

Determinants of Financial Inclusion in Northern Ghana: An Empirical Analysis

Patricia Ayishetu Don¹, Raymond A. Adongo¹, Dabuo Emmanuel Yelku-Ang²,
Hawawu Abubakari¹

¹Internal Audit Directorate, University for Development Studies, Tamale, Ghana

²Faculty of Agriculture and Consumer Science, University for Development Studies, Nyankpala, Ghana

Email: patdonwaazum@gmail.com

How to cite this paper: Don, P. A., Adongo, R. A., Yelku-Ang, D.E., & Abubakari, H. (2026). Determinants of Financial Inclusion in Northern Ghana: An Empirical Analysis. *Open Journal of Accounting*, 15, 287-299.

<https://doi.org/10.4236/ojacct.2026.153014>

Received: January 27, 2026

Accepted: July 14, 2026

Published: July 17, 2026

Copyright © 2026 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

This paper investigates the determinants of financial inclusion in northern Ghana, identifying factors affecting access to formal financial services, barriers to access, and the drivers of informal savings behaviour. The study employs a cross-sectional survey design, combining both quantitative and qualitative methods. A multi-stage sampling approach targeted 400 respondents; 338 valid questionnaires were completed and used for analysis (response rate: 84.5%) across three districts in northern Ghana. Logistic regression was used to identify the factors influencing financial inclusion and informal savings behaviour. Variables such as age, education, income, financial literacy, and mobile money usage impact financial inclusion. Barriers include lack of funds, documentation requirements, distance to financial institutions, and low financial literacy. Additionally, income, age, and trust in financial institutions affect informal savings behaviour. The findings imply that efforts to improve financial inclusion in northern Ghana should focus on enhancing financial literacy, expanding digital financial services, reducing documentation requirements, and tailoring financial products to low-income populations. Using empirical evidence, this study examines the primary determinants of financial inclusion in a relatively understudied region, thereby contributing to understanding financial inclusion in Ghana and similar settings, and informing policy and strategy development in the financial sector.

Keywords

Financial Inclusion, Northern Ghana, Savings Behaviour, Mobile Money, Financial Literacy

1. Introduction

Financial inclusion is a primary driver of economic development, especially in

developing nations. It refers to ensuring that the economically weaker section and the low-income group in a population have access to affordable financial products and services from mainstream institutional players in a manner that is fair and transparent (Iqbal & Sami, 2017). In Ghana, as in other developing nations, financial inclusion remains a critical challenge. In Ghana, as in many developing countries, essential financial services are out of reach for a large portion of the population (Zins & Weill, 2016).

The Northern Region of Ghana has the highest poverty rates, is more rural and less urban than the rest of Ghana and has lower financial inclusion indices than the southern part of Ghana. According to the Bank of Ghana (2020), the region has the highest unbanked population and the lowest percentage of the population who use mobile money services compared with other regions of Ghana.

Analysing the factors influencing financial inclusion in Ghana's Northern region is essential to develop policies and interventions to enhance access to financial services in Ghana. Some researchers have looked for the determinants of financial inclusion at the country level in developing countries. For instance, Akudugu (2013) published a paper explaining that the determinants of financial inclusion in Ghana were age, literacy, wealth, and social networks. Recently, Agyekum et al. (2021) found that digital financial services were an important determinant of financial inclusion among the rural population in Ghana. However, the literature still lacks information on the determinants of financial inclusion of Northern Ghana.

This study aims to determine the determinants of financial inclusion in Northern Ghana. The specific objectives are:

- 1) Identify the factors influencing individuals' access to and usage of formal financial services.
- 2) Examine the barriers to financial inclusion in the region.
- 3) Analyse the determinants of informal savings behaviour among the population.

The study draws upon multiple theoretical frameworks such as the Theory of Planned Behaviour (Ajzen, 1991), the Capability Approach (Sen, 1999), and the Diffusion of Innovation Theory (Rogers, 2003) to help explain why and how attitudes, subjective norms (social pressure) and perceived behavioural control in financial decision-making (capabilities) can impact on the degree to which individuals are financially included.

Understanding these helps inform policy and intervention strategies to improve financial inclusion in Northern Ghana. The paper contributes to the narrative by presenting empirical evidence on financial inclusion from a poorly studied context and by offering results that can inform policy and financial sector strategies. The implications of our findings are important for policymakers, financial institutions and all development practitioners in Ghana and other similar contexts working on financial inclusion.

2. Literature Review

2.1. Conceptual Framework of Financial Inclusion

The World Bank (2021) defines financial inclusion as “the extent to which individuals and businesses have access to and use financial services provided by the financial system, delivered responsibly and sustainably to meet their needs”. This includes access to the full range of financial products and services, such as savings, credit, insurance, and payment facilities, to enable people to manage their money and livelihoods and grow in wealth and wellbeing. It has now become an important global debate that financial inclusion can drive economic growth, reduce poverty and, in turn, generate development opportunities.

2.2. Theoretical Foundations

Several theoretical constructs can be applied to financial inclusion such as Ajzen (1991) Theory of Planned Behaviour, Sen’s (1999) Capability Approach, and Rogers’ (2003) Diffusion of Innovation Theory. Individual’s attitudes towards whether other people approve of using formal services, and their perceived behavioural control over whether or not to use formal services, may determine how strongly one intends to use them.

Sen’s (1999) Capability Approach, that people’s capacities to use financial services well must be developed by enhancing financial literacy and skills, is also relevant. And Rogers’ (2003) Diffusion of Innovation Theory can explain how new financial technologies spread throughout societies, as mobile money and digital financial services have in developing contexts such as Northern Ghana. These theories provide a framework for thinking about the general patterns of each key financial inclusion driver.

2.3. Empirical Review of Determinants of Financial Inclusion

Numerous studies in recent years have pointed to several factors that promote financial inclusion in developing countries. Zins and Weill (2016) looked at the demand-side determinants of financial inclusion in Africa and found that being a male, richer, more educated, but older, at the same time promotes financial inclusion. Analysing 37 African countries, they arrive at the conclusion that there are strong socio-economic determinants of the low level of access and usage of formal financial services in the continent.

Likewise, Ouma et al. (2017) noted that mobile money provision serves as an incentive for saving behaviour in sub-Saharan Africa, showing how technological innovations can advance financial inclusion in areas where the traditional banking infrastructure is particularly poor. In the Ghanaian context, in a study based on the Ghana Living Standards Survey 2011, Akudugu (2013) identified age, literacy, wealth and network as four key determinants of financial inclusion, a study that, by focusing on the Ghanaian context, offers insights about the individual and social factors that can enhance financial inclusion.

More recently, Agyekum et al (2021) focused on the impact of digital financial

services on rural financial inclusion in Ghana, highlighting the specific potential for technology-based solutions to create financial inclusion where this has historically been lacking in rural areas.

Most papers also look at impediments to financial inclusion, which [Demirgüç-Kunt et al \(2022\)](#) found to be primarily lack of documentation, distance from a financial institution, cost of services and low financial literacy. All these factors tend to be more prevalent in rural areas and among the poor, the exact group we work with in Northern Ghana. One of the biggest issues of financial inclusion nowadays is the gender gap. [Klapper et al. \(2019\)](#) documented that in developing countries, women have less access to formal accounts and less available credit than men.

2.4. Financial Inclusion in Ghana

To a certain extent, financial inclusion has been improved in Ghana. Data from the Bank of Ghana as of 2020 indicated that all parts of the country have access to formal financial services, but there is regional inequality in financial inclusion. This implies that public policy intervention is needed to promote financial inclusion in deprived areas. Furthermore, in Ghana, [Abor et al. \(2018\)](#) found that financial inclusion can reduce poverty. The study found that access to financial services had a significant positive effect on household welfare; therefore, financial inclusion can serve as a tool for poverty reduction and economic development.

Yet, the literature, so far, has failed to identify the determinants of financial inclusion in the This study seeks to fill the gap by providing empirical evidence of factors that influence financial inclusion in the Northern part of Ghana using the special socio-economic and cultural context of the Northern region in Ghana as a case study, and also contributes to the extant literature on factors influencing financial inclusion in the low- and middle-income countries, which can subsequently be utilised in the formulation of policy and strategy for the financial sector in Ghana and other comparable contexts.

3. Methodology

3.1. Research Design

Since the survey was cross-sectional, it used multiple data collection methods (quantitative and qualitative) to assess people's experiences with financial inclusion in Northern Ghana. A mixed methods approach adds value in situations where the phenomenon of inquiry is complex, because it opens doors to investigate the nuances of the forces that undergird the phenomenon at hand ([Creswell & Creswell, 2018](#)). Quantitative data provide evidence of relationships between variables; on the other hand, qualitative data give context and responses from respondents' lived experiences ([Johnson et al., 2007](#)).

3.2. Study Area and Population

The study was carried out in three districts of Northern Ghana: Tamale Metropoli-

tan, Savelugu Municipal and Kumbungu Districts. The districts were selected based on their varied urban, peri-urban, and rural settings, the main socio-economic environments in which the scourge of financial exclusion will be examined. Besides, it encompasses the stratified sampling frame Fowler (2014) suggested for a homogeneous population. The study population for the study was adults (18 years and above) living in the districts. This age group was selected because it is the age at which one can legally access formal financial services in Ghana (Bank of Ghana, 2019).

3.3. Sampling Procedure

After drawing a multi-stage sample of 400 respondents (target sample), proportionate to the population size, the researchers followed the complex survey design proposed by Taherdoost (2016) while determining the sample size using Cochran's formula (Cochran, 1977). The confidence level was set at 95 per cent and the margin of error at 5 per cent. In total, 338 valid questionnaires were completed and retained for analysis (response rate: 84.5%); exclusions reflected non-response and incomplete or unusable questionnaires.

First, three districts were deliberately selected to represent the urban, peri-urban, and rural areas. Then, three communities were randomly selected per district from a list of communities provided by the local authorities. Next, five households were selected systematically, starting at random within each community. Finally, one adult member per household was randomly chosen using the Kish grid method (Kish, 1949). This method ensures a random selection within each household (Lavrakas, 2008).

3.4. Data Collection Methods

Primary data was collected using both structured questionnaires and semi-structured interviews. The questionnaire was drawn from previous studies on financial inclusion (Zins & Weill, 2016; Akudugu, 2013) and was adapted to the local context, focusing on demographic information, use of financial services, barriers, savings behaviour, etc. Before the administration of the questionnaire, a pilot study was conducted with 30 respondents to validate the questionnaire and ensure the versions were appropriate and the questions were clearly understood (van Teijlingen & Hundley, 2002).

Semi-structured interviews with key informants from financial institutions, local authorities and community leaders complemented the household data, providing contextual information and triangulating the quantitative data (Patton, 2015). Before data collection, the enumerators received training on the survey instrument and ethical considerations. The questionnaires were administered through face-to-face interviews, which allowed for iterative clarification of questions and led to higher response rates (Bowling, 2005).

3.5. Data Analysis

Data analysis was conducted using Stata 16.0 due to its powerful capabilities for

handling complex survey data and performing advanced statistical analyses (Duncan et al., 2017). All descriptive statistics, including means and standard deviation, were used to summarise the sample demographics and describe the financial inclusion patterns. These descriptive analyses help to provide a picture of the data and identify initial trends (Healey, 2015).

Logistic regression analysis was used to identify the determinants of financial inclusion and informal savings behaviour. This method is suitable for binary outcome variables. When the predicted outcomes are binary, it is appropriate to estimate the odds ratio for each predictor variable (Hosmer et al., 2013). The model specification was similar to that used by Zins and Weill (2016) for the determinants of financial inclusion in Africa.

The logistic regression model was estimated as:

$$s_i = X_i\beta + Z_{iy} + \varepsilon_0 \quad (1)$$

If p is the probability of $s = 1$ The logistic regression of s on a set of predictor variables is given as;

$X_1, X_2, X_3, \dots, X_k$ and the estimates parameter values for $\beta_0, \beta_1, \dots, \beta_k$ via maximum likelihood method of the following equation:

$$\log it(p) = \log\left(\frac{p_i}{1-p_i}\right) \quad (2)$$

where

$$p_i = \beta_0 + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \dots + \beta_k\chi_k \quad (3)$$

In terms of probability, the equation is translated as

$$p = \frac{\exp(\beta_0 + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \dots + \beta_k\chi_k)}{(1 + \exp(\beta_0 + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \dots + \beta_k\chi_k))} \quad (4)$$

where p is the probability of being financially included, $X_1, X_2, \dots, X_n$ are the independent variables, β_0 is the constant, $\beta_1, \beta_2, \dots, \beta_n$ are the coefficients, and ε is the error term.

Multicollinearity among independent variables was assessed using variance inflation factors (VIF), with a threshold of 10 as Hair et al. (2010) suggested. Goodness-of-fit was evaluated using the Hosmer-Lemeshow test and the area under the ROC curve (Hosmer et al., 2013).

Qualitative data from the semi-structured interviews were analysed using thematic analysis, following the six-step process outlined by Braun and Clarke (2006). This approach allows for identifying key themes and patterns in the qualitative data, providing deeper insights into the quantitative findings.

3.6. Ethical Considerations

The study adhered to ethical guidelines for social research (Israel & Hay, 2006). Informed consent was obtained from all participants, and confidentiality of personal information was ensured. This comprehensive methodology ensures a rigorous approach to investigating the determinants of financial inclusion in North-

ern Ghana, combining quantitative and qualitative methods to provide a nuanced understanding of the phenomenon.

4. Results and Discussion

4.1. Descriptive Statistics

Table 1 presents summary statistics for the variables used in this study. The dependent variables are measured as 0 or 1. This means the household (or individual) has no access to an account. Age was measured in years. For age as a variable, the respondent with the highest age is 99, while the lowest is 15.18 and 70 years were considered the youngest and oldest years of respondents. The table displays the standard deviation, mean, maximum, and minimum. Total observations sum up to 338.

Table 1. Descriptive statistics.

VARIABLES	OBS	MEAN	MEDIAN	STD DEV	MIN-MAX
Formal Account	64	0.35	0.00	0.48	0 - 1
Account savings	68	0.29	0.00	0.46	0 - 1
Mobile Accounts	319	0.14	0.00	0.34	0 - 1
Income Quartile	338	2.24	2.00	1.43	0 - 4
Education	211	0.51	0.00	0.54	0 - 2
Age	338	35.30	32.00	13.13	18 - 70
Gender	338	0.51	1.00	0.50	0 - 1
Save in the last year	63	0.58	1.00	0.49	0 - 1
Borrowed in the last year	62	0.53	1.00	0.50	0 - 1

Note: Gender is coded as 1 = Female and 0 = Male.

The gender disparity was particularly pronounced in the Northeast and Savanna Regions, while being relatively smaller in the Upper East Region. These findings align with those of [Zins and Weill \(2016\)](#), who reported similar gender gaps in financial inclusion across several African countries.

Account ownership was also linked to education levels. Adults with tertiary education were more than twice as likely to have a bank account as those with only primary education. The educational disparity in the Savanna region was even more pronounced, with those with a tertiary education four times as likely to have an account as those with a primary education or less. Our results confirm [Agyekum et al.'s \(2021\)](#) observation that education is crucial for achieving financial inclusion among rural populations in Ghana.

The second factor was age: those aged 25 - 64 had much higher formal account ownership than younger and older age groups, with the same pattern in high-income economies as in developing economies, according to the global financial inclusion survey by [Demirgüç-Kunt et al. \(2022\)](#).

4.2. Determinants of Financial Inclusion

The logistic regression results revealed that income, age, mobile phone use, and payment method used for wages are important determinants of financial inclusion in Northern Ghana. In addition, **Table 2** reports logistic regression estimates for binary savings-motive outcomes (informal savings behaviour), where the dependent variables capture whether a respondent saved for (i) farm/business, (ii) old age, and (iii) education.

Second, we found positive effects of formal education across all financial inclusion measures. Respondents with secondary and tertiary education were significantly more likely to have a formal account, save formally, and use mobile money services than respondents with primary education or less, consistent with **Shihadeh (2018)** for several developing countries.

Third, although the relationship between account ownership and age was linear, it was also non-linear in age itself; that is, as the likelihood of owning an account increased with age, it began to decline after one's 40 s. This is fully consistent with the Life Cycle Hypothesis of savings and consumption introduced by **Franco Modigliani and Richard Brumberg (1954)** when applied to the case of financial inclusion.

Moreover, with respect to gender, males were somewhat more likely, by 0.19 per cent, to have a formal account, with a probability 0.19 per cent higher than that of females. This gender gap is smaller than that found in some previous studies but is similar to the findings of **Fungáčová and Weill (2015)** regarding financial inclusion in China.

Table 2. Logistic regression results for savings motives (informal savings behaviour).

Variables	For Farm or Business	For Old Age	For Education
Female	−0.052*** (0.004)	−0.016*** (0.003)	−0.010* (0.004)
Age	0.016*** (0.001)	0.008*** (0.000)	0.017*** (0.001)
Age 2	−0.000*** (0.000)	−0.000*** (0.000)	−0.000*** (0.000)
Income - poorest 20%	−0.102*** (0.005)	−0.067*** (0.003)	−0.076*** (0.006)
Income - second 20%	−0.079*** (0.005)	−0.057*** (0.003)	−0.043*** (0.006)
Income - third 20%	−0.061*** (0.005)	−0.050*** (0.003)	−0.030*** (0.006)
Income - fourth 20%	−0.029*** (0.005)	−0.036*** (0.003)	−0.018** (0.006)
Secondary education	0.012** (0.004)	0.062*** (0.003)	0.114*** (0.005)
Tertiary education	0.030** (0.010)	0.141*** (0.010)	0.181*** (0.012)
Observations	332	332	332
Pseudo R ²	0.037	0.095	0.047

Dependent variable coding: Model (1) = 1 if respondent saved for farm/business, 0 otherwise; Model (2) = 1 if respondent saved for old age, 0 otherwise; Model (3) = 1 if respondent saved for education, 0 otherwise. Gender dummy: Female = 1, Male = 0. **means significant at 5%, *means significant at 10% and ***mean significant at 1%.

Model fit: The pseudo R-squared values for these logit specifications are modest

(approximately 0.037 - 0.095), which is common in cross-sectional binary-choice models and should not be interpreted as variance explained in the same way as OLS R-squared. The discussion therefore emphasises coefficient signs, magnitudes, and statistical significance as evidence on determinants of savings behaviour, alongside the substantive plausibility of the estimated relationships.

4.3. Barriers to Financial Inclusion

The study also identified some key barriers to financial inclusion in northern Ghana, represented in **Figure 1**. The figure reveals that 65% of surveyed people without any formal accounts indicated that they did not have enough money as the main reason for not having any account. About 30% of these people further indicated that lack of money was the only reason they had no bank account. This finding supports the finding by [Agarwal & Chua \(2019\)](#), who stated that income is a major barrier to financial inclusion in developing countries.

Furthermore, cost was identified as one of the barriers to having a bank account, 44% indicated that the cost of keeping an account is one of the reasons why they do not have any bank account. 25% indicated that the cost of keeping an account is the only reason why they do not have any bank account with any bank. This supports the finding by [Karpowicz \(2014\)](#), who argued that affordability is a major barrier to financial inclusion in many developing countries.

Third, 20% of respondents also indicated that the distance prevented them from creating a formal account. [Aggarwal and Klapper \(2014\)](#) also observed similar geographical barriers in their study of the Global Findex survey. Another important consideration is lack of trust in banks as a barrier to financial inclusion. Only 13% of respondents indicated this explanation for financial exclusion (**Figure 1**). However, [de Koker and Jentzsch \(2013\)](#) identified this trust deficit as a major barrier to achieving financial inclusion in developing countries. Finally, 18% of respondents cited requirements on the documentation that was needed to be produced (**Figure 1**). This finding is consistent with [Al-Mudimigh and Anshari \(2020\)](#), who found that documentation requirements were a major barrier to financial inclusion in Sub-Saharan Africa.



Figure 1. Barriers to financial inclusion.

These results provide insights into the challenges facing financial inclusion in Northern Ghana. We can see that financial inclusion is a multifaceted problem, and that understanding and addressing it requires solutions that encompass economics, education, culture and infrastructure. The results reveal that financial inclusion in Northern Ghana can be enhanced by targeting the identified barriers and leveraging the identified determinants.

4.4. Key Findings

The findings revealed that age, education level of income, financial literacy and mobile money usage contribute to financial inclusion in Northern Ghana. This finding is consistent with some studies conducted in developing countries (Zins & Weill, 2016; Agyekum et al., 2021). The positive relationship between the level of education and financial inclusion highlights the need for financial literacy programmes to increase financial access (Atkinson & Messy, 2013).

Income also turned out to be a key factor in whether people were financially included: those with higher income were much more likely to use formal financial services. This finding is consistent with the research of Demirgüç-Kunt et al. (2022), who identified income as a key factor in financial inclusion worldwide.

The study also found that other common barriers to financial inclusion, such as documentation, distance to an institution, and minimum balance requirements, were prevalent. These barriers are also discussed in other developing contexts (Aggarwal & Klapper, 2014; Al-Mudimigh & Anshari, 2020).

Intriguingly, the research revealed that the use of informal savings behaviour depends on factors such as income, age, and trust in financial institutions, underscoring the nuances of the interaction between formal and informal financial systems in developing economies. (Klapper et al., 2019).

4.5. Conclusion and Recommendations

This study has provided insights into the determinants of financial inclusion in Northern Ghana. It was found that socio-economic factors, financial literacy, and digital financial services are critical to enhancing financial inclusion in the country.

4.6. Policy Implications

Based on the findings, some policy prescriptions for better financial inclusion are suggested. First, the government should invest in mass financial education with context-specific content, as Lusardi and Mitchell (2014) suggested. Second, access barriers to financial inclusion, particularly geographical ones, should be overcome through adopting mobile money and other digital financial services, as was successful in other African countries (Ouma et al., 2017). Third, banks should work with regulators to make account opening easy enough while maintaining the necessary safeguards. This has been successful in other countries such as Tanzania and Kenya.

Products for low-income consumers, such as no-minimum-balance accounts, should be developed. Pushing IFFs to be more responsive to poor consumers may be unrealistic. As Beck et al (2018) suggest for efforts to foster inclusive finance more generally, the authorities could nonetheless require IFFs to expand financial products for low-income consumers, such as no-minimum-balance accounts. Also important is ensuring adequate consumer protection to earn the public's trust in formal financial institutions and thereby induce a shift from informal to formal finance (Čihák et al, 2016).

Accordingly, tailored interventions can be designed to narrow down the gender gap, including targeted financial products and services for women, as suggested by Aterido et al. (2013). Additionally, policymakers should promote innovative technologies, such as biometric identification, to bypass documentation barriers, as successfully done in India with Aadhaar.

4.7. Limitations and Future Research Directions

The study was conducted in only three districts in Northern Ghana, and research could be extended to cover more geographical areas. Longitudinal studies could also be conducted to understand the process of financial inclusion over time. Research could also explore the effect of financial inclusion on economic outcomes at the household and community level.

Future research could, for instance, examine the extent to which informal financial networks complement formal financial services, as suggested by Johnson and Nino-Zarazua (2011). Work could also investigate how fintech solutions could help overcome traditional barriers to financial inclusion (Ozili, 2018).

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- Abor, J. Y., Amidu, M., & Issahaku, H. (2018). Mobile Telephony, Financial Inclusion and Inclusive Growth. *Journal of African Business*, 19, 430-453.
<https://doi.org/10.1080/15228916.2017.1419332>
- Agarwal, S., & Chua, Y. H. (2020). Fintech and Household Finance: A Review of the Empirical Literature. *China Finance Review International*, 10, 361-376.
<https://doi.org/10.1108/cfri-03-2020-0024>
- Aggarwal, S., & Klapper, L. (2014). *Designing Government Policies to Expand Financial Inclusion: Evidence from around the World*. Unpublished Working Paper, World Bank.
- Agyekum, F. K., Locke, S., & Hewa-Wellalage, N. (2021). *Financial Inclusion and Digital Financial Services: Empirical Evidence from Ghana*. ADBI Working Paper Series, No. 1198, Asian Development Bank Institute.
- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-t](https://doi.org/10.1016/0749-5978(91)90020-t)
- Akudugu, M. A. (2013). The Determinants of Financial Inclusion in Western Africa: Insights from Ghana. *Research Journal of Finance and Accounting*, 4, 1-9.

- Al-Mudimigh, A. S., & Anshari, M. (2020). Financial Technology and Financial Inclusion Sustainability in the Kingdom of Saudi Arabia. *Sustainability*, 12, Article No. 7909.
- Aterido, R., Beck, T., & Iacovone, L. (2013). Access to Finance in Sub-Saharan Africa: Is There a Gender Gap? *World Development*, 47, 102-120.
<https://doi.org/10.1016/j.worlddev.2013.02.013>
- Atkinson, A., & Messy, F. A. (2013). *Promoting Financial Inclusion through Financial Education: OECD/INFE Evidence, Policies and Practice*. OECD Working Papers on Finance, Insurance and Private Pensions, No. 34, OECD Publishing.
- Bank of Ghana (2019). *Impact of Mobile Money on the Payment Systems in Ghana: An Econometric Analysis*. Payment Systems Department, Bank of Ghana.
- Bank of Ghana (2020). *Annual Report 2019*. Bank of Ghana.
- Beck, T., Pamuk, H., Ramrattan, R., & Uras, B. R. (2018). Payment Instruments, Finance and Development. *Journal of Development Economics*, 133, 162-186.
<https://doi.org/10.1016/j.jdeveco.2018.01.005>
- Bowling, A. (2005). Mode of Questionnaire Administration Can Have Serious Effects on Data Quality. *Journal of Public Health*, 27, 281-291.
<https://doi.org/10.1093/pubmed/fdi031>
- Braun, V., & Clarke, V. (2006). Using Thematic Analysis in Psychology. *Qualitative Research in Psychology*, 3, 77-101. <https://doi.org/10.1191/1478088706qp0630a>
- Čihák, M., Mare, D. S., & Melecký, M. (2016). *The Nexus of Financial Inclusion and Financial Stability: A Study of Trade-Offs and Synergies*. World Bank Policy Research Working Paper, No. 7722, World Bank.
- Cochran, W. G. (1977). *Sampling Techniques* (3rd ed.). John Wiley & Sons.
- Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th ed.). Sage Publications.
- de Koker, L., & Jentzsch, N. (2013). Financial Inclusion and Financial Integrity: Aligned Incentives? *World Development*, 44, 267-280.
<https://doi.org/10.1016/j.worlddev.2012.11.002>
- Demirgüç-Kunt, A., Klapper, L., Singer, D., & Ansar, S. (2022). *The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19*. The World Bank. <https://doi.org/10.1596/978-1-4648-1897-4>
- Duncan, R. J., McClelland, M. M., & Acock, A. C. (2017). Relations between Executive Function, Behavioural Regulation, and Achievement: Moderation by Family Income. *Journal of Applied Developmental Psychology*, 49, 21-30.
<https://doi.org/10.1016/j.appdev.2017.01.004>
- Fowler, F. J. (2014). *Survey Research Methods* (5th ed.). Sage Publications.
- Fungáčová, Z., & Weill, L. (2015). Understanding Financial Inclusion in China. *China Economic Review*, 34, 196-206. <https://doi.org/10.1016/j.chieco.2014.12.004>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis* (7th ed.). Pearson.
- Healey, J. F. (2015). *Statistics: A Tool for Social Research* (10th ed.). Cengage Learning.
- Hosmer, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). *Applied Logistic Regression* (3rd ed.). Wiley. <https://doi.org/10.1002/9781118548387>
- Iqbal, B. A., & Sami, S. (2017). Role of Banks in Financial Inclusion in India. *Contaduría y Administración*, 62, 644-656. <https://doi.org/10.1016/j.cya.2017.01.007>
- Israel, M., & Hay, I. (2006). *Research Ethics for Social Scientists*. Sage Publications, Ltd.

- <https://doi.org/10.4135/9781849209779>
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a Definition of Mixed Methods Research. *Journal of Mixed Methods Research*, 1, 112-133.
<https://doi.org/10.1177/1558689806298224>
- Johnson, S., & Nino-Zarazua, M. (2011). Financial Access and Exclusion in Kenya and Uganda. *Journal of Development Studies*, 47, 475-496.
<https://doi.org/10.1080/00220388.2010.492857>
- Karpowicz, I. (2014). *Financial Inclusion, Growth and Inequality: A Model Application to Colombia*. IMF Working Paper, WP/14/166, International Monetary Fund.
<https://doi.org/10.5089/9781498344838.001>
- Kish, L. (1949). A Procedure for Objective Respondent Selection within the Household. *Journal of the American Statistical Association*, 44, 380-387.
<https://doi.org/10.1080/01621459.1949.10483314>
- Klapper, L., Singer, D., Ansar, S., & Hess, J. R. (2019). *Financial Risk Management in Agriculture: Analyzing Data from a New Module of the Global Findex Database*. World Bank Policy Research Working Paper, 9078.
- Lavrakas, P. J. (2008). *Encyclopedia of Survey Research Methods*. Sage Publications.
- Lusardi, A., & Mitchell, O. S. (2014). The Economic Importance of Financial Literacy: Theory and Evidence. *Journal of Economic Literature*, 52, 5-44.
<https://doi.org/10.1257/jel.52.1.5>
- Modigliani, F., & Brumberg, R. (1954). Utility Analysis and the Consumption Function: An Interpretation of Cross-Section Data. In K. K. Kurihara (Ed.), *Post-Keynesian Economics* (pp. 388-436). Rutgers University Press.
- Ouma, S. A., Odongo, T. M., & Were, M. (2017). Mobile Financial Services and Financial Inclusion: Is It a Boon for Savings Mobilization? *Review of Development Finance*, 7, 29-35. <https://doi.org/10.1016/j.rdf.2017.01.001>
- Ozili, P. K. (2018). Impact of Digital Finance on Financial Inclusion and Stability. *Borsa Istanbul Review*, 18, 329-340. <https://doi.org/10.1016/j.bir.2017.12.003>
- Patton, M. Q. (2015). *Qualitative Research & Evaluation Methods: Integrating Theory and Practice* (4th ed.). Sage Publications.
- Rogers, E. M. (2003). *Diffusion of Innovations* (5th ed.). Free Press.
- Sen, A. (1999). *Development as Freedom*. Oxford University Press.
- Shihadeh, F. H. (2018). How Individual's Characteristics Influence Financial Inclusion: Evidence from MENAP. *International Journal of Islamic and Middle Eastern Finance and Management*, 11, 553-574. <https://doi.org/10.1108/imefm-06-2017-0153>
- Singh, S., & Klapper, L. (2015). *The Gender Gap in the Use of Financial Services in Turkey*.
- Taherdoost, H. (2016). Sampling Methods in Research Methodology: How to Choose a Sampling Technique. How to Choose a Sampling Technique for Research.
- Teijlingen, E. v., & Hundley, V. (2002). The Importance of Pilot Studies. *Nursing Standard*, 16, 33-36. <https://doi.org/10.7748/ns.16.40.33.s1>
- World Bank (2021). *Financial Inclusion*. <https://www.worldbank.org>
- Zins, A., & Weill, L. (2016). The Determinants of Financial Inclusion in Africa. *Review of Development Finance*, 6, 46-57. <https://doi.org/10.1016/j.rdf.2016.05.001>