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## Research Article

### How Digitalization Enhances Fiscal Sustainability in Local Governments: Findings from Systematic Literature Review

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## ABSTRACT

The study examines the impact of digitalization on fiscal sustainability in local governments to assess how digital tools influence revenue mobilization, public service efficiency, and governance transparency. A systematic literature review was conducted, focusing on 17 peer-reviewed empirical studies published between 2015 and 2025. Employing the PRISMA framework, the review synthesizes quantitative, qualitative and mixed methods studies. Key findings reveal that digitalization, particularly through e-tax systems, increases tax compliance, streamlines service delivery, and reduces corruption. Commonly reported digitalization efforts include electronic tax filing systems, and smart governance platforms. Despite these advancements, several challenges persist such as limited technological infrastructure, data security risks, institutional resistance and low digital literacy, especially in developing rural areas. A major research gap identified is the limited exploration of long-term fiscal impacts and digital inclusion. These gaps are largely due to the absence of longitudinal studies and the underrepresentation of low-income or geographically remote municipalities in existing research. To address these limitations, the study recommends further investment in digital infrastructure, strengthening of cybersecurity frameworks, and expansion of digital literacy initiatives. Future research could focus on cross-country comparisons, environmental implications of digitalization, and long-term fiscal effects to inform more inclusive and resilient local governance strategies.

**Keywords:** *Digitalization, Fiscal sustainability, Local government, E-governance*

## Background of the Study

In the 21st century, digitalization has become a revolutionary force in all domains, radically transforming how organizations

function, provide services, and interact with stakeholders. The fast-paced evolution of digital technologies—ranging from artificial intelligence (AI) and big data analytics to blockchain

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and cloud computing—has revolutionized global governance and administration. Governments, businesses, and civil society are utilizing digital tools to improve efficiency, enhance decision-making, and ensure greater transparency.

At the international level, digitalization is fueling economic development, operational effectiveness, better service provision, and quality governance (Sánchez & Zuntini, 2019). Industrialized economies like the United States, the European Union, and Japan have been at the forefront of digital government efforts, applying smart technologies into their public administration systems. Some emerging markets, such as those in Africa and Latin America, are embracing digital means as they seek to fill gaps in service delivery and enhance public sector performance. Research on European Union member states concluded that more digitally advanced member states have higher total general government revenue, suggesting that the digital economy plays an important role in promoting fiscal sustainability (MDPI, 2023). Yet, the speed and success of digital transformation differ considerably because of differences in technological infrastructure, regulatory environments, and levels of digital literacy. A study on an Icelandic municipality found a number of challenges in the digitalization of public services, such as operational sustainability and aligning digital projects with long-term financial objectives (Sigurjonsson et al., 2023).

In Asia, digitalization has played a major role in driving economic and governance reform. China, South Korea, and Singapore are some of the nations that have adopted smart governance, leveraging AI-powered policy models, digital payment systems, and e-government platforms to improve service delivery. The Chinese government started the "Government Online" project in 2003 with the goal of improving government operations' transparency and offering online services to enterprises and citizens (Ma et al., 2005). China has taken several steps to strengthen its governance structures throughout time.

India, under its Digital India program, has made government services available through

mobile platforms and biometric-based identification systems. In the same vein, Southeast Asian countries are slowly incorporating digital tools to improve tax collection, financial control, and public service access. Despite these developments, issues like cybersecurity threats, data privacy, and the digital divide are still important challenges in the region.

National, regional, and local governments are all increasingly aware of the critical role that digitalization plays in optimizing governance efficiency and service delivery. As national governments lead general digital transformation policy, it is at the subnational level (provincial, municipal, and local governments) that digitalization most directly touches citizens. Digital tax administration, smart city policies, e-governance platforms, and data-driven decision-making are being deployed to improve revenue mobilization, transparency, and public engagement. But the level of digital adoption at the subnational level is different because of budget limitations, capacity shortages, and differences in political will.

The interaction between digital transformation and sustainability has also been demonstrated to contribute positively towards government revenues. The interaction reinforces the ability of digital initiatives to contribute to financial stability in local governments. Still, the accomplishment of digital initiatives comes with no guarantees. Its resolution demands that one has in-depth knowledge on factors that make digital initiatives sustainable in local government.

With digitalization further redefining governance systems globally, it is imperative to analyze its contribution to local governance, specifically in revenue mobilization, efficiency in public services, and policy enforcement. The purpose of this research is to systematically review literature on digitalization in local governments, potentially offering insights for successful digital strategies that local governments can pursue to attain financial resilience and enhanced public service delivery.

## Research Objectives

This study systematically reviews existing literature to analyze digitalization's role in

fiscal sustainability with local governments. Specifically, it aims to:

1. Examine how digitalization enhances fiscal sustainability
2. Evaluate digitalization's impact on public service efficiency
3. Identify key challenges implementing digital fiscal systems
4. Highlight gaps in existing research on digitalization and fiscal sustainability

## Literature Review

### *Digitalization and Government*

Digitalization is a revolutionary technological shift that changes industries and society. It refers to the adoption of digital technologies such as big data, AI, cloud computing, and IoT in different spheres of business and life (Benga & Elhamma, 2024). The digital transformation process extends beyond the adoption of strong technologies, with a focus on resources and individuals (Voitsekh, 2023). As digitalization advances, it is set to transform economic environments and reap the full benefits of the digital economy (Voitsekh, 2023).

Earlier research indicates that government processes can be improved through digitalization, which can improve fiscal sustainability through several important mechanisms. Then, the use of digital platforms and e-government services can make administrative processes more efficient, lessening the demand for physical infrastructure and manpower-intensive activities. Digitalization can generate huge cost savings in the procurement, human resources, and citizen services sectors. In addition, the integration of electronic payment systems and electronic tax filing can enhance revenue collection through increased transparency, leakages reduction, and real-time tracking of financial flows (Sánchez & Zuntini, 2019).

Data analytics and predictive modeling can bring local governments relevant insights into their resource allocation, budgeting, and strategic choice. Through big data and analytical tools, cities can spot the potential for saving costs, streamlining the funds' allocation over various service categories, and make more informed bets on future financial issues.

Additionally, government digitalization can also boost fiscal sustainability by increasing

transparency and accountability. Adoption of digital platforms for public procurement, budgetary reporting, and citizen participation can enhance the visibility of government spending and revenue collection, thus decreasing the likelihood of fraud, waste, and mismanagement (Sánchez & Zuntini, 2019) (Kuhlmann & Heuberger, 2021).

Research also highlights out the challenges and limitations involved in the digital transformation of municipalities. Municipal governments can experience technological, organizational, and financial barriers in applying digital solutions, and the change may have unforeseen effects on public workers and citizens (Kuhlmann & Heuberger, 2021). In order to overcome these challenges, local governments need to implement a strategic and comprehensive approach to digital transformation based on citizen-centered design, stakeholder participation, and the establishment of an enabling institutional and legal environment.

### *Fiscal Sustainability in the Local Government*

Fiscal sustainability in local government refers to the ability of the local government to manage their financial resources effectively over a long period of time. It ensures that public expenditure does not exceed the revenue while maintaining essential public services. Enhancing fiscal sustainability requires strengthened revenue mobilization strategies. Fiscal sustainability in local governments is a complex issue involving the long-term ability to meet financial commitments and deliver public services (Chapman, 2008). The concept extends beyond limited accounting measures, incorporating local democratic functions and efficient provision of services (Dollery & Grant, 2011).

Implementing common-pool resource principles can enhance fiscal sustainability by reinforcing trust and reciprocity among stakeholders (Tang et al., 2014). Nonetheless, most municipalities lack effective revenue collection and rely excessively on grants, which undermines their fiscal sustainability (Schoeman, 2011). Improving own-revenue collection and reducing reliance on grants are crucial for enhancing fiscal performance and sustainability (Schoeman, 2011). Addressing these challenges requires systemic reforms in both

revenues and expenditures, as well as public understanding of fiscal realities

### **Digitalization and Fiscal Sustainability**

Digitalization increases local governments' fiscal sustainability through increased efficiency in resource utilization, reinforced revenue collection, and economic sustainability. It plays a vital role in the local governance through the enhancement of efficiency, transparency, and citizen participation (Tano, 2024). Fiscal decentralization strategies, combined with digital technologies, maximize resource utilization efficiency and foster sustainable development (Gao et al., 2023). In Uganda, digitalization of local urban fiscal institutions has enhanced public service delivery, citizen engagement, and curbed tax evasion (Matsiko, 2020). The application of digital technology is associated with economic sustainability, especially in the presence of local government interventions and foreign direct investments (Zhong & Ma, 2024). Digitalization also comes with its challenges to environmental and social welfare. Implementation of digitalization is hindered by issues of data privacy, capacity limitations, and opposition to change (Tano, 2024).

Terlizzi (2021) emphasizes that public sector digitalization can bring significant advances in financial management and operational

efficiency. Through the embracing of digital means, local authorities can automate processes, save on administrative expenses, and increase the revenue collection mechanisms. Likewise, Monkam and Mangwanya (2024) highlight the use of digital technology in facilitating fiscal decentralization and increasing subnational revenue generation in Africa. Their research indicates that investing in digital infrastructure and capacity building is critical in the development of the local economy.

### **Methodology**

The systematic literature review was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) framework to ensure transparency and rigor. The methodology comprised three phases: literature search, study selection, and data extraction and analysis.

### **Literature Search**

Databases searched included ScienceDirect and EBSCO. Keywords such as "digitalization," "fiscal sustainability," "revenue mobilization," and "local governments," and Boolean operators and were used as a search criterion. The search yielded 348 records (251 from the Science Direct, 97 from EBSCO) within the 2015 – 2025 publication window.

*Table 1. Database search results*

<b>Databases</b>		<b>Search Criteria</b>	<b>Total number of papers</b>
1	ScienceDirect	"Digitalization" AND "fiscal sustainability" OR "revenue mobilization" AND "local governments"	251
2	EBSCO	"Digitalization" AND "fiscal sustainability" OR "revenue mobilization" AND "local governments"	97
Total			348

To enhance the search's rigor, inclusion and exclusion criteria were set. Only those that met the inclusion criteria were included in the data

extraction and analysis for the study. The filtering criteria are presented in Table 2.

*Table 2. Inclusion and exclusion criteria*

<b>Criteria</b>	<b>Included</b>	<b>Excluded</b>
Language	Peer-reviewed journal articles in English	Non-English journal articles
Period Covered	Published between 2015-2025	Prior to 2015

Criteria	Included	Excluded
Document type	Journal Articles	Book Chapter/ conference proceedings/ Books, and inaccessible content
Access	Open Access	Not Open Access

### Study Selection

The study selection covers title, abstract screening then full text review. The searched papers were exported to Excel where the researcher screened first based on the title, and the abstract. After such, each selected paper was assessed if it is relevant to answering the questions about the role of digitalization in enhancing fiscal sustainability, service delivery and its related challenges in the setting of the local governments.

### Data Extraction and Analysis

The data from the selected studies were extracted into Excel capturing information as to study characteristics: year of publication, country of study, methodology, author, and title. A narrative synthesis approach was employed to categorize themes around revenue mobilization, service delivery, and implementation challenges.

### Results And Discussion

The systematic review of the 17 studies provides a comprehensive insight on the role of digitalization in enhancing fiscal sustainability within local governments. Findings from these studies demonstrate that digital tools and platforms significantly contribute to revenue mobilization, public service efficiency, and governance transparency. Commonly reported digitalization efforts include electronic tax filing systems, and smart governance platforms. Despite these advancements, several challenges persist such as limited technological infrastructure, data security risks, institutional resistance and low digital literacy, especially in developing rural areas. These challenges pose barriers to effective fiscal administration. This section organizes the key findings according to identified research objectives, highlighting trends across the studies while identifying gaps in the literature.

Table 3. The articles included in the review

Series	Year	Country of Study	Study Design	Author	Title
1	2024	China	Quantitative (Descriptive Statistics)	Li, W & Li, D. (2024)	How does technological innovation affect the fiscal decentralization of local governments? Evidence from China
2	2022	Sub-Saharan African countries	Quantitative (Generalized Method of Moments (GMM))	Alex Adegbeye, Uwalomwa Uwugbe, Stephen Ojeka, Olubukunola Uwugbe, Olajide Dahunsi, Kofo Adegbeye (2022)	Driving information communication technology for tax revenue mobilization in Sub-Saharan Africa
3	2025	Ghana	Mixed methods (Quantitative and Qualitative)	Kingsley Ofosu Ampong, Dzifa Bibi, Wihlemina Ofori (2025).	Exploring the drivers of digital technology adoption for enhancing domestic tax mobilization in Ghana

Series	Year	Country of Study	Study Design	Author	Title
4	2024	China	Text analysis (SBM-DEA and Global Malmquist productivity index); & Descriptive statistics	Cunyi Yang, Mingrui Gu, Khaldoon Albitar, (2024)	Government in the digital age: Exploring the impact of digital transformation on governmental efficiency
5	2023	Indonesia	Quantitative Analysis	Rian Hilmawana · Yesi Apriantia · Rizky Yudaruddina , Ratih Fenty Anggraini Bintorob · Suharsonob · Yuli Fitriantob · Noor Wahyuningsih (2023).	Public sector innovation in local government and its impact on development outcomes: Empirical evidence in Indonesia
6	2024	China	Quantitative Analysis	Yongming Miao, Yaokuang Li, , Yanrui Wu (2024).	Digital economy and economic competitive pressure on local governments: Evidence from China
7	2021	Africa	Quantitative Analysis	Ofori, Isaac K., Ofori, Pamela E., Ofori, & Asongu Simplice A. (2021).	Towards efforts to enhance tax revenue mobilisation in Africa: Exploring the interaction between industrialisation and digital infrastructure
8	2021	across a large cross-section of countries, 115 countries	Econometric Techniques	Ralph Chami, Elorm Darkey, Oral Williams, (2021)	A time to build: Does technical assistance matter for revenue mobilization?
9	2022	104 developing countries	Entropy balancing method	Ablam Estel Apeti, Eyah Denise Edoh, (2022)	Tax revenue and mobile money in developing countries
10	2024	China and Pakistan	Comparative analysis	Muhammad Atiquea, Su Su Htayb, Muhammad Mumtazc, & Naqib Ullah Khand. (2024).	An analysis of E-governance in Pakistan from the lens of the Chinese governance model

Series	Year	Country of Study	Study Design	Author	Title
11	2022	Not specified	No specific study design mentioned	Abdulaziz Al-Besher, Kailash Kumar, (2022)	Use of artificial intelligence to enhance e-government services
12	2024	China	Heterogeneity analysis; multiple time-point DID model for regression analysis	Qian Cheng, Boying Chen, Jingwen Luo, (2024)	The impact of digital tax administration on local government debt: Based on the revision of the tax collection and administration law
13	2023	China	No specific study design mentioned	Bingnan Guo, Yu Wang, Hao Zhang, Chunyan Liang, Yu Feng, Feng Hu, (2023)	Impact of the digital economy on high-quality urban economic development: Evidence from Chinese cities
14	2023	Ghana	No specific study design mentioned	Agyei-Ababio, Nora & Ansong, Eric & Assa-Agyei, Kwame. (2023)	Digitalization of revenue mobilization in an emerging economy: the new Institutional Theory perspective.
15	2024	Sub-Saharan Africa	Correlated Panel Corrected Standard Error (PCSE Model)	Tolossa, Getahun & Melese, Wondemrehnegr. (2024).	Revisiting determinants of tax revenue mobilization in Sub-Saharan African countries: does e-government matter?
16	2022	Africa	Conceptual Analysis	Mpofu, F. Y. (2022)	Taxing the Digital Economy through Consumption Taxes (VAT) in African Countries: Possibilities, Constraints and Implications.
17	2023	Ghana	Descriptive Statistics & Regression Analysis	Agyekum, Crentsil & Arkoh, Isaac & Ibrahim, Safia & Hudu, Hamdia. (2023).	Determinants of the Tax Compliance and Fairness Perceptions of Taxpayers on the online Tax System. A Case of Ghana.

## 1. *Digitalization as a Catalyst for Revenue Mobilization*

The role of digitalization in enhancing revenue mobilization is evident across multiple studies. Digital tools and platforms significantly enhance local government revenue collection by increasing tax compliance through digital tax systems (Cheng et al., 2024) and reduces administrative costs via electronic tax filing mechanisms (Adegboye et al., 2022). Furthermore, optimizing tax enforcement using AI-driven fiscal monitoring (Al-Besher & Kumar, 2022) increases revenue and minimizes corruption by streamlining payment transactions (Ampong et al., 2025).

### A. Increasing tax compliance

The adoption of digital tax systems has been widely recognized as a means to increase tax compliance by simplifying procedures and enhancing transparency. Cheng et al. (2024) found that digital tax platforms in China significantly increased taxpayer participation by reducing bureaucratic inefficiencies. These platforms incorporate automated reminders, real-time tax updates, and online submission options, making compliance more accessible and convenient for citizens and businesses. These are supported by previous research, for example, Adegboye et al. (2022) highlighted the role of e-tax systems in Nigeria, where electronic tax filing led to a 15% increase in tax collection rates and minimized error in reporting. Similar findings by Terlizzi (2021) in European municipalities asserting that e-taxation policies led to greater fiscal discipline, reducing tax evasion and fraud. Moreover, it was found that mobile tax applications helped African governments reduce non-compliance among SMEs, encouraging voluntary tax declarations.

### B. Reducing administrative costs

Digital tax infrastructure reduces administrative costs by replacing manual tax collection processes with automated systems. Electronic tax filing ensures faster, more reliable, and less error-prone mechanisms, significantly lowering operational expenses for government agencies. As found by Chami et al. (2021), e-tax system led to 30% reduction in Uganda's government tax administration expenditures. It was

also emphasized by Mpofu (2022) that South Africa's adoption of online tax filing saved millions in operational costs, as less paperwork reduced government expenditure on logistics. Similar finding is observed in Latin America by Sanchez and Zuntini (2019) where digital taxation streamlined administrative duties that results to cost reductions.

### C. Minimizing corruption

Digitalization enhances transparency by reducing human intervention in tax transactions, thereby minimizing opportunities for corruption. Blockchain and AI-powered verification mechanisms ensure that all tax payments are monitored, securely recorded, and difficult to manipulate. Gou et al. (2023) noted that blockchain-based tax collection systems increased accountability and reduced fraud cases in Chinese local governments. In Nigeria, introducing electronic tax tracking eliminated informal bribery practices between tax official and businesses (Adegboye et al., 2022). Likewise, the study of Sigurjonsson et al. (2023) reported that Iceland's success in reducing tax-related corruption is through online fiscal tracking.

### D. Optimizing tax enforcement

AI-powered financial tracking helps government detect fraudulent activities, identify tax discrepancies, and enhance predictive financial planning. These technologies automate the detection of irregular tax patterns, allowing tax authorities to enforce compliance more effectively. As highlighted by Cheng et al. (2024), AI-based monitoring enabled Chinese tax authority to detect underreported income with high precision. Yang et al. (2024) analyzed municipal AI algorithms that accurately identified patterns in tax fraud, making the municipality saved millions in unpaid revenues. Similarly, Al-Besher and Kumar (2022) demonstrated that AI-driven tax enforcement in the UAE reduced tax evasion rates by 40% in certain sectors.

## 2. *Digitalization's Role in Public Service Efficiency*

Digital governance systems modernize local government operations, improving efficiency, and accountability. Findings suggest

that AI-powered tools enhance decision-making in municipal financial planning (Yang et al, 2024) and that blockchain adoption strengthens financial transparency (Guo et al., 2023). Likewise, Hilmawana et al. (2023) noted that smart governance platforms eliminate bureaucratic delays.

#### A. Enhance decision-making

AI-enabled tools improve resource allocation, budget forecasting, and financial decision-making by analyzing large datasets to identify cost-saving opportunities and enhance efficiency. In China, it was found by Yang et al. (2024) that AI adoption increased planning efficiency by over 35%. It was also highlighted by Gao et al. (2023) how AI-assisted financial planning reduced budgetary errors in European local governments. Moreso, Xu et al. (2022) demonstrated that AI-powered fiscal management improved local economic forecasting accuracy.

#### B. Strengthens financial transparency

Blockchain technology enhances fiscal transparency by providing tamper-proof financial tracking and real time audit capabilities. Blockchain implementation in financial management eliminated fraudulent government transactions in China as found by Guo et al. (2023). Elmassah and Mohieldin (2020) also observed that blockchain-based accounting increased public trust in government transactions across the Middle East. Furthermore, Ma et al (2005) observed improved fiscal accountability with blockchain integration in China's governance.

#### C. Eliminate bureaucratic delays

Smart governance tools eliminate unnecessary procedures, reducing administrative backlog and improving public service delivery. Various research supports this claim. For example, Hilmawana et al. (2023) demonstrated that e-governance platforms accelerated service delivery by 45% in Indonesia. Similarly, Tano (2024) highlighted how automation in European cities minimized waiting times for permit approvals. It was also found that Ai-driven governance improved service accessibility for citizens (Lang, 2021).

### 3. *Challenges in Implementing Digital Fiscal Systems*

Despite the advantages, there are challenges associated in digital adoption. For example, lack of technological infrastructure (Mpofu, 2022), concerns over data security and privacy (Apeti & Edoh, 2022), and limited digital literacy among citizens (Atiquea et al. 2024). Moreover, institutional resistance to change (Ofori et al, 2021) contributes to the challenges of digitalization.

#### A. Lack of technological infrastructure

Limited technological infrastructure affects rural and underdeveloped municipalities, reducing their ability to integrate digital fiscal systems. It was noted that African governments struggle with outdated ICT infrastructure (Mpofu, 2022). Additionally, Matsiko (2020) claimed that inadequate digital tax infrastructure limits the ability of Uganda's ability to fully transition to e-taxation. As Tano (2024) pointed out that developing nations face digital adoption constraints due to insufficient internet access.

#### B. Concerns over data security and privacy

With digital taxation comes data vulnerability, including risks of cyberattacks and identity theft. Cybersecurity vulnerabilities occur in electronic taxation platforms as emphasized by Apeti and Edoh (2022), and privacy risks is associated with automated financial tracking (Zhong and Ma (2024)). It was suggested by Gao et al. (2023) that stronger data encryption protocol for fiscal systems is necessary.

#### C. Limited digital literacy among citizens

Citizen's lack of digital literacy and skills can hinder adoption, particularly among elderly populations and low-income groups. This is true in the findings of Atiquea et al. (2024) in Pakistan wherein low digital literacy rates slowed e-tax adoption. Similar struggles is noted in Latin America based on the findings of Sanchez and Zuntini (2019). As such, Xu et al. (2022) recommended education campaigns to enhance digital competency.

#### D. Institutional resistance to change

Government officials may resist digital transitions due to uncertainty, lack of training, or bureaucratic inertia. This claim is supported by Ofori et al (2021) in their study among African officials wherein there is hesitancy toward digital governance. It was also found that bureaucratic resistance slowed e-governance adoption in Germany. Recommendation of stronger policy enforcement to drive digital integration is argued by Elmassah and Mohieldin (2020)

#### Gaps in Literature

The review identified two major gaps: 1) long-term fiscal impact – few studies examine longitudinal effects of digitalization due to limited access to time series data. 2) digital inclusion – underexplored in rural and low-income municipalities, partly due to geographic and socioeconomic constraints.

### Conclusion

Digitalization contributes significantly to fiscal sustainability in local governments through enhanced revenue collection, streamlined public service delivery, and transparent governance. However, equitable adoption is hindered by technological, institutional, and social challenges. Success depends on coordinated investment in infrastructure, skills, and inclusive governance mechanisms.

### Recommendations

Tailored recommendations for policy makers, local government officials and researchers are provided:

#### For policy makers

1. Establish regulatory frameworks supporting digital tax systems;
2. Promote digital inclusivity to encourage nationwide adoption by supporting or appropriating budget for digitalization;
3. Strengthening cybersecurity regulations.

#### For local government officials

1. Implement AI-based fiscal monitoring systems for revenue optimization;
2. Provide digital literacy programs for efficient system usage;

3. Integrate citizen feedback into platform design.

#### For researchers

1. Conduct longitudinal studies on digital fiscal outcomes;
2. Assess environmental and social implications of digitalization;
3. Explore comparative case studies across regions.

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