/10.3390/jrfm18080422

[86] Vanguard News. (2025). Weak auditing, accounting systems fueling corruption, say Reps. Vanguard. https://www.vanguardngr.com/2025/01/weak-auditing-accounting-systems-fueling-corruption-say-reps

[87] Visa & Kearney. (2022). The transformational power of digital payments for governments. Visa. https://www.visa.co.uk/content/dam/VCOM/global/run-your-business/documents/visa-kearney-the-transformational-power-of-digital-payments-for-governments.pdf

[88] World Bank. (2021). Reducing corruption in public procurement. World Bank Blogs. https://blogs.worldbank.org/en/developmenttalk/reducing-corruption-public-procurement

[89] World Bank. (2023). Enhancing government effectiveness and transparency: The fight against corruption. World Bank. https://documents1.worldbank.org/curated/en/099062424162020898/pdf/P17460717046820c188951ef06cb396c8c.pdf

[90] World Bank. (2025). Enhancing transparency: The impact of blockchain-based audit trails. World Bank Blogs. https://blogs.worldbank.org/en/governance/enhancing-transparency--the-impact-of-blockchain-based-audit-tra

[91] Xanthopoulou, Panagiota. (2022). Blockchain and the digital transformation of the public sector: The Greek experience. Technium Social Sciences Journal. 32. 558-570. 10.47577/tssj.v32i1.6702.

[92] Zahir Irani, Raul M. Abril, VishanthWeerakkody, Amizan Omar, Uthayasankar Sivarajah. (2023). The impact of legacy systems on digital transformation in European public administration: Lesson learned from a multi case analysis. Government Information Quarterly, Volume 40, Issue 1, 101784. https://doi.org/10.1016/j.giq.2022.101784.

[93] Ziorklui, Joseph & Ampofo, Frederick Owusu & Antwi, Bernard & Nyonyoh, Nicholas. (2024). Effectiveness of internal controls mechanisms in preventing and detecting fraud. Finance & Accounting Research Journal. 6. 1259-1274. 10.51594/farj.v6i7.1322.