Digital Public Financial Management: A Global Systematic Review of Implementation, Challenges, and Governance Outcomes

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Abstract

This article presents a global systematic review of peer-reviewed literature published between 2015 and 2021 on the implementation, challenges, and governance outcomes of digital Public Financial Management (PFM) systems. It investigates the central question: how do digital tools such as Integrated Financial Management Information Systems (IFMIS) and e-procurement platforms influence public sector efficiency, transparency, and accountability across different country contexts? The study reviews 12 empirical and theoretical studies to identify patterns in implementation strategies, success factors, and barriers. The results highlight that digital PFM systems can significantly improve fiscal control and reduce corruption when aligned with institutional capacity, political commitment, and stakeholder engagement. However, persistent challenges such as poor ICT infrastructure, limited user training, and fragmented reform efforts undermine effectiveness in many developing countries. The discussion integrates comparative findings and case-based evidence to evaluate key governance outcomes. Ultimately, the study concludes that digital PFM reforms require context-specific design, gradual rollout, and sustained institutional support.

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1. Introduction

Over the last decade, the digitization of Public Financial Management (PFM) has become a strategic imperative for governments seeking to enhance fiscal transparency, accountability, and operational efficiency. Digital PFM encompasses a range of tools and systems, including Integrated Financial Management Information Systems (IFMIS), electronic procurement platforms, and digital auditing mechanisms that enable real-time data access, improve oversight, and reduce both error and discretion in public finances. This transformation is particularly critical in developing countries, where manual systems historically foster inefficiencies, leakages, and corruption (Jeong & Oh, 2019).

Evidence from South Korea confirms the promise of digital tools. According to Jeong and Oh (2019), IFMIS implementation in South Korea improved fiscal control, streamlined procurement, and enabled real-time reporting but the authors stress that institutional readiness and workforce adaptability remain vital for realizing such gains. Cross-national quantitative studies further support the link between digitalization and improved governance. Park and Kim (2020) show through panel data analysis that countries with advanced e-government systems experience significantly lower corruption. Similarly, Zhao et al. (2021) find that e-government initiatives can curb corrupt practices, particularly when supported by a conducive institutional and cultural environment. However, both studies caution that digital tools alone are insufficient without complementary reforms such as legal frameworks, political commitment, and civic engagement.

Challenges to digital PFM persist in many contexts. For instance, Chalu (2019) examines IFMIS adoption in Tanzanian local governments and finds that digital reporting systems improved financial transparency and accountability. Still, institutional capacity, training, and systemic resistance pose considerable barriers to full integration and effective usage. Beyond individual country contexts, broader structural enhancements are important. Martí and Kasperskaya (2015) demonstrate that implementing accrual-based IPSAS across cross-country cases leads to better fiscal transparency and more robust resource allocation. Yet, political resistance and capacity constraints continue to slow uptake, particularly in less developed institutional settings.

These findings converge around three critical themes. First, implementation: when supported by enabling structures and capacities, digital tools like IFMIS can meaningfully strengthen financial oversight. Second, challenges: technological literacy, training, and institutional readiness often limit digital systems' reach and efficacy. Third, governance outcomes: while digital transformation can enhance transparency, efficiency, and trust, these gains are contingent on broader governance reforms and context readiness.

This systematic literature review synthesizes peer-reviewed evidence published between 2015 and 2021 to explore the implementation, challenges, and governance outcomes of digital PFM systems across diverse contexts. Specifically, it examines the conditions and strategies that enable the successful adoption of digital tools such as IFMIS; the technical, organizational, and environmental barriers that often hinder these reforms, particularly in low- and middle-income countries; and

the measurable governance outcomes that result, including improvements in transparency, efficiency, accountability, and reductions in corruption. By integrating cross-national studies, national case analyses, and sub-national perspectives, this review seeks to illuminate when, where, and how digital PFM initiatives succeed or falter. In doing so, it provides actionable insights for policymakers, reform advocates, and development practitioners navigating the complex process of public financial management transformation in the digital age.

2. Literature Review

The literature on digital Public Financial Management (PFM) consistently highlights that technologies like Integrated Financial Management Information Systems (IFMIS) can significantly bolster transparency, fiscal discipline, and efficiency when supported by appropriate institutional frameworks. In South Korea, Jeong and Oh (2019) demonstrate how IFMIS implementation improved real-time fiscal control and procurement, contingent upon institutional readiness and skilled users. Cross-national studies reinforce this: Park and Kim (2020) find that advanced e government correlates with lower corruption, and Zhao et al. (2021) show that cultural and institutional contexts crucially influence the effectiveness of digital reforms. Martí and Kasperskaya (2015) argue further that adoption of accrual-based IPSAS enhances fiscal transparency and resource allocation, although progress is limited by capacity constraints.

In Africa, growing evidence affirms these findings. In Rwanda, Harelimana (2017) reports significant improvements in budgeting, cash management, and

internal controls following IFMIS deployment. In Kenya, research by Mugwe and Ngugi (2017) shows that IFMIS usage in Kiambu County enhances public procurement performance, driven by modules like online tendering, automated planning, and supplier engagement. Ayoo (2020), focusing on Nairobi City County, finds that IFMIS significantly promotes financial accountability, efficiency, and transaction transparency, despite encountering regulatory and awareness challenges. Similarly, Wanyonyi and Theuri (2021) show that IFMIS implementation in Trans Nzoia County improved financial performance by automating budgeting and enhancing cost control mechanisms.

However, structural and organizational barriers frequently impede effective digital transformation. Osano and Ngugi (2018) identifies factors such as staff resistance, insufficient management commitment, system complexity, and low user capacity as key constraints to IFMIS adoption in Kenya's public ministries. These challenges echo broader findings that successful digitalization demands not just technology, but training, governance capacity, and change management support.

Taken together, this literature reinforces three key themes: digital PFM systems can drive improvements in transparency, efficiency, and anti-corruption, but their efficacy depends on institutional capacity, technical infrastructure, and user-centered implementation. The balance between technological potential and contextual readiness is central to whether digital reforms translate into meaningful governance improvements. This foundation sets the stage for the systematic review's exploration of implementation strategies, recurring challenges, and governance outcomes across diverse contexts.

3. Methods

This study employed a systematic literature review (SLR) methodology to synthesize peer-reviewed research on digital Public Financial Management (PFM) systems, with a focus on their implementation, challenges, and governance outcomes across global contexts. The review followed a structured process consistent with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. Relevant studies were identified through a comprehensive search of academic databases including Scopus, Web of Science, ScienceDirect, and Google Scholar. The search was limited to articles published between 2015 and 2021 to ensure relevance to contemporary digital governance trends while maintaining a consistent time frame for comparative analysis.

Keywords used in the search included combinations of terms such as "digital public financial management", "IFMIS", "PFM reform", "e-government and accountability", "financial transparency", "fiscal control", and "governance outcomes". Inclusion criteria required that studies be published in peer-reviewed journals or academic repositories, be written in English, and focus on empirical or conceptual analysis of digital PFM systems at national or subnational levels. Grey literature, conference proceedings, and policy briefs were excluded unless they were published by recognized international institutions and contained robust empirical data.

Initial screening involved title and abstract reviews, followed by full-text analysis of eligible studies. A total of 12 articles met the inclusion criteria and were selected for in-depth review. Data were extracted using a standardized coding

protocol that captured publication details, geographical context, type of digital PFM system, methodological approach, key findings, and noted limitations. Thematic analysis was employed to identify recurring implementation patterns, challenges, and governance outcomes. The review also sought to map regional differences and institutional factors influencing digital PFM adoption.

4. Results and Discussion

The findings from this systematic review of 12 peer-reviewed studies (2015-2021) highlight a complex yet promising landscape for digital Public Financial Management (PFM) reforms. A central pattern observed across contexts is that digital tools such as Integrated Financial Management Information Systems (IFMIS), e-government platforms, and electronic procurement systems contribute positively to transparency, fiscal control, and accountability provided that institutional, technical, and human capacity conditions are favorable. In South Korea, for example, Jeong and Oh (2019) show that IFMIS adoption enabled real-time budget tracking, enhanced spending efficiency, and reduced discretionary manipulation of public funds. Similarly, Park and Kim (2020) present cross-national evidence that robust digital PFM mechanisms are correlated with reduced corruption and increased government effectiveness.

At the national level in developing countries, Rwanda's implementation of IFMIS resulted in significant improvements in internal control systems and reporting accuracy (Harelimana, 2017). In Kenya, county-level studies reveal comparable benefits. Mugwe and Ngugi (2017) notes that the digitalization of procurement

processes through IFMIS modules led to increased competitiveness and transparency in tendering procedures. Wanyonyi and Theuri (2021) observe that IFMIS improved cash management, budget execution, and accountability in Trans Nzoia County. Nairobi County's experience also showed that while IFMIS promoted transparency, challenges related to regulatory enforcement and user capacity remained persistent (Ayoo, 2020).

However, digital PFM reforms face several recurring challenges. A substantial body of research emphasizes technical constraints, poor ICT infrastructure, limited user training, and weak political commitment as barriers to effective implementation (Martí & Kasperskaya, 2015; Elgohary, 2017). These barriers are often more pronounced in low-income or post-conflict contexts where institutional capacity is limited. Mahlangu and Ruhode (2021), examining e-government gaps in Zimbabwe, found that lack of stakeholder engagement and inadequate change management undermined the sustainability of digital systems. Similarly, technical challenges such as system interoperability, data inconsistencies, and internet connectivity bottlenecks were found to hinder the seamless integration of financial data (Zhao et al., 2021).

The review also shows that governance outcomes vary according to reform design and local adaptation. Successful cases often feature gradual, modular implementation rather than top-down, large-scale digital rollouts. For example, countries that adopted IFMIS in phases starting with budgeting modules before scaling to procurement and audit functions, reported higher success rates (Harelimana, 2017; Jeong & Oh, 2019). Conversely, rushed reforms without proper stakeholder buy-in or contextual adaptation led to technical failures and user

resistance. Capacity-building efforts, including extensive user training and alignment with legal frameworks, emerged as essential enablers for long-term success (Park & Kim, 2020).

Another insight is the importance of political will and anti-corruption frameworks in shaping outcomes. In many cases, the presence of strong accountability institutions amplified the impact of digital tools on reducing leakages and enhancing fiscal discipline. Elgohary (2017) underscores the role of civil society and media in using digital financial data for oversight, particularly in African and Middle Eastern countries where traditional accountability mechanisms are weak. Moreover, Martí and Kasperskaya (2015) note that digital systems are most effective when integrated with performance-based budgeting and results monitoring.

Overall, the review reveals that while digital PFM systems hold significant potential to transform public sector governance, their effectiveness depends on a synergy of technological innovation, institutional reforms, and socio-political alignment. Governments must invest not only in systems infrastructure but also in human capital, regulatory frameworks, and inclusive reform processes. The variability in outcomes across countries demonstrates that digital transformation in public finance is not a one-size-fits-all solution but a complex, adaptive process that requires local tailoring and continuous learning.

5. Conclusion

This systematic review confirms that digital Public Financial Management (PFM) systems such as Integrated Financial Management Information Systems

(IFMIS), e-procurement platforms, and digital budgeting tools, have the potential to significantly improve transparency, efficiency, and accountability in public sector governance. Case studies from countries like South Korea, Rwanda, and Kenya illustrate that when properly implemented, these systems can enhance fiscal control, reduce leakages, and promote timely and accurate financial reporting. However, the review also reveals that digital PFM is not a one-size-fits-all solution. The success of these reforms depends on several interrelated factors, including technical infrastructure, institutional capacity, stakeholder engagement, and political will.

Despite these opportunities, many countries particularly in developing regions, face persistent challenges such as limited ICT infrastructure, inadequate user training, system interoperability issues, and resistance to change. These barriers often undermine the intended governance outcomes of digital PFM systems. For digital reforms to be effective and sustainable, they must be embedded within broader institutional and policy frameworks, supported by consistent political commitment and capacity-building efforts. As governments continue to adopt digital tools for financial management, ensuring local adaptation, stakeholder inclusion, and continuous learning will be essential to achieving long-term governance improvements.

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