

The Role of Mobile Money in Enhancing Tax Collection Efficiency in Galmudug State of Somalia

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ABSTRACT

This study examined the role of mobile money in enhancing tax collection efficiency in Galmudug State of Somalia, where formal banking coverage remains limited but digital payment practices are widely used. The study adopted a quantitative explanatory design supported by secondary documentary analysis. Primary data were collected from 97 respondents, including taxpayers, business owners, traders, tax officers, civil servants, and mobile money agents. Descriptive statistics, reliability testing, Pearson correlation, and multiple linear regression were used to analyze the survey data, and the Ministry of Finance financial statements and budget-related reports were reviewed to assess domestic own-source revenue trends from 2019 to 2024. The findings show that mobile money usage was positively and significantly associated with tax collection efficiency. The regression model explained 54.1% of the variance in tax collection efficiency, and mobile money usage was a significant predictor. Respondents linked mobile money to faster payment, stronger traceability, better transparency, reduced manual inconvenience, and improved accountability. The study concludes that mobile money can support revenue administration reform when embedded in an integrated e-tax system with safeguards for cybersecurity, taxpayer identification, e-receipts, and automated reconciliation.

Keywords: mobile money; tax collection efficiency; digital tax administration; Galmudug State of Somalia; quantitative research

INTRODUCTION

Efficient tax collection is a core element of fiscal capacity. Governments require stable domestic revenue to finance public services, maintain administrative operations, and strengthen public legitimacy. In fragile and low-capacity fiscal environments, the central challenge is not merely whether tax laws exist, but whether the revenue authority can identify taxpayers, receive payments safely, issue reliable receipts, reconcile collections, and reduce leakage. This problem is particularly relevant in Galmudug State of Somalia, where public institutions continue to develop, and formal financial infrastructure remains limited.

At the same time, Somalia has one of the most active mobile money ecosystems in Africa. Mobile money is used for household payments, retail transactions, salaries, remittances, utilities, and business settlements. This creates an important administrative opportunity for public revenue management. Where taxpayers already rely on digital payment channels, governments may be able to reduce cash handling, strengthen audit trails, improve payment convenience, and support more transparent reconciliation. Recent evidence from developing economies indicates that mobile money adoption and digital payment systems can improve tax revenue performance, especially when they reduce transaction costs and make payment records more visible to tax authorities (Adegbe et al., 2022; Apeti & Edoh, 2023; Omodero & Ekundayo, 2025).

The policy relevance of this issue is high for Galmudug. Manual collection, fragmented taxpayer records, weak receipt systems, and cash-based interactions can increase compliance costs and create opportunities for informal handling of public revenue. Somalia-specific studies have associated weak revenue performance with administrative constraints, enforcement limitations, and fragmented local fiscal systems (Abdinur & Kassim, 2020; Mohamed, 2017). However, the increasing use of mobile money may provide a practical route to strengthen

tax collection efficiency if it is integrated into a broader digital tax administration framework.

The research problem addressed in this study is that mobile money is widely used in Somalia, yet its specific role in improving tax collection efficiency in Galmudug remains insufficiently examined. Much of the existing empirical evidence focuses on Nigeria, Zambia, Kenya, Rwanda, Togo, or cross-country samples. These studies provide useful lessons, but they do not fully explain how mobile money affects revenue collection in a fragile federal member state where telecom-led payment infrastructure may be more developed than formal revenue administration systems.

This study is therefore justified on scholarly and policy grounds. Academically, it contributes to the literature on digital taxation, fiscal capacity, and mobile money by providing empirical evidence from an under-researched Somali subnational context. Practically, it supports revenue authorities by identifying how digital payment channels may improve convenience, transparency, tracking, and accountability. The study also cautions that digital payment reform cannot be treated as a purely technological intervention. Its effectiveness depends on legal safeguards, institutional capacity, cybersecurity, taxpayer trust, and reliable reconciliation systems.

The general objective of the study was to examine the role of mobile money in enhancing tax collection efficiency in Galmudug State of Somalia. The article proceeds as follows. The next section reviews relevant literature and develops the conceptual foundation. This is followed by the research questions, objectives, and hypothesis. The methodology then explains the research design, setting, sampling, instrument, data collection, validity and reliability, data analysis, and ethical considerations. The results section presents the empirical findings, while the discussion interprets the findings in relation to previous studies and theory. The final section provides the conclusion, recommendations, limitations, and directions for future research.

LITERATURE REVIEW

Mobile Money and Revenue Administration

Mobile money has become an important issue in taxation research because it changes the infrastructure through which payments are made, recorded, monitored, and reconciled. In many African economies, mobile financial services first emerged as a response to limited banking access, but their fiscal relevance has increased as governments search for practical tools to improve domestic revenue mobilization. Apeti and Edoh (2023) found that mobile money adoption significantly increases tax revenue performance in developing countries, partly through tax base broadening, institutional quality, and simplified payment processes. This finding is relevant to Galmudug because convenience and traceability are core weaknesses in cash-based revenue systems.

The African experience also shows that mobile money does not automatically produce stronger tax outcomes. Digital transaction visibility must be connected to taxpayer identification, official payment channels, electronic receipts, audit trails, and institutional enforcement. Mbonigaba (2019) argues that mobile money and digital payments can reshape tax collection in increasingly cashless societies, but transaction records remain underused unless revenue authorities have the legal authority and administrative capacity to use them for compliance management. Therefore, mobile money should be understood as an enabling infrastructure rather than a complete tax reform by itself.

Digital Tax Systems and Administrative Efficiency

Electronic tax administration can improve collection efficiency by reducing manual processing, shortening payment time, improving reconciliation, and limiting discretionary cash handling. Adegbie et al. (2022) found that electronic tax management systems improved revenue collection efficiency in selected states in South West Nigeria. Omodero and Ekundayo (2025) also found that digital payment systems enhance the digitalization of tax collection in Nigeria, although macroeconomic and institutional conditions influence the scale of impact. While these findings support the proposition that digital payment channels can strengthen tax administration, and their transferability to Galmudug requires caution, as Nigeria possesses a significantly more formalized tax system.

Evidence from Rwanda and Togo suggests that digitalization is most effective when payment systems are embedded in wider administrative reform. Kotsogiannis et al. (2025) show that e-invoicing in Rwanda improved

value-added tax compliance, particularly when combined with more effective tax audits. Kang'oro et al. (2023) similarly show that digital technologies can improve tax collection when reform includes taxpayer registration, process redesign, institutional capacity, and administrative coordination. These studies imply that Galmudug should treat mobile money as part of an integrated e-tax architecture rather than as a stand-alone payment tool.

Taxpayer Behavior, Trust, and Compliance

Tax collection efficiency also depends on taxpayer behavior. Technology can reduce payment friction, but adoption depends on perceived usefulness, ease of use, trust, digital literacy, and confidence in government systems. Serem et al. (2017) found that tax system simplicity improves compliance among rental income earners in Kenya. Nsangu and Haabazoka (2024) found that mobile money services can improve tax compliance in Zambia by increasing transaction visibility and reducing opacity in cash-based exchanges. Hamza et al. (2025) similarly link electronic payment methods to tax compliance, while noting cybersecurity, privacy, and digital exclusion risks.

These concerns are particularly important for Galmudug. A digital revenue system may reduce manual inconvenience and leakage, but it may also introduce new risks if taxpayers are uncertain about data protection, payment authentication, network reliability, or official accountability. Therefore, the policy issue is not simply whether mobile money should be used, but how it should be governed. Trust becomes a revenue administration variable because taxpayers may resist digital tax channels if they fear misuse of financial data or if official receipts are not recognized consistently by tax officers.

Somalia and Galmudug Fiscal Context

Somalia-specific literature highlights the importance of administrative capacity. Mohamed (2017) found that local government revenue collection in Somalia is constrained by weak records, poor enforcement, and fragmented fiscal systems. Abdinur and Kassim (2020) similarly show that tax administration quality affects revenue generation in Somalia. These studies explain why Galmudug's revenue system requires administrative reform, but they do not empirically test mobile money as a mechanism for improving collection efficiency.

Hashi (2025) provides a complementary mobile money perspective by showing that mobile money is embedded in Somali economic life. This supports the argument that Galmudug can build on existing digital payment behavior. Nor and Raheem (2025) also show that weak governance and economic inefficiencies undermine development in Somalia, reinforcing the need for transparent revenue systems that reduce discretion and strengthen accountability. The present study connects these streams by analyzing mobile money use, tax collection efficiency, and domestic own-source revenue trends within the same fiscal setting.

CONCEPTUAL FRAMEWORK AND RESEARCH GAP

This study was grounded in public finance theory, Technology Adoption Theory, and governance and transparency theory. Public finance theory views tax collection efficiency as the ability to mobilise revenue with low administrative cost, limited leakage, and reasonable equity. From this perspective, mobile money may improve efficiency by reducing cash handling, increasing transaction traceability, and lowering taxpayer compliance costs. However, public finance theory also raises an equity concern because digital systems should not exclude taxpayers with weak digital literacy, poor network access, or low trust in government institutions.

Technology Adoption Theory explains why taxpayers and officials may accept mobile-money-based tax systems. Ma and Liu (2004) argue that technology acceptance is shaped by perceived usefulness and ease of use. In Galmudug, the basic adoption barrier may be lower because mobile money is already widely used. The more difficult challenge is institutional integration: converting private digital payment habits into formal public revenue processes. Governance and transparency theory adds that digital payments can reduce discretion, create auditable records, and improve accountability. Yet digitalization cannot eliminate corruption by itself. It must be supported by legal rules, cybersecurity safeguards, system controls, taxpayer identification, and institutional enforcement.

The research gap is threefold. First, most empirical studies focus on countries outside Somalia or use cross-country data that cannot fully explain Galmudug's institutional setting. Second, Somalia-focused studies discuss

either revenue administration weaknesses or mobile money adoption, but rarely integrate both. Third, few studies combine stakeholder perceptions with the Ministry of Finance's own-source revenue trends. This study addresses these gaps by linking survey evidence with fiscal trend evidence from Galmudug. Conceptually, mobile money usage is treated as the key explanatory variable, tax collection efficiency is the dependent variable, and current collection practices, barriers, and risks, and overall acceptance provide diagnostic and contextual explanation.

RESEARCH QUESTIONS, OBJECTIVES, AND HYPOTHESES

The study was guided by the following research questions and objectives, which align with the survey instrument, statistical analysis, and secondary revenue trend review.

Research Questions

- To what extent is mobile money used by taxpayers and administrators in Galmudug State of Somalia?
- What weaknesses in current tax collection practices are perceived by respondents in Galmudug?
- What relationship exists between mobile money usage and tax collection efficiency in Galmudug?
- What implementation risks may affect the sustainability of mobile-money-based tax collection in Galmudug?

Research Objectives

- To assess the level of mobile money usage among relevant taxpayers and revenue stakeholders in Galmudug.
- To examine perceived weaknesses in current tax collection practices.
- To evaluate the effect of mobile money usage on tax collection efficiency, transparency, tracking, and accountability.
- To identify implementation risks and propose policy measures for strengthening digital revenue administration.

Hypothesis

H1: Mobile money usage has a positive and statistically significant effect on tax collection efficiency in Galmudug State of Somalia.

H0: Mobile money usage has no statistically significant effect on tax collection efficiency in Galmudug State of Somalia.

METHODOLOGY

Research Design

The study adopted a quantitative explanatory design supported by secondary documentary analysis. The primary survey component assessed respondent perceptions of mobile money usage, current tax collection practices, implementation barriers, and tax collection efficiency. The secondary component analyzed Galmudug Ministry of Finance financial statements and budget-related reports to examine domestic own-source revenue trends from 2019 to 2024. This combined design was appropriate because tax collection efficiency has both behavioral and fiscal dimensions. The survey captured taxpayer and administrative experience, while revenue trend analysis provided institutional evidence of domestic revenue mobilization.

Research Setting

The study was conducted in the Galmudug State of Somalia, a federal member state where formal revenue administration is still developing, and mobile money plays a major role in everyday financial transactions. The setting is relevant because it combines fiscal fragility, limited formal banking penetration, and widespread digital payment use. To protect institutional and respondent confidentiality, the study reported results in aggregate form and did not identify individual respondents, offices, or administrative units beyond the broad state-level setting.

Population and Sampling

The study population consisted of stakeholders involved in or affected by tax collection and mobile money usage in Galmudug State. These included taxpayers, business owners, traders, tax officers, civil servants, mobile money agents, and other relevant respondents. The final dataset contained 97 usable responses. Respondents were selected via purposive sampling because the study required participants with direct or indirect exposure to local taxation, business payment practices, mobile money usage, or revenue administration. Although purposive sampling limits statistical generalization, it was suitable for exploratory research in a setting where a complete sampling frame was difficult to obtain.

Instrument and Data Collection

Primary data were collected using a structured questionnaire. The instrument contained six sections: respondent profile, mobile money usage, current tax collection practices, tax collection efficiency, barriers and risks, and overall acceptance and recommendation. Likert-scale items were coded from 1 = strongly disagree to 5 = strongly agree. Mobile money usage measured the extent to which respondents used mobile money for personal, commercial, and service-related transactions. Tax collection efficiency measured perceptions of convenience, transparency, tracking, compliance, accountability, speed, and reliability. Current tax collection practices, barriers, or risks were used as diagnostic constructs to interpret the institutional environment.

Secondary data were collected from the Ministry of Finance of Galmudug State, Somalia, including financial statements and budget-related reports. Domestic own-source revenue was measured as tax revenue plus non-tax revenue, excluding grants, international projects, external transfers, and borrowing. Non-tax revenue was included because fees, licenses, penalties, registration charges, forfeits, and service charges are locally generated and rely on payment, receipt, tracking, and reconciliation systems similar to those for taxes.

Validity and Reliability

Content validity was addressed by aligning the questionnaire items with the study objectives and the key constructs identified in the literature: mobile money usage, current tax collection practices, tax collection efficiency, implementation barriers, and acceptance of digital revenue systems. The instrument was also reviewed for clarity, relevance, and logical sequencing. Specifically, the instrument was evaluated by an independent tax expert to confirm content validity. Additionally, the questionnaire was translated into Somali and pretested with local businessmen to ensure comprehensibility, with no errors or ambiguities identified. Internal consistency was assessed using Cronbach's alpha. The reliability coefficients exceeded the commonly accepted threshold of .70 for the main constructs, indicating that the items were sufficiently consistent for inferential analysis.

Model Specification

The empirical model estimated the relationship between mobile money usage and tax collection efficiency, while accounting for the broader collection environment. The operational regression model was specified as follows:

$$TCE_i = \beta_0 + \beta_1 MMU_i + \beta_2 TCP_i + \beta_3 BR_i + \beta_4 OAR_i + \varepsilon_i$$

where TCE represents tax collection efficiency, MMU represents mobile money usage, TCP represents current tax collection practices, BR represents barriers and risks, OAR represents overall acceptance and recommendation, β_0 is the intercept, β_1 to β_4 are regression coefficients, and ε is the error term. The expected sign of β_1 was positive because mobile money usage was expected to improve payment convenience, traceability, transparency, and collection reliability.

Data Analysis

Data analysis was conducted using descriptive statistics, reliability analysis, Pearson correlation, and multiple linear regression. Frequencies and percentages summarized the respondent characteristics. Means and standard deviations were used to describe Likert-scale responses. Cronbach's alpha was used to assess the internal consistency of the main constructs. Pearson correlation examined the strength and direction of association

between mobile money usage and tax collection efficiency. Multiple linear regression was used to test the main hypothesis at the 0.05 significance level. The secondary revenue trend analysis compared domestic own-source revenue across the period 2019 to 2024.

Ethical Considerations

The study followed basic research ethics principles. Respondents participated voluntarily, and their responses were analyzed in aggregate form. No individual respondent was identified in the reporting. Because the study examines public revenue, digital payments, and trust in government systems, anonymity and confidentiality were necessary to reduce response pressure and support honest answers. Formal administrative clearance and permission to conduct the study were granted by the Ministry of Finance of Galmudug State. Participants were fully informed of the study's academic purpose, and verbal informed consent was obtained from all respondents prior to data collection.

RESULTS

Respondent Profile

The respondent profile indicates that the sample captured stakeholders with relevant practical exposure to taxation, mobile money, and public administration. Most respondents had previously paid local or state tax, which strengthens the relevance of their views on revenue collection efficiency. Table 1 summarizes the profile of respondents.

Table 1 Respondent Profile

Variable	Group	N	%
Gender	Male	68	70.1
	Female	29	29.9
Age	18 to 25	23	23.7
	26 to 35	51	52.6
	36 to 45	16	16.5
	46 to 55	5	5.2
	56 and above	2	2.1
Occupation	Business owner	19	19.6
	Civil servant	19	19.6
	Mobile money agent	16	16.5
	Tax officer	19	19.6
	Trader	11	11.3
	Other	13	13.4
Education	Primary	2	2.1
	Secondary	5	5.2
	Diploma	8	8.2
	Bachelor degree	59	60.8
	Master/PhD	23	23.7
Tax payment status	Yes	84	86.6
	No	13	13.4

Note. Tax payment frequency among respondents who had previously paid tax was monthly 69.0%, quarterly 13.1%, annually 11.9%, and occasionally, 6.0% (n = 84).

Descriptive Results on Mobile Money Usage

The descriptive results show that mobile money was already embedded in respondents' financial behavior. The strongest responses related to regular use, speed, safety, service payments, and reliable transaction receipts. Table 2 presents the descriptive results for mobile money usage.

Table 2 Descriptive Results on Mobile Money Usage

Statement	Mean	SD	Interpretation
Regular use of mobile money	4.29	1.13	Strong agreement
Faster and safer than cash	4.29	0.95	Strong agreement
Use for utilities, goods, or services	4.24	0.99	Strong agreement
Easy-to-use apps or USSD	4.08	0.96	Strong agreement
Reliable transaction receipts	4.14	1.01	Strong agreement
Trust for large transactions	4.00	1.15	Agreement

Note. Likert scale: 1 = strongly disagree and 5 = strongly agree.

Descriptive Results on Tax Collection Efficiency

Respondents expressed favorable perceptions of mobile-money-based tax collection. They agreed that mobile money can make tax payment easier, improve transparency and tracking, broaden the tax base, increase accountability, and strengthen speed and reliability. Table 3 presents the empirical results for tax collection efficiency.

Table 3 Descriptive Results on Tax Collection Efficiency

Statement	Mean	SD	Interpretation
Mobile tax payment is easier and more convenient	4.04	1.12	Agreement
Reduces bribery or corruption opportunities	3.89	1.22	Agreement, but weaker than speed-related items
Improves transparency and tracking	4.05	0.99	Strong agreement
Broadens the tax base	3.98	0.91	Agreement
Willingness to pay through a secure system	3.97	0.98	Agreement
Increases government accountability	3.99	0.95	Agreement
Increases speed and reliability	4.15	0.89	Strong agreement

Note: Likert scale: 1 = strongly disagree and 5 = strongly agree.

Current Collection Practices and Implementation Barriers

The diagnostic findings show that Galmudug's current tax collection system still contains weaknesses that digital collection can address. Manual payment inconvenience recorded the highest mean among current-practice indicators, followed by perceived cash revenue leakage and corruption-related compliance concerns. Table 4 presents the current collection practice indicators.

Table 4 Diagnostic Performance of Current Tax Collection Practices

Indicator	Mean	SD	Interpretation
Cash payment to local tax officers	2.74	1.44	Moderate reliance
Immediate receipt issuance	3.72	1.05	Moderate documentation practice
Perceived cash revenue leakage	3.61	1.31	Strong leakage concern
Manual tax payment is time-consuming and inconvenient	3.86	1.04	Strongest current weakness
Corruption reduces willingness to pay	3.49	1.29	Notable compliance concern
Satisfaction with current collection efficiency	3.79	1.12	Moderate satisfaction

Implementation risks were also significant. Respondents identified regulation and cybersecurity safeguards as the strongest concern, followed by resistance from tax officials and network reliability. Table 5 summarizes the main barriers and risks.

Table 5 Barriers and Risks to Mobile-Money-Based Tax Collection

Barrier or risk	Mean	SD	Interpretation
Need for regulation and cybersecurity safeguards	4.07	0.96	Strongest concern
Tax officials may resist digitalization	3.70	1.14	High institutional concern
Poor network connectivity or system errors	3.47	1.24	High infrastructure concern
Digital literacy gaps among taxpayers	3.27	1.25	Moderate concern
Privacy or financial data exposure concern	2.80	1.30	Lower concern
Fraud or theft concern	2.71	1.41	Lower concern

Reliability, Correlation, and Regression Results

The reliability results confirm that the main constructs were internally consistent. Cronbach's alpha values were .879 for mobile money usage, .887 for tax collection efficiency, and .782 for overall acceptance. These values support the use of the constructs in inferential analysis. Table 6 summarizes the reliability, correlation, and regression results.

Table 6 Reliability, Correlation, and Regression Summary

Analytical test	Result	Interpretation
Cronbach alpha: Mobile Money Usage	.879	Strong internal consistency
Cronbach alpha: Tax Collection Efficiency	.887	Strong internal consistency
Cronbach alpha: Overall Acceptance	.782	Acceptable internal consistency
Pearson correlation between Mobile Money Usage and Tax Collection Efficiency	$r = .726, p < .001$	Strong positive association
Regression model explanatory power	$R^2 = .541$; adjusted $R^2 = .526$	Strong explanatory power for cross-sectional survey data
Focal regression coefficient for Mobile Money Usage	$\beta = .458, p = .014$	Positive and statistically significant predictor

Note. The coefficient β refers to the standardized coefficient reported for the focal independent variable. Full model replication should retain the same operational definitions and coding scheme.

The correlation result indicates a strong positive association between mobile money usage and tax collection efficiency. The regression result provides stronger evidence because mobile money usage remained a statistically significant positive predictor of tax collection efficiency. The study therefore rejected the null hypothesis and accepted the alternative hypothesis. Substantively, respondents who reported stronger mobile money usage also tended to report higher perceived efficiency in tax collection.

Secondary Revenue Trend Evidence

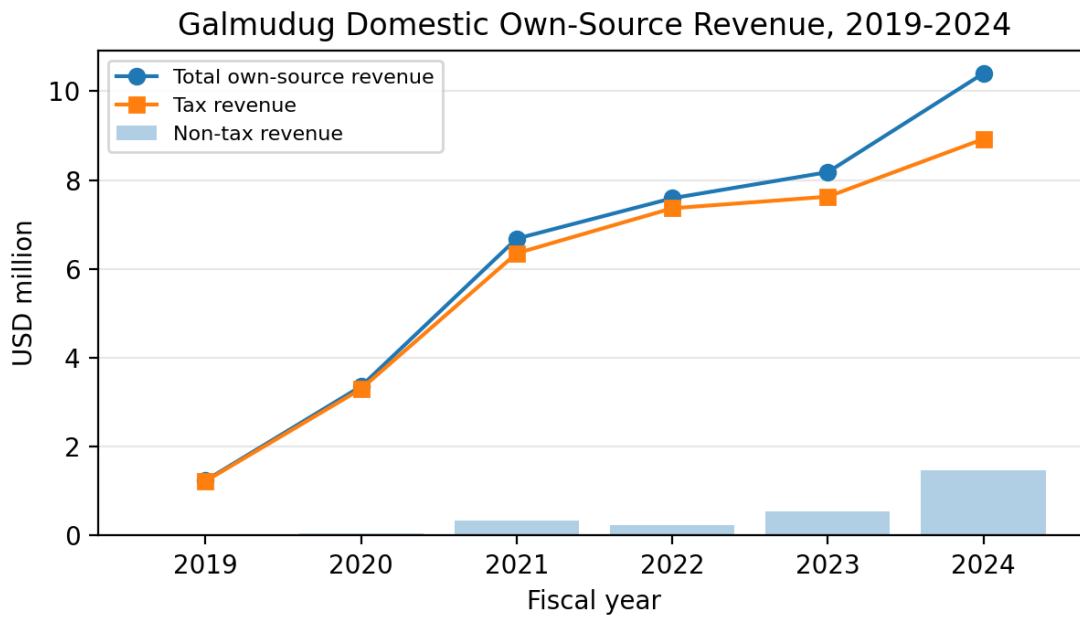
Secondary evidence was used to compare survey-based findings with domestic revenue mobilization trends. Domestic own-source revenue was calculated as tax revenue plus non-tax revenue, excluding grants, international projects, external transfers, and borrowing. Table 7 presents the revenue trend from 2019 to 2024.

Table 7 Domestic Own-Source Revenue Growth in Galmudug, 2019-2024

Year	Tax revenue (USD m)	Non-tax revenue (USD m)	Total own-source revenue (USD m)	Annual growth (USD m)	Growth (%)
2019	1.225	0.012	1.238	Baseline	Baseline
2020	3.300	0.058	3.358	2.120	171.3
2021	6.353	0.329	6.682	3.324	99.0
2022	7.366	0.226	7.592	0.910	13.6
2023	7.627	0.551	8.179	0.587	7.7
2024	8.924	1.477	10.401	2.222	27.2

Note. Compiled from Galmudug Ministry of Finance financial statements and budget-related reports. Values are rounded to three decimals. Grants, external transfers, international projects, and borrowing are excluded.

Figure 1 Domestic Own-Source Revenue Trend, 2019-2024



The trend provides institutional support for the primary findings. Domestic own-source revenue increased from approximately USD 1.24 million in 2019 to USD 10.40 million in 2024. The growth was not perfectly linear, but it suggests substantial improvement in domestic revenue mobilization during the period in which digital and mobile-money-based collection became more embedded in Galmudug's fiscal administration.

DISCUSSION

The findings support the central argument that mobile money can improve tax collection efficiency in a fragile fiscal environment. The high descriptive scores for mobile money usage indicate that digital payment behavior is already prevalent among respondents. This is important because technology adoption is often limited by unfamiliarity, but in Galmudug the more immediate challenge appears to be institutional integration. Mobile money is not a new behavior to be created from zero; rather, it is an existing payment habit that the revenue authority can formalize within a trusted public revenue system.

The positive and statistically significant relationship between mobile money usage and tax collection efficiency is consistent with Apeti and Edoh (2023), who found that mobile money adoption improves tax revenue performance in developing countries. It is also consistent with Adegbie et al. (2022) and Omodero and Ekundayo (2025), who show that electronic tax management and digital payment systems can improve revenue collection efficiency. The Galmudug evidence adds contextual value because it shows that the relationship is observable in a fragile federal state where mobile money infrastructure has developed faster than formal banking and revenue administration systems.

The findings also support the administrative efficiency argument. Respondents associated mobile money with faster payment, better tracking, stronger transparency, and improved accountability. These results imply that mobile money can reduce the operational burden of manual collection. In practical terms, a digital payment trail can help the Ministry of Finance verify whether a taxpayer paid, when the payment was made, which revenue category was involved, and whether the receipt matches the amount recorded. This can strengthen cash flow control, reduce reconciliation delays, and improve the reliability of domestic revenue reports.

However, the study also shows that digital collection should not be romanticized. The mean score for reducing bribery and corruption opportunities was positive but weaker than the scores for speed and tracking. This suggests that taxpayers may see mobile money as administratively useful, but they may not believe that technology alone can remove governance problems. This finding is consistent with governance and transparency theory. Digital payments can create audit trails and reduce cash discretion, but corruption control still requires enforceable rules, internal controls, sanctions, supervision, and independent reconciliation.

The barrier results are especially important for policy design. The highest concern related to regulation and cybersecurity safeguards. This implies that taxpayers and revenue stakeholders may support mobile tax payments only if the system is secure, legally recognized, and transparent. Poor cybersecurity, weak data protection, unclear dispute resolution, or unauthorized access to taxpayer information could damage trust and reduce compliance. Therefore, the move towards mobile-money-based tax collection should include taxpayer authentication, transaction verification, role-based access controls, system backups, and clear procedures for correcting payment errors.

The secondary revenue trend provides additional support but must be interpreted cautiously. Domestic own-source revenue increased substantially between 2019 and 2024. This trend is consistent with the argument that improved payment infrastructure and digital collection practices can support domestic revenue mobilization. Nevertheless, causality cannot be attributed to mobile money alone. Enforcement reforms, changes in economic activity, public financial management support, taxpayer registration, administrative restructuring, and political conditions may also have contributed. The appropriate interpretation is therefore cautious: the revenue trend aligns with the survey evidence, but it does not independently prove that mobile money caused the entire revenue increase.

Theoretically, the study contributes to public finance theory by showing that fiscal capacity depends not only on tax bases and tax rates, but also on the payment and information infrastructure used by revenue authorities. For Technology Adoption Theory, the findings suggest that perceived usefulness and ease of use are already strong in the Somali mobile money context. The deeper challenge is the conversion of private payment acceptance into institutionalized tax compliance. For governance theory, the study demonstrates that digital collection can support transparency, but only when combined with rules, safeguards, accountability, and administrative capacity.

For policy, the findings imply that Galmudug should move beyond basic mobile payment collection and design a comprehensive e-tax architecture. A narrow reform that only permits taxpayers to send money to an official number may improve convenience, but it will not fully address taxpayer identification, assessment, filing, receipts, reconciliation, arrears management, audit selection, and reporting. The stronger reform option is an integrated system that connects taxpayer registration, e-filing, e-receipts, official payment channels, automated reconciliation, and risk-based compliance monitoring.

CONCLUSION, RECOMMENDATIONS, LIMITATIONS, AND FUTURE RESEARCH

Conclusion

This study examined the role of mobile money in enhancing tax collection efficiency in Galmudug State of Somalia. The findings support the hypothesis that mobile money usage has a positive and statistically significant effect on tax collection efficiency. The regression model explained 54.1% of the variance in tax collection efficiency, and mobile money usage was a significant positive predictor. Respondents associated mobile money with faster payment, improved tracking, stronger transparency, reduced manual inconvenience, and better accountability.

The secondary Ministry of Finance evidence reinforces the survey results. Domestic own-source revenue increased from approximately USD 1.24 million in 2019 to USD 10.40 million in 2024. This trend suggests improved domestic revenue mobilization during the expansion of digital collection systems, although causality cannot be attributed to mobile money alone. The study therefore advances the literature by showing that mobile money can operate as a practical foundation for modernizing tax and own-source revenue administration in fragile fiscal environments.

Recommendations

First, Galmudug should move from basic mobile payment collection towards an integrated e-tax system. The system should include taxpayer registration, e-filing, electronic receipts, payment verification, automated reconciliation, and real-time revenue reporting. This would allow the Ministry of Finance to track collections more accurately and reduce dependence on manual documentation.

Second, the state should introduce phased self-assessment and e-filing for registered businesses, service providers, professional taxpayers, and other identifiable taxpayer categories. A self-assessment model can reduce administrative delay and shift routine compliance towards taxpayers while allowing the revenue authority to focus on verification, risk profiling, and audits.

Third, Galmudug should adopt e-invoicing gradually for businesses and service providers that generate recurring taxable transactions. Evidence from Rwanda suggests that e-invoicing can strengthen audit trails and improve compliance when supported by tax audits and administrative capacity (Kotsogiannis et al., 2025).

Fourth, digital reform should cover taxes and non-tax own-source revenues. Fees, licenses, penalties, forfeits, registration charges, and service charges should be collected through official digital channels because these revenue streams depend on the same verification and reconciliation capabilities as taxes.

Finally, cybersecurity and data protection should be treated as core revenue administration functions. Clear rules are needed for user authentication, transaction verification, data access, privacy, system backup, and dispute resolution. Tax officials also require training in digital revenue systems, electronic reconciliation, taxpayer support, fraud detection, and data management.

Limitations and Future Research

The study has limitations. The sample of 97 respondents provides useful exploratory evidence, but the findings should not be generalized to all taxpayers in Galmudug without caution. The survey was cross-sectional and perception-based, so it cannot prove long-term causality. The secondary revenue trend supports the study's argument, but it cannot isolate mobile money as the only cause of revenue growth.

Future research should use larger samples, longitudinal revenue data, district-level comparisons, and qualitative interviews with taxpayers, tax officers, telecom operators, and Ministry of Finance officials. Comparative studies across Somalia's federal member states would clarify whether Galmudug's experience reflects a broader national pattern. Further studies should also examine how telecom operators, banks, and revenue authorities can share data lawfully while protecting taxpayer privacy.

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