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An Assessment of the Factors Affecting Mobile Money Provision in Lufwanyama

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Abstract

This article analyzes mobile money provision in Lufwanyama District using a descriptive research design aligned to the Technology Acceptance Model. The study surveyed 384 respondents. Lufwanyama is estimated to have 303 agents which yields an agent to population ratio of 1 to 439 and 22.79 agents per 10,000 people. Provider presence is broad for Kazang at 62.5 percent, MTN at 61.7 percent, and Airtel at 60.4 percent with Zamtel present in 13.5 percent of areas. Access remains uneven as 11.7 percent of respondents report no agent within 1 to 2 kilometers and 8.1 percent travel more than 5 kilometers to the nearest agent. Awareness is near universal and use is universal in the sample. Perceived usefulness and ease of use are high while trust is mixed. The most frequently cited constraint is poor network coverage reported by 86.7 percent followed by high transaction fees at 49.7 percent and both limited agent availability and trust or security concerns at 37.8 percent. Findings support targeted expansion of agent coverage improvements in rural connectivity, stronger liquidity management and user protection measures to deepen financial inclusion.

Keywords: Mobile money; financial inclusion; Technology Acceptance Model; Lufwanyama District; Zambia.

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I. Introduction

Small value digital payments are now essential to everyday transactions in rural Zambia where formal financial infrastructure is sparse. In Lufwanyama District the geographic spread of settlements, limited road networks and variable network availability shape how residents access and use mobile money agents. Building on Slade Luwaile's district study, this article presents a journal style synthesis that mirrors Florence's flow and section sequencing. The analysis focuses on three core questions. First the density and spatial availability of agents relative to the district population. Second, the factors that influence provision and continued use. Third, the obstacles that undermine reliable last mile service.

1.1 Problem Statement

Despite strong national growth in digital finance many rural districts still experience thin agent coverage and unreliable service. In Lufwanyama the presence of multiple providers has not eliminated pockets where residents walk long distances to find an active and liquid agent. Network interruptions and liquidity gaps result in failed or delayed transactions that erode user confidence. Although awareness is high and mobile phone ownership is widespread, continued use depends on perceived usefulness, trust and consistent service quality. There is a need to quantify agent density and spatial access, evaluate user level determinants of continued use and document the specific operational challenges that inhibit reliable rural service delivery.

1.2 Research Objectives and Questions

The study pursued three objectives that align to the problem statement.

1. To establish the main patterns of agent distribution and the agent to population ratio in the district.
2. To evaluate the influence of perceived usefulness, trust affordability and network quality on continued use.
3. To establish the principal challenges that limits provision and reliable use.

1.3 Research Questions

1. What is the agent to population ratio and how are agents distributed relative to where people live and transact
2. Which perceptions and contextual factors best explain intention to continue using mobile money
3. What challenges most frequently disrupt everyday transactions for rural users and agents

1.4 Previous Studies

International work shows that agent presence affordability and usable interfaces are necessary but not sufficient for rural uptake. Global cross country and provider studies highlight persistent rural gaps in access and service reliability and point to enabling regulation and practical agent management as levers for deeper inclusion [1-6]. Regional evidence emphasizes the roles of perceived usefulness perceived ease of use trust and cost and

confirms that agent proximity and network quality matter for adoption and continued use [7-11]. [6] conducted a study which assessed whether simply increasing the number of agents leads to higher service usage, results showed that despite agent rollout mobile money usage did not significantly increase in areas with poor network connectivity and low mobile phone ownership. Zambian and closely related local studies underscore agent liquidity network reliability fee transparency and effective redress as practical determinants of trust and routine use [12,15,16]. [1] assessed how documentation requirements influence financial inclusion outcomes and discovered that stringent KYC policies reduce access to mobile money services especially in rural areas lucking formal identification systems. Together this literature motivates a district specific analysis that quantifies agent density and tests Technology Acceptance Model constructs to explain continued use in a rural context.

2. Materials and Methods

2.1 Research Philosophy and Design

The study adopted a positivist and explanatory design to test relationships among measurable constructs. A structured questionnaire with five-point Likert items captured affordability, network quality, usefulness, trust and intention to continue use alongside demographics and access variables.

2.2 Sampling and Sample Size

A sample of 384 respondents from Lufwanyama District was selected with coverage across communities to reflect settlement patterns. This size supports estimation for a district population above 100,000 residents.

2.3 Data Collection

Data were collected through a structured instrument administered digitally and in person where necessary. Items covered demographics mobile money awareness and use access to agents distance to nearest agent provider presence perceptions of affordability and ease of use trust in security and reliability perceived network quality and intention to continue using mobile money.

2.4 Conceptual Model and Variables

The analysis applied the Technology Acceptance Model (TAM developed by Fred D. Davis in 1986). Independent variables were perceived usefulness, trust perceived affordability and network quality. The dependent variable was the intention to continue use. Control variables captured access conditions including number of nearby agents, provider presence and distance to the nearest outlet.

2.5 Data Analysis

Descriptive statistics summarized distributions and access indicators. Correlations explored bivariate relations among constructs. Multiple linear regression estimated the influence of perceived usefulness, trust affordability and network quality on intention to continue use. Significance was assessed at conventional thresholds.

2.6 Ethical Considerations

The study obtained informed consent from all respondents assured anonymity and permitted withdrawal at any time. Data were stored securely and reported in aggregate.

3. Results

3.1 Background of Respondents

Mobile phone ownership is 97.7 percent. By gender 77.9 percent are male and 22.1 percent are female. The largest age band is 36 to 45 at 48.7 percent followed by 26 to 35 at 37.5 percent and 46 and above at 13.8 percent. Education levels are 81.8 percent tertiary 13.8 percent secondary and 4.4 percent no formal education.

Table1

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	299	77.9
	Female	85	22.1
Age Group	26–35 years	144	37.5
	36–45 years	187	48.7
	46 and above	53	13.8
Education Level	No formal education	17	4.4
	Secondary education	53	13.8
	Tertiary education	314	81.8
Source of Income	Employment	297	77.3
	Business	61	15.9
	Other income sources	26	6.8
Mobile Phone Ownership	Yes	375	97.7
	No	9	2.3

3.2 Agent Availability and Agent to Population Ratio

The district is estimated to have 303 agents which yield an agent to population ratio of 1 to 439 and 22.79 agents per 10,000 people. Within a 1 to 2-kilometre walking distance 32.6 percent of respondents report 2 to 3 nearby agents 26.8 percent report 1 agent 19.3 percent report 4 to 5 agents and 9.6 percent report more than 5 agents. A total of 11.7 percent reported no agent within walking distance.

3.3 Presence of Service Providers

Provider presence by locality is reported as follows; Kazang 62.5 percent MTN 61.7 percent Airtel 60.4 percent Zamtel 13.5 percent. Every community surveyed has at least one provider active.

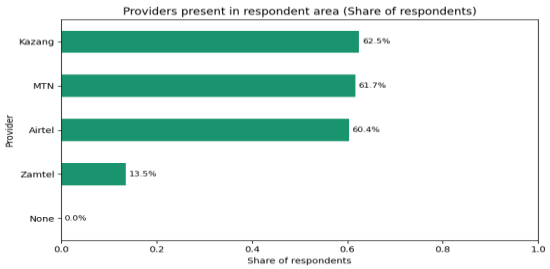

Figure1

Source: Authors Computations 2026

3.4 Distance to the Nearest Agent

A total of 57.3 percent of respondents live within 1 kilometer of an agent 34.6 percent live 1 to 5 kilometers away and 8.1 percent must travel more than 5 kilometers.

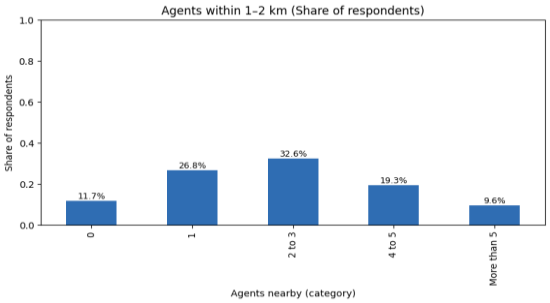

Figure2

Source: Authors Computations 2026

3.5 Awareness Use and Perceptions

Awareness is 97.9 percent and use is 100 percent. In perceptions 70.9 percent rate services as affordable while 90.9 percent agree that services are easy to learn and use. Trust shows a mixed pattern with 37.8 percent expressing strong confidence and a sizable neutral share. Intention to continue using mobile money is high with 77.6 percent agreeing or strongly agreeing.

3.6 Challenges in Everyday Use

The most frequently reported challenge is poor network coverage at 86.7 percent. High transaction fees are cited by 49.7 percent. Both limited agent availability and trust or security concerns are reported by 37.8 percent of respondents.

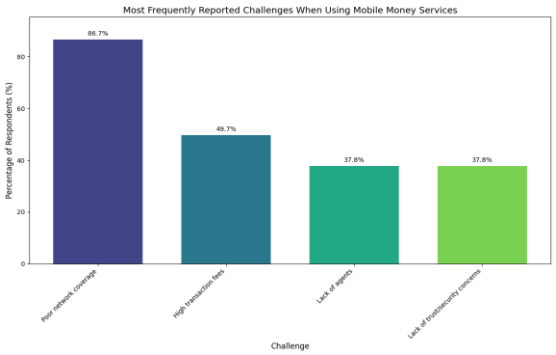

Figure3

Source: Authors Computations 2026

4. Discussion

This study examined mobile money provision in Lufwanyama District by analysing agent distribution, user perceptions, and operational challenges within a rural financial inclusion context. The findings demonstrate that while mobile money services are widely used and perceived as useful, the quality and reliability of provision remain constrained by infrastructural and operational factors.The estimated agent–population ratio of 1:439 suggests that Lufwanyama has attained a moderate level of agent presence. However, this density remains lower than rural benchmarks suggested in the literature, where ratios closer to 1:300 are associated with stable liquidity and uninterrupted service. Similar findings were reported by [6], who observed that although rural agent rollout improves nominal access, service reliability remains limited when agent density is insufficient to absorb high cash-out demand. In Lufwanyama, this is reflected in the 11.7% of respondents who reported having no agent within walking distance, indicating that aggregate ratios mask important spatial inequalities.

Distance analysis further clarifies this disparity. While a majority of respondents live within 1 km of an agent, the existence of households travelling more than 5 km confirms persistent geographic exclusion. Previous studies conducted by the following authors, [17,4] have shown that distances above 5 km significantly reduce transaction frequency and reinforce dependence on cash. The present study confirms this pattern and highlights

that physical proximity remains a critical determinant of effective mobile money provision in rural districts.

User perceptions strongly align with the Technology Acceptance Model. Perceived usefulness emerged as a statistically significant predictor of intention to continue using mobile money services. This finding is consistent with earlier studies by [11,16], which confirmed that perceived usefulness remains the strongest driver of technology adoption in low-income settings. In Lufwanyama, mobile money is perceived as essential for managing remittances, business transactions, and participation in government programmes, which explains its sustained use despite persistent operational challenges.

Trust also emerged as the strongest behavioural determinant, although only 37.8% of respondents expressed high confidence in mobile money security and reliability. This dual outcome mirrors findings by [10,19], who argue that trust functions both as an enabler and a constraint in rural digital finance. Users may continue using mobile money out of necessity while remaining sceptical due to transaction failures, fraud concerns, or weak redress mechanisms. The implication is that continued usage does not necessarily reflect full consumer confidence in the system.

An important and counterintuitive finding was the positive relationship between poor network coverage and behavioural intention to use mobile money. Rather than discouraging usage, network challenges appear to coexist with continued reliance on mobile money services. Similar observations were documented by [6] in rural Uganda, where users continued to transact digitally despite weak infrastructure because alternative financial services were unavailable. This finding suggests that in rural contexts, usage is often driven by compulsion rather than favourable service conditions, extending the explanatory power of the Technology Acceptance Model beyond its traditional assumptions.

Although affordability was perceived positively by 70.9% of respondents, it did not emerge as a statistically significant predictor of behavioural intention. This contrasts with findings from other rural African studies such as [7], where transaction costs discouraged adoption. In the context of Lufwanyama, this divergence may reflect the relatively high proportion of formally employed respondents (77.3%) and the normalization of mobile money fees over time. However, the fact that 49.7% of respondents still cited transaction fees as a challenge indicates that cost remains a practical constraint even if it does not directly influence behavioural intention.

Overall, the discussion demonstrates that mobile money provision in Lufwanyama is characterised by high reliance but fragile delivery conditions. The findings reinforce existing evidence that rural mobile money ecosystems require coordinated improvements in agent coverage, liquidity management, trust-building mechanisms, and network infrastructure rather than isolated interventions. The results therefore contribute empirically to the growing body of rural digital finance literature by illustrating that sustained usage does not necessarily imply optimal provision or service quality.

5.Contribution to Existing Literature

This study contributes to the literature on mobile money and financial inclusion by providing district-level evidence from a rural Zambian context. While most existing studies focus on adoption and usage in urban or

nationally aggregated settings, this research extends the literature by examining service provision, agent distribution, and spatial access within a sparsely populated rural district.

The findings demonstrate that high mobile money usage can persist despite weak network infrastructure and uneven agent coverage, reinforcing and extending evidence from [6] that rural usage is often driven by necessity rather than service quality. The study also advances the application of the Technology Acceptance Model by showing that perceived usefulness and trust remain dominant predictors of continued use even under constrained service conditions, building on earlier work by [17,11].

By integrating agent–population ratios and distance-based access measures, this study adds supply-side specificity to a literature that has largely emphasized demand-side perceptions, thereby offering context-relevant insights for rural financial inclusion policy and practice.

6. Conclusion

Lufwanyama exhibits high awareness and widespread use of mobile money with a moderate agent base and strong presence of major providers. Access is still uneven with pockets that lack a nearby agent and with users who must travel long distances for cash out. The analysis confirms that perceived usefulness and trust are the strongest predictors of continued use while affordability perceptions are positive but not decisive in the model. The most common operational constraint is poor network coverage followed by fees and gaps in agent availability and liquidity. Strengthening network reliability, extending agent coverage to underserved pockets, improving agent liquidity practices and enhancing user protection and support should produce the largest gains in confidence and routine use.

7.Limitations of the Study

- The study targeted a sample size of not less than 300 respondents from a population of 133, 060 due to limitations of financial and logistical resources. The accuracy of responses were likely to be affected due to low literacy levels among some residents hence trained data collectors were used to mitigate this limitation
- Data were collected using self-reported responses from mobile money users, which may be subject to recall bias and perception bias, particularly regarding trust, affordability, and network quality.
- The agent–population ratio was estimated using a midpoint-based approach derived from respondent reports rather than an administrative census of active agents. This method may not fully capture inactive or intermittently operational agents, potentially overstating effective access.
- The study was limited to Lufwanyama District, which constrains the generalisability of the findings to other rural districts in Zambia with different economic, demographic, and infrastructural characteristics.

8.Policy Recommendations

1. **Densify agent coverage where distance exceeds 5 kilometers**

   Prioritize underserved wards and market nodes. Use incentives for agents who operate in lower volume localities. Align new outlets with busy aggregation points such as markets depots and public service centres.

2. **Stabilize agent liquidity**

   Strengthen super-agent arrangements increase rebalancing frequency and expand access to float financing so that cash out and e float are consistently available during peak periods.

3. **Improve rural connectivity and service resilience**

   Expand tower capacity and optimize USSD and basic channels so that essential transactions can clear during peak loads and power disruptions.

4. **Strengthen user protection and redress**

   Provide visible and fast dispute resolution, publish simple service status and fee notices and conduct fraud awareness sessions that reach first time and cautious users.

5. **Maintain transparent and predictable fees**

   Keep low value transaction pricing simple and visible. Monitor the effect of fees on small and frequent transactions common in rural households.

6. **Invest in practical digital literacy**

   Offer short demonstrations through schools, cooperatives and savings groups that show step by step transactions common mistakes and how to seek help.

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