

A Pilot Study on Financial Literacy, Financial Technology, Cultural Values, and Financial Inclusion of Rural Residents in North Central Nigeria

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Abstract

Background: The absence of financial inclusion has added to the gap that impedes social and economic progress among rural residents in Northcentral Nigeria. To successfully tackle this present situation, it is necessary to gain an understanding of the impediments and patterns that prevent rural residents from accessing official financial services. This study therefore seeks to extend the literature and empirically investigate the effect of financial literacy, financial technology, and cultural value on financial inclusion among rural residents in Northcentral Nigeria, using the access opportunity frontier theory as the underpinning theory, and the family financial socialization theory, disruptive innovation theory as supporting theories.

Method: To achieve the study objectives, a quantitative method with a cross-sectional descriptive and epistemological approach was used with a sample size of 38 rural residents of north central Nigeria to conduct a preliminary study to test the validity and reliability of the instrument adapted. The quantitative data was analyzed using SPSS version 22.

Result: The findings revealed that the instrument adapted has reliable Cronbach alpha of above 0.7.

Conclusion: The analysis established that the adapted instrument achieved a Cronbach's alpha exceeding 0.7, thereby confirming its reliability and validating its appropriateness for the main study.

Keywords: pilot study, financial literacy, financial technology, cultural value, financial inclusion, rural residents

1. Introduction

Financial inclusion remains uneven across Nigeria, with rural North-Central communities experiencing significant exclusion from formal financial systems. This exclusion is driven by low levels of financial literacy, weak technological access, inadequate infrastructure, and cultural barriers that limit adoption of financial services. Consequently, a substantial segment of the population is unable to access savings, credit, insurance, and digital payment platforms that could enhance their livelihoods. Addressing this gap is critical for achieving inclusive development and provides the basis for this study. Despite notable national progress in expanding access to finance, a wide gap persists in North-Central Nigeria, particularly in rural areas. Millions remain financially excluded due to poor financial literacy, limited access to technology, infrastructural deficits, and cultural factors that restrict participation in the formal economy. This gap not only hinders poverty reduction but also slows down regional economic growth. A pilot study is a preliminary investigation conducted on a small-scale basis before the main study. The aim of conducting a pilot study is to assess the feasibility, timing, cost, risks, and potential adverse events related to the main study (Thabane, et al., 2010). The pilot study outcome report is vital because it provides initial insights, identifies potential issues, and validates the research direction. This contributes to the main study's feasibility and credibility by enhancing its validity and offering guidance for necessary improvements. However, pilot studies often involve a small number of participants, which limits the generalizability of the findings. As a result, the outcomes may not represent the broader population accurately (Van Teijlingen, & Hundley, 2010). The limited sample size has typically reduced the statistical power of this study, making it challenging to draw final conclusions, but still gives a sense of direction for the main study.

Prior to conducting the pilot study, the research instrument underwent a pre-testing stage involving two financial sector professionals and two academic scholars. The objective was to refine the instrument and ensure clarity of the questions. The final draft was further reviewed by three academic experts specializing in finance to strengthen

its validity before presentation to respondents. This process, known as pre-testing, is a critical phase in ensuring the clarity and appropriateness of survey items (Latimier, Riegert, Peyre, Casati, & Ramus, 2019). Pre-testing typically applies a fraction of the research tool and may involve either written or verbal responses (Regmi, Waithaka, Paudyal, Simkhada, & Van Teijlingen, 2016). In this study, the pre-test revealed no significant challenges with wording or design; however, minor modifications were made following the supervisor's suggestions prior to the pilot study.

The pilot study, which is an initial examination of the overall research methodology, employed 10% of the projected sample size. Specifically, 38 respondents were selected out of the 384 planned for the main study, aligning with the recommendation that 10% of the main sample is sufficient for a pilot (Connelly, 2008). This also falls within the acceptable range of 25–100 participants suggested by Cooper and Schindler (2011). The respondents, drawn from rural communities in North-Central Nigeria, were contacted through multi-stage sampling and completed questionnaires physically administered by trained research assistants. This pilot study aims to assess the reliability of the instruments adapted for the main research. The primary study will involve comprehensive data collection, detailed analysis, and thorough discussion and interpretation of the results.

2. Literature Review

The main study was anchored on the Access Opportunity Frontier Theory, which served as the foundational framework for defining the constructs of the dependent variable. However, given its limitations in accounting for all determinants, additional theories were integrated to strengthen the conceptual base. The Family Financial Socialization Theory provided insights into the role of service quality and the determinants of financial literacy as an independent variable, while also addressing how cultural values shape financial inclusion. The Information Processing Theory emphasized the importance of financial literacy in enabling effective information use and decision-making, whereas the Disruptive Innovation Theory highlighted the transformative role of financial technology in driving inclusion. Together, these frameworks offered a comprehensive lens through which the multifaceted dimensions of financial inclusion could be examined. Achieving universal financial inclusion remains a pressing challenge for global economic development. Despite significant reforms and innovations within financial systems, large segments of the global population—particularly in developing nations—remain excluded from formal financial services (Demirguc-Kunt et al., 2018). Financial exclusion is strongly associated with low financial literacy, cultural barriers, and limited awareness of available financial products (Jana et al., 2024; Bongomin et al., 2018). Recent studies underscore the importance of financial literacy interventions in improving knowledge, shaping responsible financial behavior, and fostering inclusion (Netemeyer et al., 2024; Ananda et al., 2024). Moreover, cultural norms and social networks have been shown to influence individuals' access to financial assistance and their broader decision-making patterns (Kumar et al., 2023).

Although technological innovations and policy reforms have expanded access, persistent disparities indicate that financial inclusion is a multidimensional issue. It is not only about physical or digital access to financial services but also about financial capability, cultural acceptance, and the interaction between formal and informal practices (World Bank, 2022). Addressing these complexities requires a holistic approach that integrates financial literacy, cultural sensitivity, and technological adaptation. It is against this backdrop, that the present study seeks to bridge critical gaps by examining the interplay between financial literacy, technological adoption, cultural values, and financial inclusion in rural North-Central Nigeria. By exploring these interconnected factors, the research aims to generate evidence-based insights that can guide policymakers and practitioners in designing more inclusive financial systems, thereby contributing to sustainable economic growth and development.

3. Methodology

The study employed a multi-stage sampling technique. In the first stage, rural communities across North-Central Nigeria were stratified based on state boundaries (Benue, Kogi, Kwara, Nasarawa, Niger, Plateau, and the Federal Capital Territory). Within each state, Local Government Areas (LGAs) were further stratified into rural classifications using official government designations. In the second stage, communities were randomly selected within the rural strata to ensure representation across the region. Finally, households within each community were sampled systematically, and one eligible respondent per household was selected using simple random sampling. This approach ensured adequate geographic spread while capturing the heterogeneity of rural populations across the region. Prior to the pilot study, the survey instrument underwent pre-testing with two financial sector professionals and two academic scholars. Their feedback led to specific refinements: Simplification of technical financial terms to enhance comprehension among rural respondents, rewording of ambiguous items for clarity, adjustment of response options in some Likert-scale questions to reduce overlap, minor formatting changes to improve readability.

Subsequently, three additional academic experts in finance reviewed the revised draft, confirming its clarity and alignment with the study objectives. These refinements ensured that the instrument was robust before distribution for the pilot study.

Reliability was assessed using Cronbach's alpha. The instrument achieved values above 0.70, which meets the accepted benchmark for research. Hair et al. (2019) emphasizes that for empirical studies, a threshold of 0.70 is sufficient to indicate internal consistency among measurement items. Therefore, the reliability coefficients obtained in this pilot study validate the instrument's suitability for the main study. The study adhered to established ethical research standards. Informed consent was obtained from all participants after explaining the purpose of the study, the voluntary nature of participation, and their right to withdraw at any time without penalty. Respondents were assured of the confidentiality and anonymity of their responses, with data used solely for academic purposes. Where literacy levels were low, trained research assistants verbally explained the consent form and obtained oral consent before administering the questionnaires.

4. Frequency Analysis

The demography of the respondents was described in eight (8) unique divides: gender, age, marital status, highest qualification, head of family, number of dependents, number of years spent at present location, house owner or rented apartment. The specifics of the frequency examination are presented in the tables below.

Table 1. What is your gender?

	Frequency	Percentage	Valid	Percentage	Cumulative Percentage
Male	21	55	55	55	
Female	17	45	45	100	
Total	38	100	100		

Field Survey 2024

Table 1 shows the gender of the respondents and the percentage distribution of each gender, with male consisting of 55% and female 45%. The gender distribution of 55% male and 45% female respondents suggests a relatively balanced participation of men and women in the study, though men are slightly more represented. In the social reality of rural North-Central Nigeria, this pattern reflects the fact that men often have greater visibility in financial decision-making and public engagements, which may influence their higher representation in surveys. However, the relatively high female participation (45%) also indicates that women, despite cultural and structural constraints, play a significant role in household and community financial practices.

Table 2. What is your age range?

	Frequency	Percentage	Valid	Percentage	Cumulative Percentage
18 - 30 years old	8	21	21	21	21
31 - 40 years old	10	26	26	26	47
41 - 50 years old	12	32	32	32	79
51 - 60 years old	6	16	16	16	95
61 years old and above	2	5	5	5	100
Total	38	100	100	100	

Field Survey 2024

Table 2 represents the age classification of the respondents. The highest being 32% which constitute respondents from 41 to 50 years old range, and the least being 5%, consisting of 61 years old and above range. All the respondents are of the approved financial inclusion age of 18 years and above. The age distribution shows that the largest group of respondents (32%) falls within the 41–50 years range, while the smallest group (5%) consists of those aged 61 and above. This suggests that individuals in their middle age are the most active participants in financial inclusion activities, likely because they are in their peak productive and income-generating years, making them more engaged with financial products and services. Conversely, the low representation of older respondents (61+) reflects the social reality that elderly individuals in rural North-Central Nigeria often have reduced economic activity, lower literacy levels, and greater reliance on informal financial practices such as family support, cooperative societies, or traditional saving methods.

Table 3. What is your marital status?

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Single	13	34	34	34
Married	25	66	66	100
Total	38	100	100	

Field Survey 2024

Table 3 represents the marital status of the respondents and the percentage distribution of their status, with singles constituting 34% and married respondents 66%. This distribution reflects a social reality where most adults within the study population are married, which may influence their financial priorities, social responsibilities, and decision-making patterns compared to their single counterparts.

Table 4. What is your highest qualification?

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Doctor of Philosophy (PhD)	0	0	0	0
Master's Degree	4	11	11	11
Bachelor Degree/Higher National Diploma	8	21	21	32
Diploma/ NCE	15	39	39	71
Secondary School Certificate Examination	7	18	18	89
First School Leaving Certificate	4	11	11	100
Total	38	100	100	

Field Survey 2024

Table 4 represents the academic qualifications of the respondents. The highest proportion, 39%, consists of respondents with Diploma and NCE qualifications, while the lowest, 0%, represents respondents with PhD degrees. Notably, all respondents possess some form of academic qualification. This distribution highlights a social reality where access to tertiary education is widespread, yet advanced degrees such as PhDs remain rare, reflecting both the economic and structural challenges of pursuing higher levels of education in the society.

Table 5. Are you head of family?

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Yes	17	45	45	45
No	21	55	55	100
Total	38	100	100	

Field Survey 2024

Table 5 represents the head of family respondents, with the percentage distribution showing 45% as heads of family and 55% as non-heads of family. This distribution reflects a social reality where a significant proportion of individuals still operate within family structures without direct headship responsibilities, which may influence their financial obligations, decision-making power, and levels of economic pressure compared to those who bear the primary responsibility of heading a family.

Table 6. Number of dependents

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
0-5	17	45	45	45

6-10	11	29	29	74
11-15	7	18	18	92
16-20	3	8	8	100
Total	38	100	100	

Field Survey 2024

Table 6 represents the number of dependents the respondents have. The percentage distribution shows that 45% of respondents have between 0–5 dependents, which is the highest proportion, while the least is 8%, representing those with 16–20 dependents. Respondents with fewer dependents may experience lighter financial and caregiving burdens, allowing for more disposable income and personal advancement, while those with larger numbers of dependents carry greater social and economic responsibilities, which could affect their savings capacity, investment decisions, and overall quality of life.

Table 7. Number of years spent at present location

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
0-10 years	0	0	0	0
11-20 years	3	8	8	8
21-30 years	7	18	18	26
31-40 years	8	21	21	47
41years & above	20	53	53	100
Total	38	100	100	

Field Survey 2024

Table 7 represents the number of years the respondents have spent at their present location. The highest proportion, 53%, consists of respondents who have lived in their current location for 41 years and above, while the least, 0%, represents those who have stayed between 0–10 years. Additionally, 18% of respondents fall within the 21–30 years range, and 21% within the 31–40 years range. This distribution reflects a social reality of long-term settlement and stability within the community, suggesting strong social ties, rootedness, and possibly limited mobility. Such prolonged residence may foster deeper cultural integration and community participation, but it may also indicate fewer opportunities for relocation due to economic, social, or infrastructural constraints.

Table 8. You own a house or live-in rented apartment

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
House owner	29	76	76	76
Rented apartment	9	24	24	100
Total	38	100	100	

Field Survey 2024

Table 8 represents the number of respondents who live in their own houses or live-in rented apartments. 76% of the respondents live in personal houses while 24% live in rented apartments.

In research, the demographic distribution of respondents is crucial for several reasons. Firstly, it ensures that the sample accurately represents the larger population, facilitating more precise generalizations. By analyzing demographic data, researchers can identify specific patterns and trends among different groups, such as age, gender, income level, and education. This helps in recognizing and addressing biases, thereby enhancing the validity of the findings. Additionally, demographic insights allow for the development of targeted interventions and policies tailored to the unique needs of various groups. Comparative demographic analysis sheds light on how different factors affect diverse population segments. Including detailed demographic information not only strengthens the credibility and transparency of the research but also adheres to ethical standards by ensuring fair representation of all population groups.

4. Findings and Analysis

The study further tested the reliability of the questionnaire items using Cronbach alpha. The number of items in each variable contained in the questionnaire used in this pilot study is shown in table 9 below.

Table 9. Operationalization and Measurement of Variables

Construct	Acronym	No. of Dimensions	No of Items	Source
Financial Literacy:	FinLit	3		Dewi et al. (2020)
Financial awareness	FinAwar		6	
Financial experience	FinExp		5	
Financial behaviour	FinBeh		4	
Financial Technology	FinTech	1	11	Lontchi et al. (2023)
Cultural Value	Culval	1	8	Anyangwe, et al (2022).
Financial Inclusion	FinInc	1	9	Aritonang et al. (2022)

Each of these variables have Cronbach alpha values of 0.7, according to the studies above, however this study also tested the Cronbach alpha values of the constructs. The information in table 9 above indicates a total of 43 items was used in 6 constructs for the Cronbach alpha test. To test the reliability of the constructs, the reliability analysis for each of the constructs were assessed, and their Cronbach alpha values were calculated. The results of the Cronbach alpha values are presented below.

Table 11. Overall Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.948	.949	43

Source: SPSS Version 22

The Cronbach's alpha reported above is 0.948. This value indicates the extent to which the items in the scale are interrelated or correlated with each other. In general, higher values of Cronbach's alpha suggest greater internal consistency among the items. The result reveals there is high internal consistency among the 43 items. To establish internal consistency reliability of the construct, Cronbach's alpha, and composite reliability (CR) should be higher than the threshold of 0.7. It is clear from table 11, that all the latent indicators are reliable since their value is higher than the threshold value of 0.7.

Table 12. Financial Awareness Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.851	.852	6

Source: SPSS Version 22

The Cronbach's alpha reported for construct of financial awareness is 0.851. This value of 0.851 suggests a moderate to good level of internal consistency among the 6 items and the items are therefore maintained in the study.

Table 13. Financial Experience Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.806	.810	5

Source: SPSS Version 22

The Cronbach's alpha reported for construct of financial experience is 0.806. This value of 0.806 suggests a moderate to good level of internal consistency among the 5 items and the items are therefore maintained in the study.

Table 14. Financial Behaviour Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.854	.855	4

Source: SPSS Version 22

With a coefficient of 0.854, the scale demonstrates a moderate to good level of internal consistency. This suggests that the items within the scale are correlated with each other, indicating reliability in measuring the intended construct.

Table 15. Financial Technology Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.886	.893	11

Source: SPSS Version 22

The reported Cronbach's alpha coefficient is 0.886. This value indicates a high level of internal consistency among the items in the scale. Higher values of Cronbach's alpha suggest stronger interrelatedness or correlation among the items, indicating greater reliability in measuring the intended construct. Cronbach's Alpha Based on Standardized Items is a version of Cronbach's alpha, calculated based on standardized (z-score transformed) items, also demonstrates a high level of internal consistency with a coefficient of 0.893. This suggests that the consistency in measuring the construct is maintained even when considering standardized variations in item responses.

Table 16. Financial Inclusion Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.823	.821	9

Source: SPSS Version 22

The reported Cronbach's alpha coefficient is 0.823. This value suggests a moderate to good level of internal consistency among the items in the scale. Higher values of Cronbach's alpha indicate stronger interrelatedness or correlation among the items, indicating greater reliability in measuring the intended construct. Cronbach's Alpha Based on Standardized Items is a version of Cronbach's alpha, calculated based on standardized (z-score transformed) items. This is reported at 0.821. Despite a slight decrease from the unstandardized alpha, it still indicates a similar level of internal consistency. This suggests that the consistency in measuring the construct is maintained even when considering standardized variations in item responses.

Table 17. Cultural Value Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.898	.900	8

Source: SPSS Version 22

The reported Cronbach's alpha coefficient is 0.898. This value indicates a high level of internal consistency among the items in your scale. Higher values of Cronbach's alpha signify stronger interrelatedness or correlation among the items, suggesting greater reliability in measuring the intended construct. The Cronbach's alpha based on standardized items is 0.900, which is slightly higher than the unstandardized alpha. This suggests that even after standardizing the items, the internal consistency remains high. Standardization helps mitigate the effect of item variances on the reliability estimate. The scale comprises of eight items.

Overall, these results indicate that the scale demonstrates a high level of internal consistency and reliability in measuring the intended construct. The consistency is robust across both the original and standardized versions of the items, providing a strong basis for confidence in interpreting and utilizing the scale in research.

5. Conclusion

The study depicted and evaluated, the construct reliability of all the items designed in the survey instrument. This was carefully assessed using the Cronbach alpha value. The outcome showed that all the variables had a high alpha value of above 0.7, signifying that all the items used in the survey instrument should be upheld. Based on the study topic financial literacy, financial technology, cultural value, and financial inclusion of rural residents in north central Nigeria, responses to the survey instruments were solicited from rural residents of the region under review. The demographic information of the respondents was generated based on: gender, age, marital status, highest academic qualification, number of years spent in the location/area by the respondents. The study also sought to know heads of families and their number of dependents. Also, responses on the living condition of the respondents were sought for. This is to know if the respondent lives in private homes or rented apartments. This pilot study was carried out with the aim of weighing the practicability, length of time, and significance of using the survey instrument for the main study. The pilot study assisted to improve the plan and structure of study items used in the survey instrument as they were pre-tested and appraised by some subject matter specialists to ensure our data sets are hitch free throughout the actual application in the main study.

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