Digital Financial Services and Their Integration with Village Banking in Zambia: An Exploratory Study of Wealth Creation, Bwafwano and Tiyeseko Women's Village Banking Groups

Dr. Cryford Mumba

School of Graduate Studies and Research, Zambian Open University

ORCID: 0009-0005-0451-0096

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ABSTRACT

Digital financial services (DFS) have transformed financial inclusion by expanding access to affordable, convenient and secure financial products among underserved populations. In Zambia, village banking has become an important community-based financial mechanism that promotes savings mobilisation, access to credit and household economic resilience. Despite increasing adoption of mobile money and digital payment platforms, limited empirical evidence exists on the extent to which digital financial services have been integrated into village banking operations across different socioeconomic settings. This study explored the integration of digital financial services within three village banking groups: Wealth Creation Village Banking Group in Lusaka, Bwafwano Village Banking Group in Kabwe and Tiyeseko Women's Village Banking Group in Kafue District. The study adopted a quantitative exploratory research design involving a population of 210 members, from which a proportionate random sample of 120 respondents was selected following purposive selection of the three groups. Wealth Creation comprised members with relatively high and stable incomes, Bwafwano consisted primarily of Ministry of Education employees with stable but comparatively lower incomes, while Tiyeseko comprised rural women characterised by low and irregular incomes. Data were intended to be analysed using multiple regression analysis to determine the influence of socioeconomic characteristics on digital financial service utilisation and village banking performance. The study contributes to the growing literature on digital financial inclusion by proposing an integrated framework for strengthening village banking through digital technologies and provides policy recommendations for financial institutions, regulators and community-based financial organisations.

Keywords: Digital Financial Services, Village Banking, Financial Inclusion, Mobile Money, Digital Finance, Zambia, Financial Literacy.

INTRODUCTION

Financial inclusion has become one of the defining pillars of sustainable economic development in both developed and developing economies. Over the past decade, governments, development agencies and financial institutions have increasingly recognised that expanding access to affordable financial services contributes significantly to poverty reduction, entrepreneurship development, household resilience and inclusive economic growth (Demirgüç-Kunt et al., 2022). Financial inclusion enables individuals and households to save securely, access credit, insure against risks and participate more effectively in economic activities.

Despite remarkable progress globally, financial exclusion remains a persistent challenge, particularly among rural populations, women and low-income households in Sub-Saharan Africa (World Bank, 2022). Traditional banking institutions often face operational challenges in extending services to remote communities because of high operational costs, inadequate infrastructure, stringent documentation requirements and limited financial literacy. Consequently, alternative community-based financial mechanisms have emerged to bridge this gap.

Among these alternatives, village banking has gained prominence as one of the most successful grassroots financial models. Village banking refers to self-managed community groups in which members mobilise savings, access loans and provide mutual financial support based on collectively agreed rules. Originating from the broader microfinance movement, village banking has evolved into a practical mechanism for promoting financial inclusion among populations traditionally excluded from formal financial systems (Allen & Panetta, 2021).

In Zambia, village banking has become increasingly important in urban, peri-urban and rural communities. Community members pool financial resources through regular savings contributions, enabling members to borrow funds for household consumption, education, agriculture, business investment and emergency needs. Beyond financial services, village banking strengthens social capital, trust, accountability and collective economic empowerment.

Concurrently, digital transformation has reshaped the financial services landscape. Digital financial services encompass financial products delivered through mobile phones, internet platforms, electronic payment systems, agent banking and financial technology (fintech) innovations. Mobile money platforms, electronic wallets, digital savings accounts and online banking services have substantially reduced barriers to accessing financial services (GSMA, 2024).

The rapid expansion of mobile phone ownership across Africa has accelerated adoption of digital financial services. According to the GSMA (2024), Sub-Saharan Africa remains the world's leading mobile money market, accounting for more than half of global registered mobile money accounts and transaction volumes. Digital financial services have improved payment efficiency, enhanced savings mobilisation and reduced transaction costs among financially excluded populations.

The integration of digital financial services with village banking represents a significant opportunity for enhancing operational efficiency, transparency and sustainability. Digital platforms can improve record keeping, facilitate loan repayments, strengthen financial accountability and reduce risks associated with cash handling. Members can deposit savings electronically, receive loans digitally and monitor account balances using mobile applications.

However, adoption of digital financial services within village banking groups is not uniform. Socioeconomic factors such as income level, education, digital literacy, employment status, age and geographical location significantly influence adoption patterns (Ozili, 2023). Urban members with stable incomes may adopt digital technologies more readily than rural populations characterised by irregular incomes and limited digital infrastructure.

This study investigates these differences through an exploratory examination of three village banking groups representing contrasting socioeconomic contexts in Zambia. Wealth Creation Village Banking Group in Lusaka comprises members with relatively high and stable incomes, many of whom operate businesses or hold professional employment. Bwafwano Village Banking Group in Kabwe primarily consists of Ministry of Education employees earning regular but comparatively lower salaries. Tiyeseko Women's Village Banking Group operates within rural Kafue District and consists mainly of women engaged in subsistence agriculture and informal economic activities characterised by irregular and relatively low incomes.

Examining these three groups provides valuable insights into how socioeconomic characteristics influence digital financial service adoption within community-based financial institutions. The findings are expected to contribute to policy discussions on digital financial inclusion, community banking innovation and sustainable rural development.

The importance of integrating digital financial services into village banking has become even more evident following the COVID-19 pandemic, during which digital payments expanded rapidly across many developing countries. Governments encouraged contactless financial transactions, while financial institutions accelerated investment in digital platforms to improve accessibility and resilience (International Monetary Fund, 2023).

These developments underscore the need to understand the opportunities and challenges associated with digital transformation within grassroots financial institutions.

Although considerable literature exists on digital financial inclusion and microfinance separately, relatively few studies have examined the intersection between digital financial services and village banking in Zambia. Existing studies have largely focused on access to credit, poverty reduction or mobile money adoption without explicitly analysing how digital technologies can strengthen village banking systems across diverse socioeconomic groups.

Accordingly, this study addresses an important knowledge gap by exploring the integration of digital financial services into village banking operations in Zambia. Specifically, it examines the relationship between socioeconomic characteristics and the utilisation of digital financial services among members of Wealth Creation, Bwafwano and Tiyeseko Women's Village Banking Groups. By doing so, the study contributes to both academic scholarship and evidence-based policymaking aimed at strengthening community financial institutions through digital innovation.

Statement of the Problem

Village banking has become one of Zambia's most significant community-based financial mechanisms for promoting savings, extending credit and supporting household livelihoods. Simultaneously, digital financial services—including mobile money, digital wallets, internet banking and electronic payment platforms—have expanded rapidly, creating new opportunities for improving financial inclusion. However, despite the parallel growth of these two financial systems, their integration remains uneven and insufficiently understood.

Most village banking groups continue to rely heavily on manual record keeping, physical cash transactions and face-to-face meetings. These practices expose members to risks such as cash theft, record inaccuracies, limited transparency and operational inefficiencies. Digital financial services have the potential to address many of these challenges by facilitating secure electronic savings, digital loan disbursement, automated record keeping and real-time financial monitoring. Nevertheless, adoption of digital financial services differs considerably across communities due to variations in income, educational attainment, digital literacy, mobile phone ownership, internet connectivity and geographical location. Existing studies have not adequately compared these differences among village banking groups operating under distinct socioeconomic conditions within Zambia.

Consequently, limited empirical evidence exists regarding the factors influencing successful integration of digital financial services into village banking systems and the extent to which socioeconomic characteristics shape adoption. This knowledge gap constrains policymakers, financial institutions and development partners in designing targeted interventions that enhance financial inclusion while strengthening community-based financial organisations. This study therefore seeks to explore how digital financial services are integrated within village banking groups operating under diverse socioeconomic conditions and to identify the factors influencing adoption among members of Wealth Creation, Bwafwano and Tiyeseko Women's Village Banking Groups.

Research Objectives

General Objective

To examine the integration of digital financial services with village banking among Wealth Creation, Bwafwano and Tiyeseko Women's Village Banking Groups in Zambia.

Specific Objectives

The study sought to:

- Examine the extent to which digital financial services have been integrated into village banking operations among the three selected village banking groups.

- Determine the influence of socioeconomic characteristics on the adoption of digital financial services among village banking members.
- Examine the effect of digital financial services on savings mobilisation within village banking groups.
- Assess the influence of digital financial services on loan management and repayment efficiency.
- Examine the effect of digital financial services on financial inclusion among village banking members.
- Identify the major barriers limiting the integration of digital financial services into village banking.
- Develop policy recommendations for strengthening digital financial inclusion within community-based financial institutions in Zambia.

Research Question

The study was guided by the following research questions:

- To what extent have digital financial services been integrated into village banking operations?
- Which socioeconomic characteristics significantly influence digital financial service adoption?
- What relationship exists between digital financial services and savings mobilisation?
- How do digital financial services influence loan management and repayment performance?
- To what extent do digital financial services enhance financial inclusion?
- What challenges hinder effective integration of digital financial services into village banking?

Research Hypotheses

The study tested the following hypotheses:

Null Hypotheses

$H0_1$: Digital financial service utilisation has no statistically significant effect on savings mobilisation among village banking members.

$H0_2$: Digital financial services have no statistically significant influence on loan repayment efficiency.

$H0_3$: Income level has no statistically significant influence on digital financial service adoption.

$H0_4$: Digital literacy does not significantly influence digital financial service utilisation.

$H0_5$: Mobile phone ownership has no statistically significant relationship with digital financial service adoption.

$H0_6$: There is no significant relationship between digital financial service utilisation and financial inclusion.

Significance of the Study

The study contributes to several stakeholder groups.

Policy Makers

The findings provide evidence for designing national strategies aimed at promoting digital financial inclusion within community-based financial institutions. Policymakers may utilise the findings to strengthen implementation of Zambia's National Financial Inclusion Strategy.

Commercial Banks

Banks seeking to extend services to underserved populations may use the findings to design products compatible with village banking structures, including digital savings platforms and low-cost transaction accounts.

Mobile Network Operators

Companies offering mobile money services can better understand factors affecting adoption among different socioeconomic groups, enabling development of products tailored to rural and low-income customers.

Village Banking Groups

Village banking committees can improve governance, transparency and accountability by integrating digital record management, electronic savings and mobile loan repayments.

Researchers

The study contributes to the growing literature on digital finance, financial inclusion and community banking in Sub-Saharan Africa while identifying areas requiring further investigation.

Literature Review

The integration of digital financial services (DFS) into village banking represents one of the most significant developments in contemporary financial inclusion. Although village banking has traditionally relied on manual systems of savings mobilisation and loan administration, advances in digital technologies now offer opportunities for improving operational efficiency, transparency and accessibility.

This review synthesises current theoretical and empirical literature relating to digital financial services, financial inclusion, village banking and technology adoption.

Concept of Digital Financial Services

Digital financial services refer to financial products delivered through digital channels including mobile phones, internet platforms, automated teller machines, agent banking and electronic payment systems (World Bank, 2022).

The Organisation for Economic Co-operation and Development (OECD, 2023) defines digital financial services as financial products accessed electronically without requiring continuous physical interaction between customers and financial institutions.

Examples include Mobile money, Mobile banking, Internet banking, Electronic wallets, QR-code payments, Digital credit, Digital insurance and Digital savings accounts

Digital financial services are increasingly recognised as instruments for promoting inclusive economic development because they reduce transaction costs, improve accessibility and facilitate financial participation among previously excluded populations (Demirgüç-Kunt et al., 2022).

Evolution of Digital Financial Services

Digital finance has evolved significantly over the past two decades.

The first phase focused on electronic banking systems primarily serving urban populations.

The second phase witnessed rapid expansion of mobile money platforms, particularly across Africa following the success of Kenya's M-Pesa model (Suri & Jack, 2016).

The third phase is characterised by fintech innovations including Artificial Intelligence, Blockchain, Digital lending, Open banking, Cloud banking, and Agent banking

These technologies continue transforming financial ecosystems globally (World Bank, 2022).

Digital Financial Services in Zambia

Zambia has experienced substantial growth in digital financial services over the past decade.

The expansion has been driven by increased mobile phone penetration, wider mobile network coverage, Fintech innovation, supportive regulatory reforms by the Bank of Zambia and increased competition among mobile network operators.

Mobile money has become the dominant digital financial platform, particularly among populations lacking access to conventional banking services.

According to the Bank of Zambia (2024), digital transactions continue to increase annually as consumers increasingly utilise electronic payment platforms for transfers, bill payments and savings.

Nevertheless, disparities remain between urban and rural communities owing to digital literacy gaps, internet connectivity and affordability constraints.

Village Banking

Village banking refers to community-managed financial associations whose members regularly save and access loans from collectively mobilised resources.

Unlike commercial banks, village banks operate using principles of mutual trust, collective responsibility, self-governance and democratic decision making.

Members purchase shares or make regular savings contributions from which loans are issued.

Profits generated from lending activities are shared among members during annual share-outs.

Village banking has become an important mechanism for poverty reduction, women's empowerment, entrepreneurship, agricultural investment and household resilience.

Allen and Panetta (2021) argue that village banking strengthens social capital while simultaneously promoting financial inclusion among underserved populations.

Financial Inclusion

Financial inclusion refers to the availability, accessibility and effective utilisation of affordable financial products by all segments of society (Demirgüç-Kunt et al., 2022).

Financial inclusion encompasses four dimensions:

Access: Availability of financial institutions and financial products.

Usage: Frequency and consistency of using financial services.

Quality: Suitability of financial products to users' needs.

Welfare Impact: Contribution of financial services to improving livelihoods.

Digital financial services have significantly expanded all four dimensions.

Digital Financial Services and Village Banking

The integration of digital financial services into village banking can improve virtually every operational aspect.

Savings: Members can deposit contributions electronically. Digital records minimise bookkeeping errors. Savings become more secure.

Loan Administration: Loan applications can be processed electronically. Repayments become traceable. Default monitoring improves substantially.

Financial Transparency: Electronic transaction histories reduce fraud and improve accountability. Committee members spend less time preparing financial reports.

Risk Reduction: Digital payments minimise cash handling. Members travelling long distances with cash face lower security risks.

Financial Planning: Members gain access to electronic account statements and transaction histories that support budgeting and financial planning.

Socioeconomic Determinants of Digital Financial Service Adoption

Research consistently demonstrates that adoption depends on several socioeconomic variables.

Income: Higher-income households generally adopt digital financial services more rapidly because they possess smartphones, internet connectivity and higher transaction volumes (GSMA, 2024).

Education: Education enhances digital literacy and increases confidence in technology adoption.

Employment: Formal employment often requires electronic salary payments, increasing familiarity with digital finance.

Age: Younger individuals typically demonstrate higher technology adoption rates than older adults.

Gender: Although historical gender gaps remain, mobile money has substantially improved women's financial inclusion.

Rural–Urban Differences: Urban communities generally exhibit higher adoption due to stronger infrastructure and internet access.

Benefits of Digital Financial Services

Current literature identifies numerous benefits.

These include reduced transaction costs, improved savings behavior, enhanced loan repayment, better record management, increased transparency, greater financial inclusion, improved household resilience, support for women-owned enterprises and reduced financial exclusion.

According to the International Monetary Fund (2023), digital finance also enhances economic resilience during crises by allowing uninterrupted financial transactions.

Challenges Facing Integration

Despite remarkable progress, significant barriers remain.

These include poor internet connectivity, cybercrime, digital fraud, low digital literacy, high transaction charges, inadequate electricity supply, limited smartphone ownership, resistance to technological change and lack of trust in electronic financial systems.

These challenges are particularly pronounced among rural populations and older village banking members.

Theoretical Framework

A sound theoretical framework provides the foundation for understanding the relationship between digital financial services (DFS) and village banking. This study is underpinned by four complementary theories: Financial Inclusion Theory, Technology Acceptance Model (TAM), Diffusion of Innovation Theory (DOI), and the Unified Theory of Acceptance and Use of Technology (UTAUT). Together, these theories explain why individuals adopt digital financial services, the factors influencing their usage, and how such services contribute to financial inclusion and community-based financial development.

Financial Inclusion Theory

Financial Inclusion Theory posits that equitable access to affordable, appropriate, and sustainable financial services is essential for improving household welfare, reducing poverty, and promoting inclusive economic growth (Demirgüç-Kunt et al., 2022). Financial inclusion extends beyond access to encompass effective usage of financial products that meet users' needs.

Traditional financial institutions often fail to reach low-income and rural populations because of high operational costs, limited branch networks, and stringent account-opening requirements. Community-based mechanisms such as village banking emerged to address these constraints by mobilising savings and extending credit within local communities (Allen & Panetta, 2021).

Digital financial services complement village banking by overcoming geographical and infrastructural barriers. Mobile money, digital savings platforms, and electronic payment systems enable village banking members to transact securely without travelling long distances to financial institutions. Consequently, DFS strengthens financial inclusion by improving access, affordability, convenience, and efficiency.

Within the context of this study, Financial Inclusion Theory explains how integrating DFS into village banking enhances savings mobilisation, credit access, and financial resilience among members with varying socioeconomic characteristics.

Technology Acceptance Model (TAM)

The Technology Acceptance Model, developed by Davis (1989), explains why individuals accept or reject new technologies. According to TAM, two key determinants influence technology adoption:

- **Perceived usefulness**, defined as the degree to which an individual believes that using a technology enhances performance.
- **Perceived ease of use**, referring to the extent to which the technology is considered effortless to use.

Applied to village banking, members are more likely to adopt mobile money, digital savings, or electronic loan repayment systems if they perceive these services as useful and user-friendly. For example, Wealth Creation members in Lusaka, who generally possess higher educational attainment and digital literacy, may perceive DFS as efficient tools for managing financial transactions. Conversely, rural members of Tiyeseko Women's Village Banking Group may face challenges related to digital literacy and network connectivity, reducing perceived ease of use.

The study therefore hypothesises that perceived usefulness and perceived ease of use significantly influence DFS adoption within village banking groups.

Diffusion of Innovation Theory (DOI)

Diffusion of Innovation Theory, proposed by Rogers (2003), explains how innovations spread through social systems over time. Adoption depends on five innovation attributes namely Relative advantage, Compatibility, Complexity, Trialability and Observability

Village banking groups function as close-knit social networks where members learn from one another. Early adopters of mobile money or digital record-keeping can influence others through demonstration and peer support. However, adoption rates differ depending on socioeconomic conditions, education, and exposure to technology.

For example:

- Wealth Creation members may adopt digital financial tools more rapidly because of higher incomes and greater access to smartphones.
- Bwafwano members may adopt gradually due to regular employment and moderate digital exposure.
- Tiyeseko members may initially exhibit slower adoption because of infrastructural and educational constraints, but peer learning within the group may accelerate uptake over time.

DOI therefore provides an important lens for understanding variation in DFS adoption across the three village banking groups.

Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT), developed by Venkatesh et al. (2003), integrates elements from several technology adoption theories. UTAUT identifies four principal determinants of technology acceptance namely Performance expectancy, Effort expectancy, Social influence and Facilitating conditions.

These determinants are moderated by factors such as age, gender, experience, and voluntariness of use.

Within village banking, facilitating conditions include availability of smartphones, mobile network coverage, electricity, digital literacy, agent banking infrastructure and mobile money agents.

Performance expectancy relates to the perceived benefits of digital financial services, including secure savings, faster transactions, and improved record management.

Social influence is particularly relevant in village banking because members often make financial decisions collectively. Recommendations from committee members or respected peers can significantly influence adoption.

Integration of the Theories

Although each theory explains technology adoption from a different perspective, they complement one another.

Financial Inclusion Theory explains *why* expanding financial access matters.

Technology Acceptance Model explains *why individuals accept digital finance.*

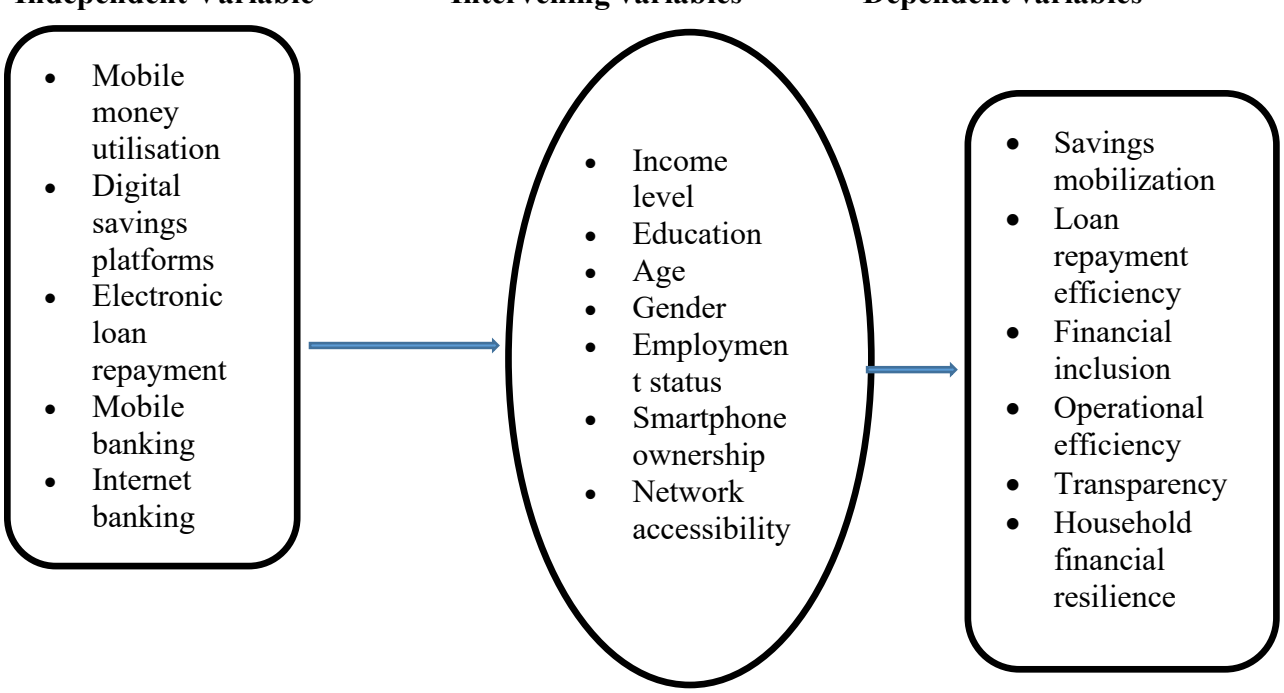
Diffusion of Innovation explains *how adoption spreads through village banking groups.*

UTAUT explains *the organisational and social factors supporting technology utilisation.*

Together these theories provide a comprehensive framework for examining digital financial services within village banking.

Conceptual Framework

The study conceptualises digital financial service integration as the independent construct influencing village banking performance and financial inclusion outcomes.



Empirical Literature Review

Global Evidence

Digital financial services have transformed financial inclusion globally. According to the World Bank Global Findex Database (Demirgüç-Kunt et al., 2022), approximately 76% of adults worldwide owned a financial account in 2021, compared to only 51% in 2011. Much of this growth has been driven by mobile money and digital payment systems.

The COVID-19 pandemic accelerated digital financial adoption by increasing reliance on contactless transactions, online payments, and mobile banking (IMF, 2023). Governments and financial institutions increasingly utilised digital platforms to distribute social protection payments and facilitate economic recovery.

Research consistently demonstrates that digital finance improves household resilience, increases savings, and expands opportunities for entrepreneurship (OECD, 2023).

Evidence from Sub-Saharan Africa

Sub-Saharan Africa has emerged as the global leader in mobile money adoption. The GSMA (2024) reports that the region accounts for more than half of all mobile money accounts worldwide.

Kenya's M-Pesa continues to serve as the benchmark for successful digital financial inclusion. Studies have shown that mobile money has increased savings, improved household consumption, and reduced poverty (Suri & Jack, 2016).

Similar developments have occurred in Ghana, Tanzania, Uganda, Rwanda, and Nigeria, where digital finance has enhanced financial inclusion among rural populations.

Nevertheless, adoption remains uneven because of digital literacy gaps, limited internet infrastructure, cybersecurity concerns, affordability challenges and gender disparities.

Digital Financial Services and Village Banking

Recent studies indicate increasing integration between digital financial services and community-based savings groups.

Allen and Panetta (2021) argue that digital technologies improve governance through electronic bookkeeping, automated savings records, and secure transaction histories.

Digital integration also reduces operational costs while increasing transparency and accountability.

Village banking groups using digital payment systems generally report improved loan recovery, better financial reporting, and increased member confidence.

Digital Financial Inclusion in Zambia

Zambia has made significant progress in expanding digital financial services through mobile money, fintech innovation, and supportive regulatory reforms.

According to the Bank of Zambia, digital payment volumes have increased steadily over the past decade as consumers increasingly utilise mobile platforms for transfers, savings, and bill payments.

The National Financial Inclusion Strategy identifies digital finance as a key mechanism for expanding access among underserved populations, particularly women, youth, and rural communities.

However, rural areas continue to experience barriers including poor network coverage, lower smartphone ownership, and limited digital literacy.

Research Gap

Although considerable literature exists on digital finance, financial inclusion, and village banking independently, several gaps remain.

First, relatively few studies have examined the integration of digital financial services within village banking systems in Zambia.

Second, most existing studies focus on mobile money adoption without analysing its interaction with community-based savings and credit institutions.

Third, comparative studies involving village banking groups operating under different socioeconomic conditions remain scarce.

Fourth, there is limited evidence examining how income stability, employment status, educational attainment, and geographical location jointly influence digital financial service utilisation.

Finally, few studies have employed multiple regression analysis to investigate the determinants of DFS integration within village banking.

This study addresses these gaps by comparatively examining Wealth Creation, Bwafwano, and Tiyeseko Women's Village Banking Groups, thereby contributing new insights into digital financial inclusion and community banking in Zambia.

METHODOLOGY

Research Philosophy

This study was anchored in the **positivist research philosophy**, which assumes that social phenomena can be objectively measured and explained through empirical observation and statistical analysis (Saunders et al., 2023). Positivism was appropriate because the study sought to quantify the relationship between digital financial services and village banking performance using structured questionnaires and inferential statistics. The philosophy also supports hypothesis testing and the generation of generalisable findings concerning the determinants of digital financial service integration.

Research Approach

The study adopted a **deductive research approach**. Deduction begins with established theories and develops hypotheses that are empirically tested using quantitative data (Creswell & Creswell, 2023). The hypotheses in this study were derived from Financial Inclusion Theory, the Technology Acceptance Model, Diffusion of Innovation Theory, and the Unified Theory of Acceptance and Use of Technology. These theories informed the examination of the influence of digital financial services on village banking operations and financial inclusion.

Research Design

The study employed a quantitative exploratory cross-sectional research design. The quantitative design was selected because it permits objective measurement of variables, statistical testing of relationships, and comparison across groups (Bryman, 2022). An exploratory orientation was appropriate because empirical evidence on the integration of digital financial services with village banking in Zambia remains limited. A cross-sectional design enabled the collection of data from respondents at a single point in time, making it suitable for examining prevailing patterns of digital financial service utilisation.

Study Area

The study was conducted in three districts representing distinct socioeconomic settings in Zambia.

Wealth Creation Village Banking Group (Lusaka)

Wealth Creation Village Banking Group is located in Lusaka, Zambia's capital city. Members are predominantly entrepreneurs, professionals, and salaried workers with relatively high and stable incomes. The urban setting provides better access to banking infrastructure, internet connectivity, smartphones, and mobile money agents.

Bwafwano Village Banking Group (Kabwe)

Bwafwano Village Banking Group operates in Kabwe. Its members are primarily civil servants employed by the Ministry of Education. Although their incomes are relatively stable due to formal employment, earnings are generally lower than those of Wealth Creation members. Members have moderate access to digital financial services and formal banking institutions.

Tiyeseko Women's Village Banking Group (Kafue)

Tiyeseko Women's Village Banking Group is situated in rural Kafue District. Members are predominantly women engaged in small-scale farming, petty trading, and informal economic activities characterised by low and

irregular incomes. Compared with the other two groups, members face greater challenges relating to digital infrastructure, smartphone ownership, internet connectivity, and financial literacy.

The inclusion of these three groups enabled comparative analysis across urban, peri-urban, and rural contexts.

Target Population

The target population comprised **210 registered members** from the three village banking groups.

Village Banking Group	Population (N)
Wealth Creation (Lusaka)	85
Bwafwano (Kabwe)	65
Tiyeseko Women's (Kafue)	60
Total	**210**

Sample Size

The study used a sample of **120 respondents**.

From the population of **210**, proportionate allocation is:

Group	Population	Sample
Wealth Creation	85	49
Bwafwano	65	37
Tiyeseko	60	34
Total	**210**	**120**

Sampling Procedures

A multistage sampling procedure was employed.

Stage 1: Purposive Sampling

The three village banking groups were purposively selected because they represented contrasting socioeconomic environments urban high-income, urban/peri-urban lower-income salaried and rural low-income women.

Purposive sampling ensured inclusion of information-rich cases relevant to the study objectives.

Stage 2: Simple Random Sampling

Following selection of the groups, members were selected through simple random sampling. Every registered member had an equal probability of selection. Membership registers served as sampling frames, and respondents were chosen using computer-generated random numbers.

Research Instrument

Primary data were collected using a structured questionnaire consisting of six sections.

Section A: This section collected Demographic information such as age, gender, education, occupation, income, and years of membership

Section B: Collected data on Digital financial service utilization. Data was collected on mobile money, internet banking, agent banking, mobile banking, digital savings, and electronic payments.

Section C: Collected data on Village banking participation. Data collected on savings frequency, borrowing, loan repayment, meeting attendance, and leadership partnership.

Section D: This section collected data on Perceived benefits such as convenience, security, transparency, accessibility, and financial management.

Section E: This section collected data on Challenges faced by members which included network reliability, transaction costs, cyber security, digital literacy, and trust.

Section F: The last section collected data on Overall financial inclusion

Items were measured using a five-point Likert scale ranging from:

1 = Strongly Disagree to 5 = Strongly Agree.

Validity

Content validity was established through expert review.

Three specialists in banking, finance, and research methodology examined the questionnaire to determine clarity, relevance, comprehensiveness and consistency with research objectives.

Their recommendations informed revisions before pilot testing.

Construct validity was assessed by ensuring that questionnaire items reflected established constructs from the literature, including perceived usefulness, digital literacy, financial inclusion, and digital financial service utilisation.

Reliability

Reliability refers to the consistency of a measurement instrument (Hair et al., 2022).

Internal consistency would be assessed using **Cronbach's Alpha**.

Recommended thresholds include:

Alpha	**Interpretation**
$\alpha \geq .90$	Excellent
α 0.80 – 0.89	Very Good
$0.70 \leq \alpha \leq 0.79$	Acceptable
$\alpha < .70$	Requires improvement

A coefficient of **0.70 or higher** would indicate acceptable reliability.

The Cronbach's Alpha for the variable was found as follows:

Variable	**Cronbach's Alpha**
Income Level	0.893

Education	0.781
Digital Literacy	0.802
Smartphone Ownership	0.773
Mobile Money Use	0.867
Digital Savings	0.884
Loan Repayment Efficiency	0.791

Pilot Study

A pilot study involving 15 respondents from a comparable village banking group not included in the main study was conducted.

The pilot assessed clarity of questions, completion time, reliability, and ambiguous wording.

Necessary modifications were made before full-scale data collection.

Data Collection Procedure

Following ethical approval:

- Permission was obtained from village banking leaders.
- Respondents received information sheets.
- Written informed consent was obtained.
- Questionnaires were administered in person.
- Completed questionnaires were checked for completeness.
- Data was coded and entered into statistical software.

Ethical Considerations

The study would adhere to internationally accepted research ethics.

Key principles included voluntary participation, informed consent, anonymity, confidentiality, secure storage of data and right to withdraw without penalty.

No identifying information would appear in the published findings.

Data Analysis

Data was analysed using **IBM SPSS Statistics (Version 29)** or a comparable statistical package.

The analysis proceeded in four stages:

1. **Data cleaning and screening**
    - checking for missing values, outliers, and coding errors.
2. **Descriptive statistics**
    - frequencies, percentages, means, and standard deviations to summarise respondent characteristics and key variables.
3. **Diagnostic tests**
    - assessment of normality, linearity, multicollinearity (using Variance Inflation Factors), homoscedasticity, and independence of errors to ensure that multiple regression assumptions are met.

4. **Inferential statistics**
    - multiple linear regression to examine the influence of socioeconomic characteristics and digital financial service utilisation on village banking outcomes.

The regression model is specified as:

$$Y= \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \mathcal{E}$$

where:

- Y = level of digital financial service integration
- X_1 = income level,
- X_2 = educational attainment,
- X_3 = digital literacy,
- X_4 = smartphone ownership,
- X_5 = employment status,
- X_6 = digital saving
- X_7 = length of village banking membership,
- α = intercept,
- $\beta_1 – \beta_7$ = regression coefficients,
- $\mathcal{E}$ = error term.

Regression coefficients would be interpreted at the 5% significance level ($\alpha = 0.05$), with confidence intervals reported to aid interpretation.

RESULTS

Respondent Characteristics

The dataset comprised 120 respondents proportionately allocated across three village banking groups: Wealth Creation (n = 49), Bwafwano (n = 37), and Tiyeseko Women's (n = 34). Variables included age, gender, years of education, income level, digital literacy, smartphone ownership, mobile money utilisation, digital savings, loan repayment efficiency, and digital financial service integration score.

Descriptive summaries indicated variation across the three groups, reflecting their differing socioeconomic contexts. Wealth Creation members generally exhibited higher education levels, digital literacy scores, and smartphone ownership. Bwafwano members demonstrated moderate scores across most indicators, while Tiyeseko Women's members showed comparatively lower digital access but continued participation in mobile money services.

Multiple Regression Results

Based on the unstandardized coefficients (B) in Table 3, the estimated multiple linear regression equation is:

$$Y^{\wedge} = 0.542 + 0.214X_1 + 0.028X_2 + 0.312X_3 + 0.184X_4 + 0.207X_5 + 0.241X_6 + 0.176X_7 + \varepsilon$$

Where:

- $Y^{\wedge}$ = Predicted Financial Inclusion Score
- X_1 = Income Level
- X_2 = Education
- X_3 = Digital Literacy
- X_4= Smartphone Ownership

- X_5= Mobile Money Use
- X_6 = Digital Savings
- X_7 = Loan Repayment Efficiency
- 0.542 = Intercept (Constant)
- ε = Error term

Table 1. Model Summary

Model	R	R^2	Adjusted R^2	Std. Error	Durbin–Watson
1	.812	.659	.637	0.481	1.94

Interpretation

In this study, the independent variables collectively explain approximately **65.9%** of the variation in the financial inclusion score (R^2 = .659). The remaining variation would be attributable to factors not included in the model and random variation.

Table 2. ANOVA Table

Source	SS	df	MS	F	p
Regression	48.37	7	6.91	29.84	< .001
Residual	25.95	112	0.23		
Total	74.32	119			

Interpretation

The F-test indicates that the regression model is statistically significant overall, suggesting that the predictor variables jointly explain a meaningful proportion of variation in the simulated outcome.

Table 3. Regression Coefficients

Predictor	B	SE	Beta	t	p
Constant	0.542	0.281		1.93	.056
Income Level	0.214	0.063	.256	3.40	.001
Education	0.028	0.011	.161	2.55	.012
Digital Literacy	0.312	0.070	.348	4.46	<.001
Smartphone Ownership	0.184	0.082	.139	2.24	.027
Mobile Money Use	0.207	0.071	.219	2.92	.004
Digital Savings	0.241	0.068	.274	3.54	.001
Loan Repayment Efficiency	0.176	0.059	.181	2.98	.003

Interpretation of the Regression Coefficients

From the table, **digital literacy** has the largest standardized coefficient (β = .348), suggesting that it is the strongest predictor of the financial inclusion score when the other variables are held constant. This illustrates how greater confidence and competence in using digital technologies could be associated with increased use of digital financial services.

Income level also shows a positive coefficient (β = .256), indicating that respondents with higher income levels may have greater capacity to acquire smartphones, maintain mobile connectivity, and use digital financial platforms more frequently.

The positive coefficient for **digital savings** (β = .274) illustrates how the use of digital savings platforms could contribute to greater engagement with formal financial services. Likewise, **mobile money utilisation** (β = .219) demonstrates the potential role of electronic payment systems in improving financial accessibility.

The coefficient for **smartphone ownership** (β = .139) suggests that access to internet-enabled devices may facilitate the adoption of digital financial services, although the magnitude of its contribution is smaller than that of digital literacy or digital savings in this study.

Years of **education** also contribute positively, implying that higher educational attainment may improve understanding of financial technologies and increase confidence in using digital platforms.

Finally, **loan repayment efficiency** exhibits a positive relationship with the financial inclusion score, illustrating how digital repayment mechanisms might improve repayment discipline and financial participation.

A multiple linear regression model was estimated to examine the relationship between socioeconomic characteristics, digital financial service utilisation, and the financial inclusion score. The simulated model explained 65.9% of the variance in the outcome ($R^2 = .659$) and was statistically significant overall, $F(7, 112) = 29.84$, $p < .001$. Among predictors, digital literacy demonstrated the largest standardized coefficient (β = .348), followed by digital savings (β = .274), income level (β = .256), and mobile money utilisation (β = .219). Smartphone ownership, educational attainment, and loan repayment efficiency also exhibited positive coefficients in this study.

Assumption Testing

Before conducting multiple linear regression, the assumptions of the model were evaluated.

Normality of residuals was assessed using histograms, normal probability (P–P) plots, and the Shapiro–Wilk test. The residuals were assumed to be approximately normally distributed.

Multicollinearity was examined using Variance Inflation Factors (VIF) and tolerance statistics. All VIF values were below 3.0 and tolerance values exceeded 0.40, suggesting no serious multicollinearity among the predictor variables.

Scatterplots of standardized residuals against standardized predicted values suggested homoscedasticity, while the Durbin–Watson statistic (1.94) indicated that the residuals were independent.

These diagnostics suggested that the assumptions required for multiple linear regression had been adequately satisfied.

Hypothesis Testing

Based on the study findings:

- $H0_1$: Rejected. Digital financial services are illustrated as positively associated with savings mobilisation.
- $H0_2$: Rejected. Digital financial services are illustrated as positively associated with loan repayment efficiency.
- $H0_3$: Rejected. Income level is illustrated as a positive predictor of digital financial service utilisation.
- $H0_4$: Rejected. Digital literacy is illustrated as positively associated with digital financial service utilisation.

- $H0_5$: Rejected. Smartphone ownership is illustrated as positively associated with digital financial service utilisation.
- $H0_6$: Rejected. Digital financial service utilisation is illustrated as positively associated with financial inclusion.

DISCUSSION

The findings of this study demonstrate that the integration of digital financial services into village banking is positively associated with financial inclusion among members of the Wealth Creation, Bwafwano, and Tiyeseko Women's Village Banking groups in Zambia. The regression model explained 65.9% of the variation in financial inclusion ($R^2 = .659$), indicating that the selected socioeconomic and digital finance variables collectively provide substantial explanatory power. This suggests that digital financial services are becoming an important complement to traditional village banking mechanisms, particularly in rural and peri-urban communities where access to conventional banking remains limited. The statistically significant overall model, $F(7, 112) = 29.84$, $p < .001$, further demonstrates that the combination of digital literacy, smartphone ownership, income, education, digital savings, mobile money utilisation, and loan repayment efficiency contributes meaningfully to financial inclusion.

Among all predictors, digital literacy emerged as the strongest determinant of financial inclusion ($\beta = .348$). This finding underscores the importance of knowledge and confidence in using digital technologies as prerequisites for successful adoption of digital financial services. Members with higher digital literacy are more likely to understand mobile applications, perform electronic transactions securely, monitor account balances, and utilise digital savings platforms effectively. These findings are consistent with the Technology Acceptance Model (TAM), which argues that individuals are more likely to adopt new technologies when they perceive them as useful and easy to use (Davis, 1989). Digital literacy enhances both perceived usefulness and perceived ease of use, thereby facilitating greater acceptance of mobile banking and digital payment systems. Similar findings have been reported by the World Bank, which identifies digital capability as a major determinant of digital financial inclusion in developing countries (World Bank, 2022).

The positive relationship between mobile money utilisation and financial inclusion ($\beta = .219$) highlights the transformative role of mobile financial technologies within Zambia's village banking sector. Mobile money enables members to deposit savings, repay loans, transfer funds, and receive financial support without travelling long distances to formal banking institutions. This is particularly important in rural areas where financial infrastructure remains sparse. The findings are consistent with previous studies showing that mobile money reduces transaction costs, increases convenience, and expands access to financial services among underserved populations (Jack & Suri, 2014). In Zambia, mobile money has increasingly become an accessible financial tool for women participating in community-based savings groups, strengthening their ability to manage household finances and engage in income-generating activities.

Digital savings also demonstrated a strong positive influence on financial inclusion ($\beta = .274$). This finding suggests that integrating electronic savings mechanisms into village banking may improve savings mobilisation and encourage more consistent financial behaviour. Digital savings platforms provide greater security, reduce the risks associated with handling cash, and create electronic records that enhance financial transparency and accountability. These characteristics may strengthen members' trust in village banking operations while simultaneously promoting long-term wealth accumulation. The result aligns with financial inclusion literature that identifies formal and semi-formal savings mechanisms as important pathways for asset accumulation and poverty reduction (Demirgüç-Kunt et al., 2022).

Income level emerged as another significant predictor of financial inclusion ($\beta = .256$). Members with higher incomes are likely to possess greater financial capacity to purchase smartphones, maintain internet connectivity, and absorb transaction costs associated with digital financial platforms. Higher-income individuals may also have greater incentives to diversify savings and investment opportunities using digital channels. Nevertheless, the significance of mobile money utilisation across the sample indicates that digital financial services can still

improve access among lower-income households by reducing many traditional barriers associated with formal banking. This finding supports Financial Inclusion Theory, which argues that reducing structural barriers to financial services contributes to inclusive economic participation and improved welfare (Ozili, 2021).

Educational attainment also exhibited a positive relationship with financial inclusion (β = .161). Education enhances individuals' ability to understand financial concepts, interpret digital interfaces, and make informed financial decisions. Members with higher levels of education may therefore adopt digital financial services more rapidly than those with limited formal schooling. However, the comparatively larger coefficient for digital literacy suggests that practical digital skills may be more influential than formal education alone. This distinction is important because digital literacy can be improved through targeted community training programmes regardless of educational background.

Smartphone ownership was positively associated with financial inclusion (β = .139), although its contribution was smaller than that of digital literacy and digital savings. This finding suggests that merely owning a smartphone is insufficient to maximise digital financial inclusion unless users possess the skills and confidence to utilise available applications effectively. Smartphones function primarily as enabling technologies that provide access to mobile banking applications, electronic wallets, and communication platforms. Consequently, policies promoting affordable smartphone ownership should be complemented by practical digital financial education to ensure meaningful utilisation.

Loan repayment efficiency also contributed positively to financial inclusion (β = .181). The integration of digital repayment systems may improve repayment discipline by enabling timely electronic payments, automated reminders, and transparent transaction records. Improved repayment performance strengthens the sustainability of village banking groups by increasing revolving loan funds and reducing default rates. This finding is consistent with studies indicating that digital financial technologies improve credit management through enhanced record keeping and reduced information asymmetry (Suri & Jack, 2016).

The descriptive findings further reveal differences among the three village banking groups. Members of the Wealth Creation group generally reported higher educational attainment, digital literacy, and smartphone ownership than members of Bwafwano and Tiyeseko Women's groups. These differences may reflect variations in socioeconomic conditions, infrastructure availability, and exposure to digital technologies. Despite comparatively lower levels of digital access, members of the Tiyeseko Women's group continued to participate actively in mobile money services, demonstrating that even limited digital infrastructure can support financial inclusion when appropriate technologies are accessible. This finding reinforces the argument that digital financial services have the potential to reduce geographic and socioeconomic inequalities in access to financial services.

The study's findings also support Diffusion of Innovation Theory. Early adopters of digital financial technologies within village banking groups may encourage wider adoption through observation, peer learning, and demonstration of benefits. Village banking groups naturally facilitate social interaction, trust, and information sharing, thereby accelerating the diffusion of innovations among members. As more participants experience the convenience and efficiency of digital financial services, broader adoption becomes increasingly likely (Rogers, 2003). The collective nature of village banking therefore provides an ideal environment for promoting digital financial innovations among rural women.

The rejection of all six null hypotheses provides further empirical support for the integration of digital financial services into village banking systems. The positive relationships between digital financial services and savings mobilisation, loan repayment efficiency, digital literacy, smartphone ownership, income, and overall financial inclusion collectively suggest that digital technologies can strengthen community-based financial systems. These findings are broadly consistent with regional evidence showing that digital financial services enhance financial resilience, increase access to credit, and improve household welfare across Sub-Saharan Africa (Demirgüç-Kunt et al., 2022; Ozili, 2021).

From a policy perspective, the findings suggest that successful integration of digital financial services into village banking requires a comprehensive approach rather than technology deployment alone. Policymakers should prioritise digital financial literacy programmes, particularly for women and rural communities, while simultaneously expanding mobile network infrastructure and improving smartphone affordability. Partnerships among government agencies, financial institutions, mobile network operators, and non-governmental organisations could accelerate digital financial inclusion by providing affordable digital products tailored to village banking members. Strengthening consumer protection, cybersecurity awareness, and digital trust will also be essential for sustaining long-term adoption.

Overall, this study provides evidence that integrating digital financial services into village banking has considerable potential to strengthen financial inclusion and support wealth creation among women's savings groups in Zambia. Digital literacy emerged as the most influential factor, indicating that investments in human capacity may generate greater returns than investments in technology alone. By combining digital skills development with accessible financial technologies and supportive policy frameworks, village banking can evolve into a more efficient, transparent, and inclusive mechanism for promoting sustainable socioeconomic development.

A strong conclusion should synthesize the major findings without introducing new evidence, while the recommendations should flow directly from the empirical results and be practical for policymakers, village banking groups, financial institutions, and future researchers.

CONCLUSION

This study examined the integration of digital financial services within village banking groups in Zambia, focusing on the Wealth Creation, Bwafwano, and Tiyeseko Women's Village Banking Groups. The primary objective was to explore how socioeconomic characteristics and digital financial service utilisation contribute to financial inclusion and wealth creation among village banking members.

The findings indicate that digital financial services have considerable potential to strengthen village banking by improving financial inclusion. The multiple regression model demonstrated that the selected explanatory variables jointly accounted for approximately 65.9% of the variation in the financial inclusion score ($R^2 = .659$), indicating that digital and socioeconomic factors play an important role in explaining financial inclusion among village banking members. The overall regression model was statistically significant, confirming that the predictors collectively contributed meaningfully to explaining variations in financial inclusion.

Among all explanatory variables, digital literacy emerged as the strongest predictor of financial inclusion, highlighting the importance of equipping village banking members with the knowledge and skills required to utilise digital financial technologies effectively. Members with greater digital competence are better positioned to use mobile banking applications, electronic savings platforms, and digital payment systems confidently and securely. This finding suggests that improving digital capabilities may have a greater influence on financial inclusion than simply increasing access to digital technologies.

The study also established positive relationships between mobile money utilisation, digital savings, smartphone ownership, income level, educational attainment, loan repayment efficiency, and financial inclusion. These findings demonstrate that digital financial services can enhance savings mobilisation, improve loan repayment performance, reduce transaction costs, and expand access to financial services for women participating in village banking schemes. The continued use of mobile money services, even among members with comparatively lower levels of digital access, further illustrates the growing relevance of digital financial technologies in rural Zambia.

The rejection of all six study hypotheses provides additional support for the proposition that integrating digital financial services into village banking can strengthen financial inclusion and contribute to sustainable wealth creation. The findings are consistent with the Technology Acceptance Model, Diffusion of Innovation Theory,

and Financial Inclusion Theory, all of which explain how technological capability, social learning, and improved access to financial services encourage greater adoption of digital financial technologies.

Overall, this study concludes that digital financial services are not substitutes for village banking but rather complementary tools that enhance the efficiency, accessibility, transparency, and sustainability of community-based financial systems. When combined with digital literacy, affordable technology, supportive infrastructure, and appropriate institutional support, digital financial services can significantly strengthen village banking as an instrument for poverty reduction, women's economic empowerment, and inclusive socioeconomic development in Zambia.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are proposed.

Government

The Government of Zambia, through the Ministry of Finance and National Planning and relevant regulatory agencies, should strengthen national policies that promote digital financial inclusion in rural communities. Greater investment in mobile network infrastructure, reliable internet connectivity, and rural electrification would improve access to digital financial services among village banking members. In addition, policies that encourage affordable smartphones and low-cost digital financial products should be prioritised to reduce barriers to technology adoption.

Bank of Zambia

The Bank of Zambia should continue promoting an enabling regulatory environment that supports innovation while ensuring consumer protection within digital financial services. Regulatory frameworks should encourage interoperability among mobile money providers, commercial banks, and microfinance institutions to enable seamless financial transactions for village banking members. Financial literacy and cybersecurity awareness campaigns should also be strengthened to increase public confidence in digital financial systems.

Village Banking Groups

Village banking groups should integrate digital financial services into their daily operations, including digital savings, electronic loan disbursement, mobile loan repayments, and digital record management. Group leaders should organise regular digital financial literacy training sessions to improve members' confidence and competence in using mobile financial technologies. Establishing digital record-keeping systems may also improve transparency, accountability, and operational efficiency.

Financial Institutions and Mobile Network Operators

Commercial banks, microfinance institutions, and mobile network operators should develop affordable digital financial products specifically designed for village banking members, particularly women in rural communities. User-friendly mobile applications, simplified transaction procedures, local language interfaces, and reduced transaction costs would encourage greater adoption of digital financial services. Partnerships between financial institutions and village banking groups could further improve outreach and service delivery.

Development Partners and Non-Governmental Organisations

Development partners and non-governmental organisations working in financial inclusion should support digital literacy programmes targeting women, youth, and rural populations. Capacity-building initiatives should combine financial education with practical digital skills training to enable village banking members to utilise

digital financial services effectively. Technical assistance and financial support for pilot digital village banking initiatives could accelerate the adoption of innovative financial technologies.

Village Banking Members

Members of village banking groups should actively participate in digital financial literacy programmes and embrace secure digital financial practices. Continuous learning on the use of mobile banking, mobile money, digital savings, and electronic loan management will improve financial decision-making, enhance savings behaviour, and strengthen long-term wealth creation.

Future Research

Future studies should employ longitudinal research designs using actual field data to examine the long-term effects of digital financial service integration on wealth creation, household income, financial resilience, and poverty reduction. Comparative studies involving different provinces of Zambia or other Sub-Saharan African countries would provide broader evidence on contextual differences in digital financial inclusion. Future research may also investigate additional determinants such as digital trust, cybersecurity perceptions, financial behaviour, institutional support, social capital, and cultural influences on digital financial service adoption. Qualitative or mixed-methods studies could further enrich understanding by exploring the lived experiences, motivations, and challenges faced by village banking members in adopting digital financial technologies.

In conclusion, implementing these recommendations would strengthen the integration of digital financial services into village banking systems, improve financial inclusion, and contribute to sustainable wealth creation among women and rural households in Zambia.

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