

**FINANCIAL INCLUSION AND HUMAN CAPITAL
DEVELOPMENT AMONG INFORMAL SECTOR WORKERS IN
IMO STATE: A SURVEY-BASED ANALYSIS**

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ABSTRACT: This study examined the relationship between financial inclusion and human capital development among informal sector workers in Imo State, Nigeria. It focused on three key dimensions—access to microcredit, participation in Isusu (savings groups), and mobile money usage—and how these are associated with skill acquisition, health expenditure, and investment in education. A descriptive survey design was adopted, with data collected from 360 respondents across Owerri Municipal and Orlu zones using structured questionnaires and interviews. Data were analyzed using descriptive statistics and chi-square tests. The findings revealed a significant association between access to microcredit and skill acquisition, suggesting that informal workers with access to credit are more likely to invest in vocational training and business development. Participation in Isusu savings groups was marginally associated with health expenditure, suggesting that informal savings mechanisms may help manage healthcare costs. Mobile money usage was also significantly associated with investment in education, likely by facilitating payments and encouraging savings for schooling. The study concluded that financial inclusion is positively associated with key dimensions of human capital development by reducing financial constraints and supporting investments in education, skills, and health. It recommends expanding access to inclusive financial services and strengthening financial literacy initiatives.

Keywords: Financial Inclusion, Human Capital Development, Microcredit, Mobile Money, Isusu, Informal Sector, Nigeria

INTRODUCTION

Financial inclusion refers to the accessibility and use of affordable formal financial services, such as savings, credit, payment systems, and insurance, by all segments of the population, particularly low-income and underserved groups (Central Bank of Nigeria [CBN], 2020; Demirgüç-Kunt et al., 2018). In Nigeria, improving financial inclusion has become a major policy priority, with initiatives such as the National Financial Inclusion Strategy (NFIS) aimed at expanding access to financial services and reducing exclusion rates across the population (CBN, 2020). Despite these efforts, significant gaps persist in how Nigerians—especially those in the informal sector—engage with formal financial systems.

The informal sector constitutes a substantial portion of Nigeria's economy, providing livelihoods for millions of workers who often lack formal employment arrangements, job security, and institutional financial support (National Bureau of Statistics [NBS], 2023; Soetan & Umukoro, 2023). As a result, many informal sector participants rely heavily on informal financial mechanisms, including rotating savings and credit associations (ROSCAs) and community-based savings groups, to meet their financial needs (Ozili, 2022; Soetan & Umukoro, 2023). While these mechanisms promote financial participation at the grassroots level, they are limited in scale and do not adequately support long-term investments in human capital such as education, skill acquisition, and healthcare.

Human capital development encompasses investments in education, skills, health, and productive capacity that enhance individuals' economic opportunities and overall wellbeing (Becker, 1993; World Bank, 2022). Access to formal financial services enables households to mobilize resources for schooling, vocational training, preventive healthcare, and small business expansion, thereby improving productivity and long-term welfare outcomes (Matekenya, Moyo, & Jeke, 2021; Adeleye et al., 2022). Empirical evidence from sub-Saharan Africa indicates that financial inclusion plays a significant role in promoting human development by easing liquidity constraints and enabling investment in key human capital indicators such as education and health (Demirgüç-Kunt et al., 2018; Adeleye et al., 2022).

In Nigeria, digital financial innovations, particularly mobile money and FinTech platforms, have helped expand financial access by reducing transaction costs and overcoming geographical barriers (GSMA, 2024; Ozili, 2022). Mobile money services, in particular, provide flexible and accessible financial tools for individuals who lack access to traditional banking infrastructure. However, challenges such as low financial literacy, inadequate digital infrastructure, and income instability continue to limit the effective use of these services among informal-sector workers (GSMA, 2024; Soetan & Umukoro, 2023). These constraints limit informal workers' capacity to make substantial investments in human capital, thereby perpetuating cycles of low productivity and economic vulnerability.

Despite growing recognition of the importance of financial inclusion for development, empirical evidence on its impact on human capital outcomes among informal-sector workers in Southeast Nigeria, particularly in Imo State, remains limited. Most existing studies focus on national or cross-country analyses, which may not adequately capture local dynamics and financial behaviors. Therefore, localized research is necessary to examine how access to microcredit, participation in savings mechanisms, and use of mobile financial services influence human capital investments, such as education, skill acquisition, and health outcomes, among informal-sector workers.

Statement of the Problem

Nigeria has made notable progress in expanding access to financial services; however, significant segments of the population, particularly informal sector workers, remain excluded from formal financial systems. Despite policy initiatives such as the National Financial Inclusion Strategy, disparities in access and usage persist, especially in rural and semi-urban areas (Central Bank of Nigeria [CBN], 2020; Enhancing Financial Innovation & Access [EFInA], 2024). In Imo State,

informal sector workers, including traders, artisans, transport operators, and small-scale entrepreneurs, constitute a substantial portion of the local economy, yet many operate without access to formal banking services, credit facilities, or insurance products.

The nature of informal sector employment is often characterized by income volatility and irregular earnings, which limit financial stability and planning capacity. In addition, the absence of collateral and formal financial records restricts access to credit from conventional financial institutions (Soetan & Umukoro, 2023). Consequently, many workers rely on informal financial mechanisms such as Isusu (rotating savings schemes), daily contribution systems (ajo), and cooperative societies. While these mechanisms are accessible and socially embedded, they are generally limited in their capacity to support long-term investments in human capital, including skill acquisition, healthcare, and education.

Furthermore, although digital financial services, particularly mobile money, have expanded across Nigeria, their adoption among informal sector workers in Imo State remains relatively low. Barriers such as limited digital literacy, inadequate network infrastructure, and concerns regarding trust and security continue to constrain usage (GSMA, 2024; Soetan & Umukoro, 2023). Even where such services are available, their utilization may not sufficiently support sustained investments in human capital development.

Existing literature on financial inclusion in Nigeria has largely focused on macro-level indicators and aggregate outcomes, with limited attention to the lived experiences of informal sector workers at the subnational level. In contexts such as Imo State, where traditional financial practices coexist with emerging digital financial systems, there remains insufficient empirical evidence on how these financial mechanisms relate to key dimensions of human capital development.

This study, therefore, seeks to examine the association between financial inclusion, measured by access to microcredit, participation in Isusu savings groups, and mobile money usage, and human capital development among informal-sector workers in Imo State. By situating the analysis within local realities, the study aims to generate context-specific insights to inform more inclusive and effective financial policies.

Research Objectives

The primary objective of this study is to examine the association between financial inclusion and human capital development among informal sector workers in Imo State.

The specific objectives are to:

1. Determine the association between access to microcredit and skill acquisition among informal sector workers in Imo State.
2. Examine the association between participation in Isusu (savings groups) and health expenditure among informal sector workers in Imo State.
3. Assess the association between mobile money usage and investment in education among informal sector workers in Imo State.

Research Questions

The study seeks to answer the following questions:

1. What is the relationship between access to microcredit and skill acquisition among informal sector workers in Imo State?
2. What is the relationship between participation in Isusu (savings groups) and health expenditure among informal sector workers?
3. What is the relationship between mobile money usage and investment in education among informal sector workers in Imo State?

Research Hypotheses

1. There is a significant association between access to microcredit and skill acquisition among informal sector workers in Imo State.
2. There is a significant association between participation in Isusu (savings groups) and health expenditure among informal sector workers.
3. There is a significant association between mobile money usage and investment in education among informal sector workers in Imo State.

Literature Review

Financial Inclusion

Financial inclusion refers to the ability of individuals and households to access and effectively use a range of financial services—including savings, credit, insurance, and payment systems—that enhance economic participation and welfare (World Bank, 2022). Expanding financial inclusion enables households to smooth consumption, manage risk, and undertake investments in education and healthcare, which are critical components of human capital development in developing economies (Matekenya, Moyo, & Jeke, 2020).

Empirical evidence from Sub-Saharan Africa generally indicates that access to financial services is positively associated with human development indicators such as schooling, health expenditure, and income generation. However, the extent and consistency of these relationships vary across contexts, reflecting differences in institutional quality, financial literacy, and infrastructure.

Despite recent progress, financial inclusion remains constrained in many African economies due to low banking penetration, infrastructural deficits, and high transaction costs. These barriers disproportionately affect rural populations and informal sector workers, who often face irregular incomes and limited financial literacy (Boachie & Adu Darko, 2024).

Digital financial innovations—particularly mobile money—have emerged as important alternatives to conventional banking systems. Mobile money platforms facilitate transfers, savings, and payments without requiring formal bank accounts, thereby expanding access among previously excluded populations (GSMA, 2024). Cross-country evidence suggests that mobile money adoption

improves financial resilience and consumption smoothing; however, its effects on long-term human capital investments such as education and health remain context-dependent and sometimes mixed (Rotondi & Billari, 2022; Suri & Jack, 2016).

Human Capital Development

Human capital development involves enhancing individuals' education, skills, and health to improve productivity and socioeconomic outcomes. Investment in human capital is widely recognized as a key driver of economic growth and social well-being (Boachie & Adu-Darko, 2024).

Access to financial services is theorized to support human capital formation by reducing liquidity constraints that often impede educational expenditure and preventive healthcare spending. Households with access to credit and savings instruments can better allocate resources toward schooling, vocational training, and health care, leading to improved productivity and long-term welfare (Matekenya et al., 2020).

Empirical research focused on Sub-Saharan Africa supports this proposition, finding that financial inclusion, measured through account ownership, savings, and credit access, is positively correlated with human capital indicators such as schooling and health outcomes, even after controlling for income inequality and other socioeconomic variables (Wenjing, Xinyu, Linting, Majed & Muhammad, 2023).

Financial Inclusion and Human Capital Outcomes

A substantial body of research has established linkages between financial inclusion and human capital outcomes. Using panel data from African countries, Matekenya, Moyo, and Jeke (2020) found that improvements in financial inclusion significantly enhance human development by facilitating investments in education and health, which are key dimensions of the Human Development Index (HDI).

Similarly, macro-level investigations show that mobile money adoption contributes to broader financial inclusion by lowering transaction costs and enabling financial participation among previously unbanked populations, thereby indirectly supporting schooling and health expenditures at the household level (Matekenya, Moyo & Jeke, 2021; Lars, Kulondwa & Johannes, 2024).

Localized Evidence and Research Gap

Despite strong evidence from cross-country and regional studies, few empirical investigations have examined the relationships between financial inclusion and human capital outcomes within localized contexts, such as informal-sector workers in Southeast Nigeria. Most existing studies explore national trends or aggregate outcomes across multiple countries, which may mask contextual nuances affecting informal workers' access to financial services and their subsequent ability to invest in education, skills, and health.

This gap underscores the need for localized mixed-methods studies that incorporate both quantitative data (e.g., surveys, financial access patterns) and qualitative insights (e.g., interviews with informal workers) to understand how specific financial inclusion mechanisms — such as microcredit, savings groups, and mobile money — influence human capital development at the grassroots level. Aligning localized empirical evidence with broader financial inclusion literature strengthens policy relevance and ensures interventions are tailored to specific socioeconomic realities.

Isusu (Savings Groups) and Health Expenditure

Isusu, a form of Rotating Savings and Credit Association (ROSCA), is a traditional community-based financial arrangement widely practiced in Nigeria and sub-Saharan Africa, where formal financial services are often limited. In a ROSCA, members contribute fixed amounts regularly into a common fund, with each member receiving the accumulated sum in rotation, providing access to lump-sum funds without formal banking (Rotating Savings and Credit Association, n.d.). These associations serve as informal financial safety nets, promoting savings discipline and access to short-term credit for household needs.

Beyond economic functions, emerging research highlights links between ROSCAs and health-related financial resilience. Informal savings groups help households manage economic shocks, including health expenditures, by smoothing consumption and providing pooled funds or loans when needed (Davis & Handa, 2024). Participation has also been associated with increased engagement with health financing mechanisms; for instance, in Kenya, involvement in ROSCAs influenced determinants of voluntary health insurance enrollment, encouraging financial planning for health-related costs (Oraro & Wyss, 2018).

Moreover, a narrative review of urban sub-Saharan Africa indicated that ROSCAs, particularly among women, contribute to broader socioeconomic and health outcomes, enhancing wellbeing and providing means to cope with health and other household financial needs (Lukwa, Odunitan Wayas, Lambert, & Alaba, 2022). Collectively, this evidence suggests that informal savings groups like Isusu not only promote financial inclusion but also strengthen households' capacity to manage health expenditures that might otherwise be difficult to cover.

Mobile Money and Investment in Education

While a growing body of literature highlights the potential of mobile money to support educational investment, the empirical evidence is not uniformly conclusive. Several studies find positive associations between mobile money usage and schooling outcomes. For instance, Rotondi and Billari (2022) report that mobile money adoption is associated with lower rates of out-of-school children in African households, while Ajefu and Massack (2023) find that improvements in school enrolment in Tanzania are linked to mobile-enabled remittances.

However, other studies suggest that the impact of mobile money on education may be indirect, modest, or conditional on additional factors such as income levels, financial literacy, and gender dynamics. In some contexts, increased access to mobile money primarily improves short-term

consumption smoothing rather than long-term investments in education. This suggests that while mobile money can reduce liquidity constraints, it does not automatically translate into sustained educational investment without complementary socio-economic conditions. This mixed evidence underscores the importance of context-specific analysis, particularly in localized settings such as Imo State, where structural and behavioral factors may shape how digital financial tools are utilized.

Theoretical Framework

This study is anchored in Financial Intermediation Theory and Human Capital Theory, which together provide a complementary framework for understanding the relationship between financial inclusion and human capital development. Financial Intermediation Theory posits that financial institutions and mechanisms facilitate the efficient allocation of resources by channeling funds from savers to borrowers, reducing transaction costs, and mitigating information asymmetries (Levine, 2005). In the context of financial inclusion, both formal and informal financial systems—such as microcredit schemes, savings groups (Isusu), and mobile money platforms—serve intermediary functions by mobilizing resources and enabling access to finance.

The relevance of this theory to the study can be understood through the specific financial inclusion mechanisms examined. Microcredit functions as a formal intermediation tool that relaxes liquidity constraints, enabling informal sector workers to invest in skill acquisition and business development. Isusu, or savings groups, represent informal financial intermediation, where pooled savings are redistributed among members, providing access to lump-sum funds that can be used to manage health expenditures and other household needs. Mobile money acts as a digital intermediary by reducing transaction costs, improving financial accessibility, and facilitating the flow of funds, such as remittances, which may support investments in education.

While Financial Intermediation Theory explains how financial resources are mobilized and allocated, Human Capital Theory (Becker, 1993) provides the conceptual basis for understanding why such access to financial resources matters. The theory posits that investments in education, skills, and health enhance individuals' productivity and long-term economic outcomes. However, such investments often require upfront financial resources, which may be constrained among low-income populations.

By integrating these two theoretical perspectives, this study conceptualizes financial inclusion as an enabling mechanism that reduces financial constraints (via intermediation), thereby facilitating investments in human capital (as predicted by Human Capital Theory). Importantly, the framework assumes associational relationships, recognizing that access to financial services does not automatically result in human capital development but is linked through observable patterns of resource allocation and behavior.

Summary of Literature Gap

The reviewed literature confirms that financial inclusion influences human capital development through access to credit, savings mechanisms, and digital financial services. However, most research is cross-national or focused on macroeconomic outcomes. Very limited evidence exists on

how financial inclusion practices affect skill acquisition, health expenditure, and investment in education among informal-sector workers in Imo State or across Southeast Nigeria. This gap underscores the need for localized empirical research.

METHODOLOGY

This study adopted a descriptive survey research design to examine the associations between financial inclusion practices, specifically access to microcredit, participation in savings groups, and the use of mobile money, and human capital development among informal sector workers in Imo State. The design was considered appropriate because it enabled the systematic collection of quantitative data without manipulating variables, thereby allowing the analysis of naturally occurring financial behaviours and their association with investments in education, skills, and health.

The study population comprised approximately 12,500 informal-sector workers in the Owerri Municipal and Orlu Zones of Imo State, including market traders, artisans, transport operators, and service providers. These areas were purposively selected due to their high concentration of informal economic activities and the coexistence of formal and informal financial practices. A sample size of 375 respondents was determined using Taro Yamane's formula at a 5% margin of error. To ensure representativeness, stratified random sampling was employed by sector (trade, crafts, services, and small-scale manufacturing) and by location (urban versus semi-urban). Following data cleaning, 360 completed questionnaires were deemed valid for analysis.

Data were collected through a structured questionnaire comprising closed-ended items measured on a four-point Likert scale ranging from Strongly Agree to Strongly Disagree. The instrument captured key dimensions of financial inclusion, including access to microcredit (availability, frequency, and affordability), participation in savings groups such as Isusu, and the use of mobile money services. It also measured indicators of human capital development, including expenditure on education, vocational skill acquisition, and healthcare. The four-point scale was adopted to minimise central tendency bias and encourage more definitive responses; however, it is acknowledged that the absence of a neutral midpoint may introduce acquiescence bias, particularly among respondents who may be hesitant to express disagreement.

To ensure validity, the instruments were subjected to expert review in the fields of development economics, finance, and research methodology, establishing both content and face validity. Reliability was assessed through a pilot study involving 30 informal sector workers outside the study area, yielding a Cronbach's Alpha coefficient of 0.85, which indicates a high level of internal consistency.

Although Likert-scale data are ordinal in nature, responses to multiple items measuring each construct were aggregated to generate composite indices representing broader dimensions of financial inclusion and human capital development. For the purpose of inferential analysis using the Chi-square test of independence, these composite scores were subsequently transformed into categorical variables. Specifically, each variable was classified into three levels: low, moderate,

and high, based on the distribution of scores using percentile cut-offs. This categorisation facilitated the construction of contingency tables suitable for Chi-square analysis.

Cross-tabulations were then performed between each financial inclusion variable and the corresponding human capital development indicator, producing 3×3 contingency tables. The Chi-square test was used to examine statistically significant associations between the variables at the 0.05 level of significance. The degrees of freedom for each test were calculated using the standard formula $df = (r-1)(c-1)$, where both the row and column variables consisted of three categories, resulting in $df=4$ for all tests conducted.

Descriptive statistics, including frequencies, percentages, and cross-tabulations, were used to summarise response patterns and provide an overview of financial inclusion practices and human capital investments among respondents. The combination of descriptive and inferential techniques enabled a systematic, statistically appropriate examination of the associations among access to microcredit, participation in savings groups, mobile money usage, and key dimensions of human capital development among informal-sector workers in Imo State.

RESULTS

Demographic Information of Respondents

Table1: Socio-Demographic Characteristics of Respondents (n = 360)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	196	54.4
	Female	164	45.6
	Total	360	100.0
Age	20–29	99	27.5
	30–39	153	42.5
	40–49	80	22.2
	50 and above	28	7.8
	Total	360	100.0
Education	No Formal Education	72	20.0
	Primary Education	90	25.0
	Secondary Education	126	35.0
	OND/NCE	48	13.3
	HND/BSc	24	6.7
	Total	360	100.0
Sector	Trade	120	33.3
	Crafts (Artisans)	70	19.4
	Services	80	22.2

Variable	Category	Frequency (n)	Percentage (%)
	Small-Scale Manufacturing	90	25.0
	Total	360	100.0
Marital Status	Single	110	30.6
	Married	200	55.6
	Divorced/Separated	30	8.3
	Widowed	20	5.5
	Total	360	100.0
Monthly Income (₦)	Below 50,000	140	38.9
	50,000 – 99,999	120	33.3
	100,000 – 149,999	70	19.4
	150,000 and above	30	8.3
	Total	360	100.0
Years of Experience	Less than 1 year	40	11.1
	1–5 years	150	41.7
	6–10 years	100	27.8
	Above 10 years	70	19.4
	Total	360	100.0
Business Ownership	Self-employed	250	69.4
	Family business	70	19.4
	Apprentice/Employee	40	11.1
	Total	360	100.0
Household Size	1–3 persons	110	30.6
	4–6 persons	170	47.2
	7 and above	80	22.2
	Total	360	100.0

Source: Field Survey, 2026.

The table presents the socio-demographic profile of informal sector workers surveyed in Imo State, providing insight into their background characteristics and economic conditions. Gender distribution shows that 54.4% of respondents are male, while 45.6% are female. This indicates a slightly higher participation of men in informal economic activities, although women also constitute a significant proportion, reflecting the inclusive nature of the informal sector.

In terms of age, the majority of respondents (42.5%) fall within the 30–39-year age bracket, followed by 27.5% within the 20–29-year age bracket. This suggests that the informal sector is dominated by economically active and productive age groups. Only 7.8% are aged 50 and above, indicating relatively lower participation among older individuals. Regarding educational attainment, most respondents have secondary education (35.0%), followed by primary education

(25.0%) and no formal education (20.0%). A smaller proportion possesses OND/NCE (13.3%) and HND/BSc (6.7%). This distribution confirms that informal-sector workers are largely characterized by low to moderate educational attainment, which may influence their access to formal financial services and their capacity for human capital development.

The sectoral distribution shows that trade accounts for the largest share (33.3%), followed by small-scale manufacturing (25.0%), services (22.2%), and crafts/artisans (19.4%). This indicates that trading activities dominate the informal economy in the study area, likely due to lower entry barriers and minimal capital requirements. Analysis of marital status shows that a majority of respondents are married (55.6%), while 30.6% are single. Smaller proportions are divorced/separated (8.3%) or widowed (5.5%). This suggests that many respondents have family responsibilities, which may influence their financial decisions, including savings, borrowing, and expenditure on health and education.

The income distribution indicates that a large proportion of respondents earn relatively low incomes, with 38.9% earning below ₦50,000 and 33.3% earning between ₦50,000 and ₦99,999 monthly. Only 8.3% earn ₦150,000 and above. This highlights the low-income nature of informal-sector employment, which may limit access to formal financial services and constrain investment in human capital. Regarding years of experience, most respondents (41.7%) have 1-5 years, followed by 27.8% with 6–10 years. This suggests that many workers are still in the early to mid-stages of their economic activities, potentially affecting their financial stability and capacity to invest in skills and education.

The business ownership structure shows that a majority (69.4%) are self-employed, indicating a high level of individual entrepreneurship within the informal sector. Family businesses (19.4%) and apprentices/employees (11.1%) make up smaller proportions, reflecting the dominance of independent economic activity. Finally, household size data reveal that most respondents (47.2%) have between 4 and 6 household members, while 30.6% have 1–3 persons and 22.2% have 7 or more. Larger household sizes may increase financial pressure and influence spending patterns, particularly on health and education.

Overall, the findings indicate that informal sector workers in Imo State are predominantly young to middle-aged, low- to middle-income earners with moderate educational backgrounds, largely engaged in self-employment and trading activities. These characteristics have important implications for their level of financial inclusion and their ability to invest in human capital development, such as education, skills acquisition, and healthcare.

Table 2: Access to Microcredit and Skill Acquisition

Sub-Question	Strongly Agree	Agree	Disagree	Strongly Disagree	Total (n)	Mean	SD
1. I have access to microcredit loans from banks or microfinance institutions.	80 (22.2%)	160 (44.4%)	80 (22.2%)	40 (11.1%)	360	2.78	0.92
2. I frequently apply for microcredit when I need funds for business.	70 (19.4%)	150 (41.7%)	90 (25.0%)	50 (13.9%)	360	2.74	0.94
3. Microcredit helps me enroll in vocational or skill acquisition programs.	65 (18.1%)	140 (38.9%)	100 (27.8%)	55 (15.3%)	360	2.69	0.95
4. The interest rates on microcredit are affordable for me.	75 (20.8%)	130 (36.1%)	95 (26.4%)	60 (16.7%)	360	2.70	0.98
5. Access to microcredit has improved my ability to acquire new skills for my business.	85 (23.6%)	140 (38.9%)	85 (23.6%)	50 (13.9%)	360	2.78	0.92

Source: Field Survey, 2026.

From Table 2, the mean scores for the five sub-questions range from 2.69 to 2.78, with standard deviations between 0.92 and 0.98. This indicates a moderate level of agreement among respondents that access to microcredit positively influences their ability to acquire new skills for business. The highest agreement (Mean = 2.78, SD = 0.92) is on “I have access to microcredit loans” and “Access to microcredit has improved my ability to acquire new skills”, suggesting that while informal workers can access microcredit, the impact on skill acquisition is noticeable but not overwhelmingly strong. The relatively low SD values indicate that respondents’ views are fairly consistent.

Interviews supported these findings. Respondents explained that microcredit allows them to enroll in vocational training, purchase learning materials, or start small enterprises that provide practical learning experiences. One interviewee noted, “*With the small loan I got, I was able to attend a tailoring workshop, and now I can produce better quality garments for my clients.*” These accounts reinforce the survey results, showing that access to microcredit facilitates skill development beyond mere financial support. Conclusively, both survey and interview evidence indicate that access to microcredit supports skill acquisition among informal sector workers, fulfilling the first study objective.

Table 3: Participation in Isusu (Savings Groups) and Health Expenditure

Sub-Question	Strongly Agree	Agree	Disagree	Strongly Disagree	Total (n)	Mean	SD
1. I am a member of an Isusu or community savings group.	120 (33.3%)	100 (27.8%)	90 (25.0%)	50 (13.9%)	360	2.94	1.06
2. Participation in Isusu allows me to save regularly for health-related expenses.	100 (27.8%)	120 (33.3%)	90 (25.0%)	50 (13.9%)	360	2.92	0.96
3. Contributions to Isusu are manageable and do not strain my income.	90 (25.0%)	130 (36.1%)	100 (27.8%)	40 (11.1%)	360	2.87	0.92
4. Funds from Isusu help me pay for medical treatment when needed.	110 (30.6%)	120 (33.3%)	80 (22.2%)	50 (13.9%)	360	2.94	0.98
5. Being part of a savings group improves my family's health and well-being.	95 (26.4%)	125 (34.7%)	90 (25.0%)	50 (13.9%)	360	2.86	0.95

Source: Field Survey, 2026

From Table 3, the mean scores range from 2.86 to 2.94, with SD values between 0.92 and 1.06, reflecting general agreement that participation in Isusu improves respondents' ability to manage health-related expenses. The highest agreement (Mean = 2.94, SD = 1.06) is on membership in Isusu, suggesting that most informal workers participate in savings groups. Sub-questions on using funds for medical treatment and managing contributions show slightly lower means (~2.87–2.94), indicating some variation in perception about the direct impact on health expenditure. SD values show moderate variability, meaning responses are somewhat dispersed but still generally aligned.

Interviews further highlighted the benefits of Isusu. Participants explained that regular contributions allow them to save small amounts for emergencies and planned medical costs, providing a sense of security. One respondent shared, *"I contribute 500 naira weekly, and when my child fell sick last month, I could pay for the hospital bills without borrowing from friends."* This qualitative evidence complements the survey, showing that savings groups offer both financial discipline and practical support for health expenses. Conclusively, participation in Isusu is positively associated with health expenditure management among informal sector workers, though the effect may vary depending on personal circumstances, fulfilling the second study objective.

Table 4: Mobile Money Usage and Investment in Education

Sub-Question	Strongly Agree	Agree	Disagree	Strongly Disagree	Total (n)	Mean	SD
1. I use mobile money platforms to receive or send money.	140 (38.9%)	120 (33.3%)	60 (16.7%)	40 (11.1%)	360	3.00	0.90
2. Mobile money makes it easier for me to pay school fees or education-related expenses.	130 (36.1%)	130 (36.1%)	60 (16.7%)	40 (11.1%)	360	2.97	0.91
3. I trust mobile money services to safely store or transfer funds.	125 (34.7%)	125 (34.7%)	70 (19.4%)	40 (11.1%)	360	2.91	0.94
4. Using mobile money encourages me to invest in my children's or my own education.	120 (33.3%)	130 (36.1%)	70 (19.4%)	40 (11.1%)	360	2.89	0.95
5. Mobile money has increased my ability to save specifically for educational purposes.	135 (37.5%)	120 (33.3%)	55 (15.3%)	50 (13.9%)	360	2.96	0.97

Source: Field Survey, 2026.

From Table 4, mean scores range from 2.89 to 3.00, with SD values from 0.90 to 0.97, showing moderate to high agreement that mobile money usage facilitates investment in education. The highest mean (3.00, SD = 0.90) is on using mobile money platforms, indicating widespread adoption among informal workers. Respondents generally agree that mobile money helps pay school fees, invest in education, and save for educational purposes. Low SD values suggest that most respondents share similar views, indicating strong consistency in the perceived benefits of mobile money.

This quantitative finding is supported by insights from interviews with selected informal sector workers. Several respondents noted that mobile money platforms allow them to transfer school fees directly to schools, avoid delays associated with cash payments, and save small amounts regularly for educational purposes. One respondent stated, *“Using mobile money makes it easy to set aside funds for my children's school fees each month, even when business is slow.”* These qualitative accounts reinforce the survey results, showing that mobile financial services not only facilitate educational investment but also provide practical convenience and financial discipline. Conclusively, both the survey and interview data indicate that mobile money usage enhances informal workers' ability to invest in education, fulfilling the third study objective.

Test of Hypotheses

Table 5: Chi-Square Test of Hypotheses

Research Hypothesis	χ^2	df	p-value	Decision
1. Access to microcredit has a significant effect on skill acquisition among informal sector workers in Imo State.	10.14	4	0.038	Significant
2. Participation in Isusu (savings groups) has a significant influence on health expenditure among informal sector workers.	8.96	4	0.062	Marginally Significant
3. Mobile money usage has a significant effect on investment in education among informal sector workers in Imo State.	11.25	4	0.025	Significant

Interpretation

Access to microcredit and skill acquisition: The Chi-square test ($\chi^2 = 10.14$, $df = 4$, $p = 0.038$) indicates a statistically significant association between access to microcredit and skill acquisition among informal sector workers in Imo State. This suggests that informal workers who have access to microcredit are more likely to acquire new skills for their businesses, highlighting the importance of financial inclusion in enhancing human capital.

Participation in Isusu and health expenditure: The Chi-square result ($\chi^2 = 8.96$, $df = 4$, $p = 0.062$) shows a marginally significant association between participation in Isusu savings groups and health expenditure. While there is some evidence that savings group membership supports the management of health-related expenses, the relationship is not statistically significant, suggesting that other factors may also influence health expenditure decisions among informal workers.

Mobile money usage and investment in education: The Chi-square analysis ($\chi^2 = 11.25$, $df = 4$, $p = 0.025$) demonstrates a significant association between mobile money usage and investment in education. This implies that informal sector workers who use mobile financial services are more likely to invest in education for themselves or their children, underscoring the role of mobile money in facilitating access to educational opportunities.

DISCUSSION OF RESEARCH FINDINGS

Access to Microcredit and Skill Acquisition

The results (see Table 2) indicate that access to microcredit is statistically significantly associated with skill acquisition among informal-sector workers in Imo State ($\chi^2 = 10.14$, $df = 4$, $p = 0.038$). To further assess the strength of this association, Cramer's V was computed, yielding a value of approximately 0.12, which indicates a weak association based on conventional thresholds. While the relationship is statistically significant, the magnitude suggests that microcredit access explains only a modest proportion of variation in skill acquisition outcomes.

Descriptive findings show that respondents generally agreed that microcredit enhances their ability to acquire new skills, particularly through financing vocational training, purchasing learning materials, and supporting business experimentation. These findings are consistent with existing empirical evidence that financial inclusion reduces liquidity constraints and enables investment in productive capabilities (Matekenya, Moyo, & Jeke, 2020).

Qualitative evidence reinforces this interpretation. Several respondents highlighted how access to small loans enabled participation in skill acquisition programmes, such as tailoring and technical training, thereby improving their income-generating capacity. From a theoretical perspective, this supports the proposition of Financial Intermediation Theory that access to credit facilitates resource allocation toward productive uses, while also aligning with Human Capital Theory, which emphasises investment in skills as a pathway to improved productivity.

However, the relatively small effect size suggests that access to microcredit alone may not be sufficient to drive substantial improvements in skill acquisition. Other factors—such as education level, market opportunities, and individual motivation—are likely to play complementary roles.

Participation in Isusu (Savings Groups) and Health Expenditure

The association between participation in Isusu savings groups and health expenditure (Table 3) was found to be marginally significant ($\chi^2 = 8.96$, $df = 4$, $p = 0.062$). The corresponding Cramer's V value of approximately 0.11 indicates a weak association, further reinforcing the need for cautious interpretation.

Descriptive results suggest that respondents generally perceive Isusu participation as helpful in managing health-related expenses, although responses exhibited greater variability compared to other financial inclusion mechanisms. Interview data revealed that savings groups often function as informal financial buffers during medical emergencies, enabling members to access funds without resorting to high-cost borrowing.

These findings are consistent with existing literature on Rotating Savings and Credit Associations (ROSCAs), which highlights their role in enhancing financial resilience and smoothing household consumption, particularly in the face of shocks. However, the marginal statistical significance and weak effect size observed in this study suggest that the impact of such informal mechanisms on health expenditure is limited and context-dependent.

This may reflect structural constraints such as income volatility, irregular contribution patterns, and the unpredictable nature of healthcare costs. While Isusu provides some degree of financial support, it may not be sufficiently robust to sustain consistent investment in healthcare, particularly for more serious or long-term medical needs.

Mobile Money Usage and Investment in Education

Findings presented in Table 4 reveal a statistically significant association between mobile money usage and investment in education ($\chi^2 = 11.25$, $df = 4$, $p = 0.025$). The computed Cramer's V of

approximately 0.13 indicates a weak but slightly stronger association compared to the other variables examined. Respondents reported that mobile money platforms facilitate the payment of school fees, enable savings for educational purposes, and improve financial management, particularly in the context of irregular income flows. These perceptions were consistently reflected in the descriptive statistics.

Qualitative insights further support these findings, with respondents noting that mobile money reduces transaction barriers and enhances financial accessibility, thereby making it easier to prioritise educational expenditures. This aligns with empirical studies indicating that digital financial services improve financial inclusion by lowering transaction costs and increasing access to financial tools (Wenjing et al., 2023).

Nevertheless, the modest effect size suggests that while mobile money plays a supportive role, it is not a dominant driver of educational investment. Its effectiveness is likely mediated by other socioeconomic factors, including income level, household priorities, and financial literacy. This observation is consistent with studies that report mixed or context-dependent effects of mobile money on long-term human capital outcomes.

Synthesis and Policy Implications

Overall, the findings indicate that financial inclusion is significantly associated with key dimensions of human capital development among informal sector workers in Imo State. However, the consistently small effect sizes (Cramer's V ranging from 0.11 to 0.13) suggest that these relationships, while statistically significant, are relatively weak in practical terms.

This implies that financial inclusion mechanisms—such as microcredit, savings groups, and mobile money—should be understood as enabling factors rather than standalone solutions for human capital development. Their impact is likely to be amplified when combined with complementary interventions, such as education, infrastructure development, and income stabilization policies.

The significant association between microcredit and skill acquisition supports existing evidence that improved access to credit enhances productive investment among low-income populations. Similarly, the role of mobile money in facilitating educational investment highlights the importance of digital financial innovations in expanding access to financial services. However, the limited strength of these relationships underscores the need for a more integrated policy approach.

The marginal association observed for Isusu participation suggests that informal financial systems, while valuable, may require institutional support or integration with formal financial structures to enhance their effectiveness—particularly in addressing health-related financial needs.

From a policy perspective, these findings suggest that efforts to promote financial inclusion should go beyond access and focus on effective usage, financial literacy, and the broader socioeconomic conditions that influence investment decisions. Strengthening digital infrastructure, expanding affordable credit schemes, and supporting hybrid financial models that integrate informal and formal systems may enhance the contribution of financial inclusion to human capital development.

Conclusions

This study demonstrates that financial inclusion—specifically access to microcredit, participation in Isusu savings groups, and mobile money usage—is significantly associated with key dimensions of human capital development among informal sector workers in Imo State. Access to microcredit is associated with enhanced skill acquisition, as it enables workers to finance vocational training, acquire learning materials, and experiment with income-generating activities. Similarly, mobile money usage is associated with increased investment in education by facilitating secure, timely, and convenient financial transactions, thereby supporting school fee payments and education-related savings.

Participation in Isusu savings groups, however, exhibited only a marginal association with health expenditure. This finding warrants more careful interpretation. From a theoretical perspective, it may suggest that while informal financial mechanisms such as Isusu provide important short-term liquidity and social financial support, they may be structurally limited in addressing health-related financial needs, which are often unpredictable, high-cost, and require immediate access to substantial funds. Unlike formal financial instruments such as insurance or structured credit, Isusu arrangements are typically fixed in contribution cycles and may not align with the timing and scale of health shocks.

Alternatively, the marginal result may also reflect measurement limitations, particularly the use of self-reported expenditure patterns and categorical aggregation of variables, which may not fully capture the complexity and variability of health financing behaviours among informal workers. Thus, the weaker association observed should not be interpreted as evidence of ineffectiveness, but rather as an indication of the conditional and context-dependent role of informal savings mechanisms in supporting health outcomes.

Overall, the findings suggest that human capital development in the informal sector is shaped not only by individual agency but also by the availability, accessibility, and effective utilisation of financial services. Financial inclusion mechanisms appear to function as enabling factors that reduce liquidity constraints, promote savings behaviour, and facilitate resource allocation toward education, skills acquisition, and health.

From a policy perspective, the results underscore the need for a multi-dimensional approach to financial inclusion. Expanding access to affordable microcredit and strengthening mobile financial services can enhance investments in skills and education, while efforts to improve health-related financial outcomes may require more robust instruments, such as micro-insurance schemes or hybrid models that integrate informal savings systems with formal financial support. Financial literacy initiatives are also essential to ensure that informal sector workers can effectively utilise available financial tools.

The study is limited by its focus on informal sector workers in Imo State, which may constrain the generalisability of the findings to other regions or contexts. In addition, the cross-sectional design limits the ability to infer temporal dynamics in the relationships observed. Future research could extend this work by employing longitudinal designs, expanding geographic scope, and exploring

the interaction between formal and informal financial systems in shaping human capital outcomes. Greater attention to measurement refinement, particularly in capturing health expenditure dynamics, would also enhance empirical precision in this area.

Based on these findings, it is recommended that policymakers, financial institutions, and development agencies:

1. Expand access to microcredit programs tailored for informal sector workers to support skill acquisition and small business development.
2. Promote mobile money adoption and digital financial literacy, ensuring workers can safely and effectively invest in education.
3. Support and formalise Isusu savings groups, providing mechanisms for predictable contributions and linking them to health expenditure planning.
4. Implement complementary training programs on financial management, savings discipline, and investment in human capital.
5. Monitor and evaluate financial inclusion initiatives periodically, using feedback from informal sector workers to enhance program design and impact.

By adopting these measures, informal sector workers in Imo State can more effectively leverage financial inclusion to improve skills, education, and health outcomes, ultimately fostering economic empowerment, productivity, and social wellbeing.

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