

Digital Innovation in Public Fund Management for Public Housing Financing: A Systematic Review Towards Smart Governance and Its Implications in DKI Jakarta

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ABSTRACT

This study examines digital innovation in public fund management for affordable housing financing through a Systematic Literature Review (SLR) approach, aiming to explore its contribution to the realization of smart governance. The review synthesizes relevant studies on digital governance, public financial management, and housing policy to identify patterns, challenges, and research gaps. The findings indicate that digital innovation—such as e-budgeting, integrated financial systems, and data-driven governance—has significantly improved administrative efficiency, transparency, and accountability in public finance. However, its impact on affordable housing financing remains limited due to fragmented institutional coordination, insufficient data integration, and weak organizational capacity. The study reveals that digital transformation often remains at a procedural level and fails to produce substantive governance improvements. Addressing this limitation, the study proposes an integrative framework in which smart governance is achieved through the alignment of three key dimensions: digital infrastructure, institutional capacity, and collaborative governance processes. This framework highlights that technological advancement alone is insufficient without organizational readiness and cross-sector coordination. The findings offer theoretical contributions to Public Administration by integrating digital governance and public financial management within the housing sector. Practically, the study provides policy implications relevant to urban contexts, including DKI Jakarta, in enhancing effective and data-driven housing finance governance.

Keywords: Digital Governance, Public Fund Management, Public Financial Management, Smart Governance, Systematic Literature Review

I. INTRODUCTION

Rapid urbanization in major cities has increased the pressure on public housing, particularly for low-income communities. Limited land, rising property prices, and unequal access to adequate housing are key challenges to sustainable urbanization. In this context, public housing financing is a crucial policy instrument, the effectiveness of which depends heavily on the quality of public fund management (PFM).

Public fund management in the housing sector is not only related to budget availability but also encompasses aspects of efficiency, transparency, accountability, and accurate targeting of beneficiaries. Various studies have shown that the main problem in public housing financing often lies in weak governance, such as inefficient budget allocation, institutional fragmentation, and a lack of beneficiary data integration. These conditions result in financing policies that cannot optimally address community needs.

Along with the development of information technology, digital innovation in public administration has emerged as a strategic approach to improving public financial governance (PFG). Digitization through systems such as e-budgeting, e-planning, and the integration of financial information systems is believed to increase process efficiency, strengthen transparency, and support data-driven decision-making (data-driven governance). However, various studies have shown that digitalization does not automatically result in improved governance, especially when it is not accompanied by adequate institutional readiness and system integration. Studies on digital governance and public financial management have grown rapidly. However,

most studies still address these two aspects separately, and relatively few specifically examine the relationship between digital innovation in public fund management and public housing financing effectiveness. Furthermore, studies that integrate a smart governance perspective which emphasizes the synergy between technology, institutions, and collaboration between actors and are still limited, particularly in the housing sector context.

Based on this gap, this study uses a Systematic Literature Review (SLR) approach to synthesize empirical and conceptual findings related to digital innovation in public fund management in the public housing sector. Through this approach, the research aims to identify patterns, trends, and gaps in the literature while developing a more comprehensive understanding of how digital innovation can contribute to the realization of smart governance.

Although this research does not focus on a specific empirical location, the findings are analyzed for their relevance to the urban context, particularly Jakarta. As a metropolitan area with a high level of urbanization and significant complexity of housing issues, Jakarta serves as a relevant context for understanding the policy implications of digital innovation in managing public funds in the housing sector. Therefore, this study is expected to provide theoretical contributions to the development of public administration studies, particularly on the integration of digital governance, public financial management, and housing policy. Furthermore, this study is expected to serve as a reference for formulating more effective, transparent, and adaptive policies to support public housing financing in urban areas.

Studies on digital innovation in the public sector have grown rapidly over the past two decades, particularly within the frameworks of digital governance and public financial management (PFM) reform. The literature shows that the adoption of technologies such as e-budgeting, financial management information systems (FMIS), and e-procurement can improve administrative efficiency, fiscal transparency, and accountability. This approach is also supported by the development of the concept of data-driven governance, which places data as the primary basis for policy decision-making.

In contrast, studies on public housing financing have focused more on subsidy policies, access to financing, and housing market mechanisms. These studies emphasize the importance of government intervention in addressing market failures and ensuring housing access for low-income communities in Malaysia. However, attention to the governance of public funds in this sector remains limited.

Recent developments in the literature have begun to point to the integration of digitalization and public governance through the concept of smart governance, which emphasizes the synergy between technology, institutional capacity, and collaboration among actors. However, most research still positions digitalization as a technical variable without comprehensively linking it to institutional dynamics and the effectiveness of sectoral policies, including in the public housing sector.

II. METHODS

This study uses a qualitative approach with the Systematic Literature Review (SLR) method to analyze digital innovation in public fund management for public housing financing. This approach was chosen because the study aims to synthesize existing scientific findings, identify patterns, and construct a conceptual understanding of the relationship between digital transformation and public financial governance. A qualitative approach in literature review allows researchers to conduct in-depth interpretations of the phenomena studied, as explained by John W. Creswell. The SLR method in this study refers to systematic principles in searching, selecting, and analyzing literature to minimize bias and increase research transparency. The review process was carried out by adopting the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework, which includes the stages of identification, screening, eligibility, and inclusion of articles. Data sources were obtained from reputable scientific databases, namely Scopus, Web of Science, and Google Scholar. The literature search was conducted using a combination of keywords such as "digital governance," "public financial management," "housing finance," and "e-budgeting." Inclusion criteria for this study included: (1) articles from reputable journals, (2) relevant to the topic of digital innovation and public fund management, and (3) published within a specific timeframe (e.g., the last 10 years). Articles that were irrelevant, duplicated, or did not meet quality standards were eliminated through a selection process.

The data in this study consisted of empirical and conceptual findings obtained from selected articles. Therefore, the data analyzed were not primary field data but secondary data based on the scientific literature. Data analysis was conducted using thematic analysis techniques by identifying, categorizing, and synthesizing the main themes that emerged from the literature related to digital innovation, public fund management, and public housing financing. Theoretically, this study uses the frameworks of digital governance, New Public Governance (NPG), and Public Financial Management (PFM) as the basis for the analysis. Digital governance

is used to understand the role of technology in the transformation of public administration, NPG to explain the importance of collaboration between actors, and PFM to analyze the public fund management cycle.

To ensure the validity and reliability of the study, we applied the principles of transparency in the literature selection process and consistency in thematic analysis. With this approach, the research is expected to produce a comprehensive conceptual synthesis of how digital innovation contributes to the realization of smart governance in the management of public funds in the public housing sector.

III. RESULTS AND DISCUSSION

Based on a systematic synthesis of the relevant literature, this study reveals that digital innovation in public fund management has developed significantly over the past two decades, particularly within the framework of digital governance and public financial management reform. Various studies have shown that the use of digital technologies such as e-budgeting, financial management information systems, and integrated financial platforms can improve administrative efficiency, accelerate the budgeting process, and strengthen transparency and accountability in public fund management. Digitalization also contributes to reducing information asymmetry through more systematic and traceable transaction records.

However, the literature synthesis also shows that these developments remain partial, particularly when linked to the public housing finance sector. Most studies discussing digital innovation in public finance tend to focus on macro-level aspects, such as budget system reform or the general modernization of state financial administration. However, studies linking digital innovation to public housing finance effectiveness are limited. This confirms a thematic gap in the literature, where the housing sector has not yet become a primary focus of the discourse on the digitalization of public finance.

Furthermore, this study found that these limitations are not only thematic but also integrative in nature. The existing literature tends to separate technological, institutional, and public policy dimensions. Many studies position technology as the primary solution without considering underlying institutional readiness and organizational dynamics. However, the successful implementation of digital innovation depends heavily on an institution's ability to manage change, including human resource readiness, regulatory adaptation, and coordination between the actors involved. Without adequate integration, digitalization has the potential to produce only technical administrative efficiencies without significantly impacting the quality of governance. These issues are further complicated in the context of public housing finance. The study results indicate that public fund management in this sector still faces various challenges, such as inaccurate targeting of aid recipients due to non-integrated data, inefficient budget allocation due to weak coordination between institutions, and low transparency in public fund distribution. These issues indicate that digitalization has not fully addressed the structural challenges of housing finance governance.

Another important finding is the conceptual gap in the use of the term "smart governance." In much of the literature, this concept is often used to describe modern and efficient technology-based governance. However, most studies have not provided a clear operational definition of how smart governance can be realized in practice, particularly in the context of public fund management in the housing sector. Consequently, digitalization is often assumed to automatically result in smart governance, without considering other factors such as institutional capacity and collaboration between actors.

Based on the synthesis conducted, this study identifies that smart governance in public fund management cannot be understood solely as technology adoption but must be viewed as an integrative process involving three main dimensions: technology, institutions, and governance. Technology provides the digital infrastructure that enables efficiency and transparency, but without the support of adequate institutional capacity and collaborative governance mechanisms, the potential of this technology will not be optimized. Therefore, a successful digital transformation is one that is able to integrate these three dimensions simultaneously. Furthermore, this study highlights a contextual gap in the literature, where most studies are conducted in the context of developed countries or on a general national scale. This results in a lack of attention to the dynamics of urban areas in developing countries that are highly complex, such as urbanization pressures, land constraints, and the diversity of actors in housing governance. In this regard, the research findings are relevant to urban contexts such as DKI Jakarta, which faces significant challenges in providing public housing while simultaneously encouraging the digital transformation of governance. This complexity demands a more integrative and adaptive approach to public fund management.

Overall, the results of this study indicate that digital innovation has significant potential to improve the quality of public fund management, particularly in terms of efficiency, transparency, and accountability. However, this potential has not been fully realized in the context of public housing financing due to various limitations at the conceptual, institutional, and implementation levels. Digitalization that is not accompanied by institutional reform and strengthened collaborative governance tends to result in administrative rather than

transformational changes. Therefore, this study emphasizes that realizing smart governance in the management of public funds in the housing sector requires a holistic and integrative approach. Digital transformation must be understood as part of a broader governance reform, which includes strengthening institutional capacity, integrating systems and data, and increasing collaboration between actors. Without this, digital innovation risks becoming merely a symbol of administrative modernization without having a real impact on the effectiveness of public housing policies.

IV. CONCLUSIONS

1. This study shows that digital innovation in public fund management has significant potential to improve efficiency, transparency, and accountability, but its contribution to public housing financing remains limited. A literature synthesis confirms the thematic, integrative, conceptual, and contextual gaps in existing studies. Digitalization tends to stop at the administrative level and has not been integrated into institutional capacity and collaborative governance processes.
2. The main findings of this study emphasize that smart governance cannot be achieved through technology adoption alone, but rather through the integration of digital infrastructure, institutional capacity, and data-driven and collaborative governance mechanisms. Therefore, the effectiveness of public fund management in public housing financing is largely determined by the extent to which these three dimensions are integrated. The implications of these findings are relevant for urban contexts such as Jakarta, which faces high complexity in housing policy and digital transformation.

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Ethical Compliance

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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Conflict of Interest Declaration

The authors declare that they have no affiliations or involvement with any organization or entity with financial interests in the subject matter or materials discussed in this manuscript.

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