BRIDGING THE FINANCIAL GAP: THE ROLE OF MOBILE MONEY LENDING IN ENHANCING FINANCIAL INCLUSION IN TANZANIA

Julius Macha [1]
Benjamin Nkanda

A B S T R A C T

This study examines the influence of mobile money-based lending services on financial inclusion in Tanzania, with a specific focus on the supply-side perspective. In Tanzania, where a significant portion of the population remains unbanked or underbanked, mobile lending has emerged as a potential solution to bridge the financial access gap. A quantitative research design was employed, and data were collected through a structured questionnaire distributed via Google Forms to representatives from key financial institutions. Out of 384 questionnaires distributed, 302 were completed and valid for analysis, resulting in a response rate of 78.65%.

Descriptive statistics were used to summarize the institutional responses, while inferential analysis was conducted using SPSS. Multiple linear regression was applied to evaluate the impact of affordability, convenience, and accessibility on financial inclusion outcomes. The results showed that all three supply-side factors significantly and positively influence financial inclusion, with accessibility exerting the srongtest effect, followed by affordability and convenience.

These findings underscore the critical role of financial service providers in enhancing financial inclusion through strategic service design. To improve outcomes, providers should prioritize the development of user-centric digital lending platforms, implement transparent and affordable pricing models, and invest in infrastructure and outreach initiatives. Nonetheless, the study's institutional focus and cross-sectional design limit its ability to capture end-user experiences or dynamic trends over time. Future research should integrate demand-side perspectives and adopt longitudinal approaches for a more holistic understanding of digital financial inclusion.

1. INTRODUCTION

The introduction of mobile money services by companies such as Vodacom, Tigo, and Airtel in the late 2000s has profoundly transformed Tanzania's financial landscape. The platforms were initially introduced to facilitate basic transactions that include bill payments, airtime purchases, and person-to-person (P2P) transfers. However, theses platforms have since evolved to offer more sophisticated services, such as mobile digital loans, aimed at addressing financial exclusion among underbanked and unbanked populations (Raithatha & Storchi, 2025). As digital financial services become more widely used, the number of mobile money subscriptions

---

[1] Corresponding author: Julius Macha
  Email: koroma85@yahoo.com

increased from 63.2 million in December 2024 to 66.5 million in March 2025 (TCRA, 2024, 2025). Thus, through offering easily accessible and convenient credit options independent of conventional banking infrastructure, mobile money-based lending is emerging as a key driver of financial inclusion in Tanzania. In this context, financial inclusion reflects the process of ensuring that all individuals and businesses have easy access to, and can effectively use, affordable and appropriate financial products and services within the formal financial system (Ozili, 2023; Sarma & Pais, 2011).

Traditional financial institutions often struggle to reach large segments of the population due to geographical barriers, high operating costs, and inadequate infrastructure challenges common across many developing countries (Deshpande & Koning, 2023). In contrast, instant digital loans, disbursed as e-money via mobile wallets, remain accessible to users in both urban and rural areas. These loans are typically facilitated through partnerships between banks, microfinance institutions, and mobile network operators (MNOs). Artificial intelligence is increasingly being used to assess creditworthiness and determine appropriate loan amounts based on users' mobile money transaction histories. By the end of December 2023, six Tanzanian banks and financial institutions were collaborating with MNOs to deliver digital credit services. The number of digital loan accounts increased significantly as a result of these collaborations, from 32.09 million in December 2022 to 95.89 million in December 2023 (BOT, 2023). Concurrently, the total value of digital loans issued rose dramatically from TZS 26.79 billion to TZS 126.03 billion highlighting growing consumer trust and reliance on mobile lending solutions.

Thus, financial inclusion guarantees access to essential financial services such as credit, insurance, payments, and savings particularly for underserved populations like low-income individuals, rural communities, and small-scale businesses. It not only provides access but also empowers users to manage finances, mitigate risks, and invest in growth (Irfan et al., 2024). By integrating marginalized groups into the formal economy, financial inclusion drives poverty reduction, economic development, and entrepreneurship. Digital financial services, especially mobile money platforms, play a crucial role by offering accessible, low-cost, and convenient solutions, such as short-term digital loans, that bypass traditional banking barriers. This ecosystem benefits individuals and also supports governments, policymakers, and financial institutions in promoting broader economic stability and growth.

Mobile money-based digital lending has experienced steady growth in Tanzania, largely fuelled by strategic partnerships between mobile network operators (MNOs) and financial institutions (AFI, 2020). Platforms such as Airtel Money and HALOPESA have launched mobile lending products to expand financial access, while Vodacom's M-Pesa has collaborated with various financial institutions to provide digital credit services.

Similarly, Tigo Pesa, in partnership with Azania Bank, offers mobile-based credit solutions. The ecosystem has been further strengthened by the introduction of the Tanzania Instant Payment System (TIPS) that enhances interoperability among service providers (BOT, 2022). This system has improved transaction efficiency and promoted a more inclusive digital financial landscape.

This study focuses on Tanzania and assesses how mobile money-based digital lending contributes to financial inclusion across three core dimensions: affordability, accessibility, and convenience. Despite notable progress evidenced by formal financial inclusion reaching 76% by 2023 significant gaps remain (BOT, 2023; FSDT, 2023). Many Tanzanians, particularly women and those living in rural areas, continue to face barriers to accessing reliable and affordable financial services. As a result, a large portion of the population remains dependent on cash, limiting the overall impact of financial inclusion initiatives (Demirgüç-kunt et al., 2020; Nguyen, 2023).

The current study is grounded in Financial Inclusion Theory that stresses the importance of making financial services accessible, affordable, and inclusive, especially for underserved populations like the underbanked and unbanked. The theory serves as a lens for examining how innovations in digital financial services especially mobile money wallets could address challenges such as inadequate banking infrastructure, high transaction costs, and geographical barriers.

In Tanzania, the rapid expansion of mobile money platforms spurred by initiatives such as the Tanzania Inclusive Digital Economy has played a pivotal role in promoting financial inclusion. Notably, the number of active mobile money accounts in the country increased by 3.9%, rising from 60.8 million in the quarter ending September 2024 to 63.2 million by December 2024 (TCRA, 2024). However, access to digital credit remains limited, particularly among low-income groups, due to persistent barriers related to infrastructure and cost. While there is general research on digital financial services, few studies have specifically addressed the impact of mobile money-based lending on financial inclusion in Tanzania with respect to affordability, convenience and accessibility. This study seeks to fill that gap by offering a focused analysis of these variables, thereby informing more effective policies and strategies. Ultimately, it aims to enhance financial inclusion efforts and support the economic empowerment of marginalized communities in Tanzania.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Mobile money has emerged as a significant catalyst for financial inclusion, especially in low-income and developing countries. Numerous studies underscore its role in transforming the financial landscape by enhancing accessibility, reducing transaction costs, and facilitating service delivery to previously unbanked populations. For instance, Suri & Jack, 2016, in their seminal study on

Kenya's M-Pesa, reveal that mobile money reduces the reliance on cash, promotes savings, and improves risk-sharing mechanisms, particularly in rural areas. In Tanzania, the mobile money landscape has followed a similar developmental path, with Mobile Network Operators (MNOs) such as Vodacom, Tigo, and Airtel playing pivotal roles in driving financial innovation. Initially offering basic services like person-to-person (P2P) transfers and utility bill payments, these platforms have evolved into more complex ecosystems offering digital credit, insurance, and savings products (Awanis et al., 2022). This progression signifies not only technological advancement but also a shift in how financial services are consumed in the region.

Demirgüç-kunt et al., (2020) highlights mobile money as a crucial driver of account ownership, especially in Sub-Saharan Africa. The latest data from the Tanzania Communications Regulatory Authority (TCRA, 2025) shows an increase in mobile money subscriptions from 63.2 million in December 2024 to 66.5 million by March 2025, demonstrating the growing importance of mobile financial services in addressing persistent financial exclusion. The expansion into mobile-based digital lending is particularly transformative. Traditional financial institutions have historically struggled to reach remote and low-income populations due to infrastructural challenges, high operational costs, and bureaucratic procedures (FSDT, 2023). In contrast, mobile credit services leverage existing digital infrastructure and data analytics to extend credit efficiently and affordably. Previous studies highlight that digital credit can democratize access to finance, particularly when integrated with digital identity systems and mobile transaction histories (Adelaja et al., 2024). In Tanzania, many MNOs now employ AI-based credit scoring algorithms, which enable real-time loan disbursement even for users without a formal banking history.

These developments align with Financial Inclusion Theory, particularly the dimensions outlined by Kempson and Whyley, (1999b) and Ozili, (2020). The theory posits that financial inclusion is achieved when individuals can access affordable, convenient, and readily available financial services. Elmaasrawy et al., (2025); Nzilano & Magoti, (2025) suggest that mobile financial services significantly reduced travel time and costs for rural users, enhancing convenience and accessibility. In general, lending platforms offer low-cost alternatives to traditional banking, especially beneficial for low-income populations. Therefore, the current study conceptual framework is grounded in Financial Inclusion Theory, which emphasizes the removal of barriers to financial access, particularly for marginalized and underserved populations. The theory identifies affordability, accessibility, and convenience as the three core pillars necessary for achieving meaningful financial inclusion (Demirgüç-Kunt & Klapper, 2012; Kempson & Whyley, 1999a; Ozili, 2020). Financial inclusion is the dependent variable while accessibility, affordability, and convenience are the independent variables. Figure 1 presents the conceptual framework employed in this study.
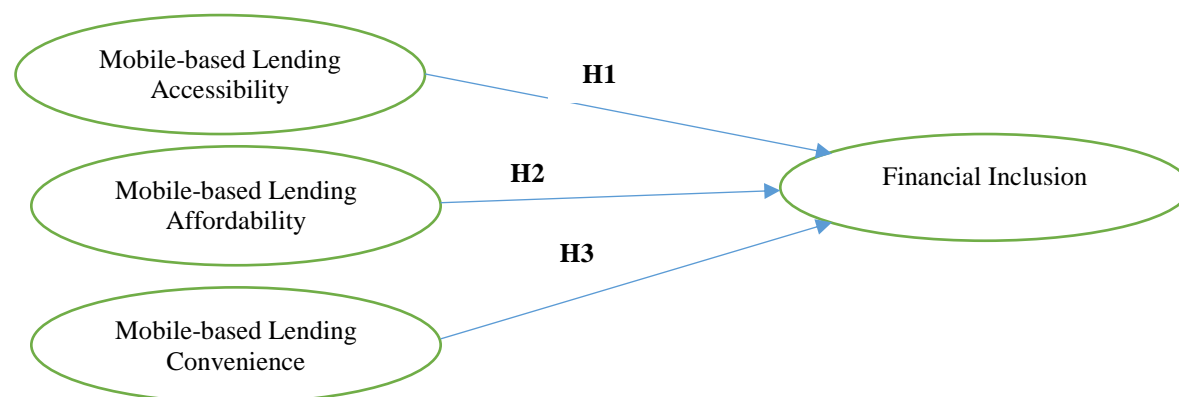

Figure 1. Conceptual Model

2.1 Mobile money-based Lending Accessibility

Accessibility, in this context, refers to the extent to which service providers design and deliver mobile lending solutions that are user-friendly, affordable, and responsive to the needs of unbanked and underserved populations. Financial service providers and mobile network operators have leveraged fintech innovations to simplify application processes, minimize documentation requirements, and develop alternative credit-scoring models, thereby removing many of the traditional barriers to credit access (Dianda et al., 2025; Ussif, 2025). By tailoring products to low-income and rural users often excluded from formal banking these providers not only extend financial services but also contribute to broader inclusion goals. Based on this service provider-driven approach to increasing access, the study proposes the following hypothesis:
H1: Mobile money-based lending accessibility positively influences financial inclusion among the unbanked population in Tanzania.

2.2 Mobile money-based Lending Affordability

In the perspective of service providers, affordability in mobile money-based lending encompasses not only competitive interest rates but also transparent fee structures, flexible repayment terms, and accessible loan

conditions tailored to the financial capacities of underserved populations. By offering affordable digital lending solutions, providers can expand their customer base, foster trust, and reduce barriers to financial participation among the unbanked. High costs, on the other hand, may deter uptake and hinder efforts to reach financially excluded groups (Bachas et al., 2018; Beck et al., 2009; Nisa et al., 2025). Previous research suggests that accessible and affordable financial products are key to integrating low-income individuals into the formal financial ecosystem (Ocharive & Iworiso, 2024). Based on this, the study hypothesizes that:

H2**:** Affordability of mobile money-based lending services positively influences financial inclusion among the unbanked population in Tanzania.

2.3 Mobile money-based Lending Convenience

Convenience in mobile money-based lending among the financial service providers is a strategic advantage that enhances customer experience and drives the adoption of digital financial services. It encompasses factors such as the speed of loan processing, ease of application through mobile platforms, automated approvals, and the availability of services at any time and from any location (Elmaasrawy et al., 2025). These features significantly reduce barriers to access, especially for underserved and unbanked populations. By streamlining loan access through mobile money channels, service providers not only improve operational efficiency but also contribute to broader financial inclusion objectives. Studies have shown that simplified and accessible financial services lead to higher uptake and usage among the unbanked (Makau & Olando, 2021). Therefore, this study posits the following hypothesis:

H3: Mobile money-based lending convenience has a positive influence on financial inclusion among the unbanked population in Tanzania.

3. METHODOLOGY

3.1 Sample Plan and Data Collection

This study targeted financial service providers in Tanzania from the supply side; particularly banks, microfinance institutions, and mobile network operators (MNOs) due to the country's strategic role in advancing digital financial services within East Africa. Tanzania has become a hub for mobile lending innovation through notable MNO-bank partnerships such as Nivushe (Tigo and ABSA), M-Pawa (Vodacom and NCBA), and Bustisha (Airtel and Azania Bank). These collaborations provided a rich context for examining the core dimensions of mobile lending in terms of accessibility, affordability, and convenience. The target population comprised employees from key departments; Information and Communication Technology (ICT), Credit, Finance, Risk Management, and Product Development who are directly involved in the design, implementation, and management of mobile loan services. Their roles provided critical insights into the

operational and strategic aspects of mobile digital lending. Moreover, a purposive sampling technique was adopted to select participants with specialized knowledge and practical experience in mobile lending, thereby ensuring data relevance, quality, and depth of insight. To determine the appropriate sample size, Cochran's formula for an unknown population was applied, yielding a required sample size of 384 respondents (Chaokromthong & Sintao, 2021).

3.2 Questionnaire and Measurement Items

This study employed a closed-ended, structured questionnaire to collect data. The questionnaire was primarily distributed via Google Forms through digital channels such as WhatsApp, email, and SMS to maximize accessibility and participation. The first section of the questionnaire gathered demographic data to provide contextual background for the analysis. The second section consisted of opinion-based items designed to assess perceptions related to mobile money-based lending, guided by Financial Inclusion Theory. A five-point Likert scale was used for these items, with responses ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). This section focused on four key constructs: accessibility, convenience, affordability, and financial inclusion. Each construct was measured using five items adapted from validated instruments in prior studies (Nisa et al., 2025; Ocharive & Iworiso, 2024). Accessibility was assessed through respondents' views on the ease of obtaining mobile loans without a bank account, the simplicity of the application process, the clarity of eligibility requirements, the reliability of mobile network services, and the ability to access loans regardless of geographic location (Abdullahi et al., 2018; Beck et al., 2009; Rani et al., 2024). Furthermore, convenience encompassed processing speed, 24/7 availability, repayment flexibility, reminders, and support efficiency (Abdullahi et al., 2018; Rani et al., 2024; Rao, 2006). While, affordability focused on interest rates, service fees, repayment flexibility, cost comparisons, and penalties (Beck et al., 2009; Rao, 2006). Finally, financial inclusion was assessed by using improved credit access, small business support, reduced informal borrowing, increased inclusion, and economic empowerment (Makau & Olando, 2021; Orio et al., 2024).This structured approach to questionnaire design ensured comprehensive coverage of relevant constructs and allowed for consistent, reliable, and valid measurement of perceptions related to mobile money-based lending.

3.3 Data Analysis

Data were analysed using SPSS Version 26, employing both descriptive and inferential statistical techniques to summarize respondent characteristics, explore trends, and test the hypothesized relationships between mobile money-based digital lending attributes and financial inclusion. Descriptive statistics; means, standard deviations, frequencies, and percentages were used to profile the respondents and summarize their perceptions

of accessibility, affordability, convenience, and financial inclusion. To examine the influence of the independent variables (accessibility, affordability, and convenience) on the dependent variable (financial inclusion), multiple linear regression analysis was conducted.

Prior to regression analysis, key assumptions were tested and met. Normality was assessed using skewness and kurtosis values, all of which fell within the acceptable range of ±1. Multicollinearity was evaluated using Variance Inflation Factor (VIF), with all values below 1.2, indicating no significant multicollinearity. Linearity was also confirmed through preliminary diagnostic plots. Reliability of the constructs was confirmed using Cronbach's Alpha, with all scales exceeding the recommended threshold of 0.70. Construct validity was established through exploratory factor analysis (Hair Jr et al., 2003; Tristan-Lopez, 2025). Hypothesis testing results revealed that all three predictors had a positive and significant effect on financial inclusion. Among them, convenience had the strongest effect, followed by affordability and then accessibility.

4. DATA PRESENTATION AND ANALYSIS

4.1 Demographic Profile of Respondents

A total of 384 surveys were distributed to banks and MNOs offering mobile loan services in Tanzania, such as NCBA, Vodacom, TCB, and YAS, through channels including email, WhatsApp, and SMS, yielding 302 valid responses that is equivalent to 78.65 response rate. Table 1 indicates respondents were primarily mid-career professionals aged 25 to 44, with nearly equal gender representation (52% male, 48% female) and high educational attainment mostly bachelor's and master's degree holders reflecting informed perspectives on mobile money-based digital lending. Participants represented banks (82%), MNOs (15%), and microfinance institutions (3%), offering a diverse view of the sector's ecosystem. Experience levels varied, with 35% having 1 to 3 years, 8% having 4 to 6 years, and 57% having over 7 years of industry experience, ensuring insights from both operational and strategic standpoints.

Table 1. Demographic profile respondents

Characteristics	Categories	Frequency	Percentage (%)
Age	18 - 24	32	10.6
	25 - 34	123	40.73
	35 - 44	115	38.08
	45 - 54	32	10.6
	55 and above	0	0
Gender	Male	157	51.99
	Female	145	48.01
Education Level	Diploma	6	1.99
	Degree	237	78.48
	Masters	59	19.54
	Doctorate	0	0
Institution	Bank	248	82.12
	Microfinance	10	3.31
	Mobile Network Operator (MNO)	44	14.57
Experience	1 -3 years	105	34.77
	4 - 6 years	24	7.95
	7 and above	173	57.28

4.2 Descriptive and Reliability Analysis

Descriptive analysis revealed that all constructs accessibility, convenience, affordability, and financial inclusion scored above the neutral midpoint (3.00), indicating generally positive perceptions of mobile money-based lending, with convenience rated highest (M = 4.26). Table 2 results demonstrate skewness and kurtosis values are within ±1 that confirms data suitability for parametric analysis in this study (Orcan,

2020). Multicollinearity diagnostics revealed variance inflation factor (VIF) values are below 5, indicating no significant multicollinearity among predictors. (Akinwande et al., 2015). Reliability analysis yielded Cronbach's Alpha values between 0.759 and 0.862, exceeding the 0.7 benchmark for internal consistency (Kline, 2011; Obrien, 2007), thereby confirming the reliability of the measurement scales.

Table 2. Descriptive, normality, multicollinearity, reliability, and validity results

Construct	Mean	SD	Skewness	Kurtosis	VIF	Cronbach's Alpha
Accessibility	3.66	0.83	-0.11	-0.54	1.137	0.759
Affordability	3.69	0.88	-0.07	-0.67	1.128	0.802
Convenience	4.26	0.81	-0.36	-0.87	1.087	0.862
Financial Inclusion	4.08	0.85	-0.2	-0.74	1.053	0.775

4.3 Results and Discussion

The multiple regression model explained 68.2% of the variance in financial inclusion ($R^2 = 0.682$, Adj. $R^2 = 0.674$) and was statistically significant ($p < 0.001$). Table 3 results demonstrate accessibility ($\beta = 0.324$, $p = 0.049$), affordability ($\beta = 0.267$, $p = 0.001$), and convenience ($\beta = 0.215$, $p = 0.006$) had significant positive effects on financial inclusion, with accessibility showing the strongest influence. Hypothesis testing confirmed that each relationship was supported at the 5% significance level, demonstrating that improving accessibility, affordability, and convenience in mobile money-based lending substantially enhances financial inclusion in Tanzania.

Table 3. Multiple regression testing results

Hypotheses	Path	β	Std. Error	t-value	p-value	Remarks
	Constant	0.725	0.118	6.14	0.000	
H1	Accessibility > Financial Inclusion	0.324	0.057	5.68	0.049	Supported
H2	Affordability > Financial Inclusion	0.267	0.062	4.31	0.001	Supported
H3	Convenience > Financial Inclusion	0.215	0.06	3.58	0.006	Supported

The study found that mobile money-based digital lending significantly enhances financial inclusion in Tanzania through accessibility, convenience, and affordability. Accessibility had a positive effect on financial inclusion. The findings supported the Financial Inclusion Theory (Sarma & Pais, 2011; Kempson & Whyley, 1999b). In addition, the study findings are consistent to extant studies that accessibility enhance financial inclusion (Abdullahi et al., 2018; Dianda et al., 2025; Msacky et al., 2024; Nisa et al., 2025; Ussif, 2025). The findings imply that easier access to mobile loans encourage individuals engagement with formal financial institutions by overcoming traditional barriers such as limited branch networks, collateral requirements, and paperwork.

Convenience was also found to have significant and positive impact on financial inclusion among the unbanked. The study findings supported previous study findings that found convenience influence individuals to engage in savings or borrowings (Abdullahi et al., 2018; Makau & Olando, 2021; Siyal et al., 2024). The results suggest that mobile-based lending which are well designed to allow 24/7 access with simple application procedures and flexible repayments would entice individuals to engage in borrowing via mobile. The findings confirm that affordability has a significant and positive impact on financial inclusion, aligning with previous research by (Makau & Olando, 2021; Nisa et al., 2025; Ocharive & Iworiso, 2024). This suggests that improving financial inclusion may be possible through reducing the cost and increasing the transparency of mobile-based lending services. Furthermore, lowering access barriers can further enhance the effectiveness of these financial solutions. Overall, the findings underscore that enhancing accessibility, convenience, and affordability in mobile lending is critical for expanding sustainable financial inclusion.

5. CONTRIBUTION AND IMPLICATIONS

The study provides both theoretical and managerial insights into financial inclusion through mobile money-based lending. Theoretically, the findings support Financial Inclusion Theory by showing that accessibility, convenience, and affordability are key factors in promoting financial inclusion among marginalized groups, while also highlighting the relative importance of these factors in shaping user adoption. Managerially, banks, microfinance institutions, and MNOs should prioritize convenience by automating loan processes and ensuring 24/7 availability, enhance accessibility through simple mobile platforms and inclusive credit scoring, and improve affordability via transparent fees and flexible repayment terms. Policymakers and regulators are encouraged to foster innovation through frameworks like regulatory sandboxes, promoting coordinated rules and cross-sector collaboration to support responsible mobile money-based lending.

6. CONCLUSION, LIMITATIONS AND FUTURE RESEARCH

This study concluded that mobile money-based lending significantly promotes financial inclusion in Tanzania, with accessibility, convenience, and affordability being key drivers. However, several limitations were noted. The cross-sectional design limited the ability to observe changes in behaviour over time, while the exclusive focus on supply-side perspectives captured only institutional views, potentially overlooking consumer experiences, trust, and digital literacy. Additionally, the study was concentrated in urban and semi-urban areas, which may not reflect rural realities where digital exclusion is greater. The model examined only three constructs, leaving out other relevant factors such as perceived security, trust, and knowledge of consumer protection, which are increasingly recognized as important for financial inclusion. Future research should adopt longitudinal or mixed-method approaches, incorporate demand-side perspectives, include rural populations, and consider additional variables and demographic differences like gender, age, income, and geography to provide a more comprehensive understanding of how mobile money-based lending affects financial inclusion and to guide the development of more inclusive, effective, and sustainable financial solutions.

References:

Abdullahi, M. S., Usman, B. M., Salisu, F. B., & Muhammad, Y. S. (2018). Investigating the effect of convenience, accessibility and reliability on customer satisfaction in the Nigeria banking industry. *Pakistan Journal of Humanities and Social Sciences*, *6*(3), 296–314.

Adelaja, A. O., Umeorah, S. C., & Abikoye, B. E. (2024). Advancing financial inclusion through fintech : Solutions for unbanked and underbanked populations Advancing financial inclusion through fintech : Solutions for unbanked and underbanked populations. *World Journal of Advanced Research and Reviews*, *23*(1), 427–438. DOI: 10.30574/wjarr.2024.23.2.2379

AFI. (2020). *Digital Credit Regulation in Tanzania*. https://www.afi-global.org/sites/default/files/publications/2020-11/AFI_DFS_Tanzania_CS_AW2-digital.pdf

Akinwande, M. O., Dikko, H. G., & Samson, A. (2015). Variance inflation factor: as a condition for the inclusion of suppressor variable (s) in regression analysis. *Open Journal of Statistics*, *5*(7), 754.

Awanis, A., Lowe, C., Andersson-Manjang, S., & Lindsey, D. (2022). *State of the Industry Report on Mobile Money*.

Bachas, P., Gertler, P., Higgins, S., & Seira, E. (2018). Digital financial services go a long way: Transaction costs and financial inclusion. *AEA Papers and Proceedings*, *108*, 444–448.

Beck, T., Demirgüç-Kunt, A., & Honohan, P. (2009). Access to financial services: Measurement, impact, and policies. *The world bank research observer*, 119-145.

BOT. (2022). *Bank of Tanzania national payment systems annual report 2022*. https://www.bot.go.tz/Publications/Regular/Annual Report/en/2024020511594863.pdf

BOT. (2023). *Annual financial inclusion report 2023*. https://bot.go.tz/Publications/Regular/Annual%20Report/en/2024120408412609.pdf

Chaokromthong, K., & Sintao, N. (2021). Sample size estimation using Yamane and Cochran and Krejcie and Morgan and green formulas and Cohen statistical power analysis by G* Power and comparisions. *Apheit International Journal of Interdisciplinary Social Sciences and Technology*, 10(2), 76–86.

Demirgüç-Kunt, A., & Klapper, L. F. (2012). Measuring financial inclusion: The global findex database. In *World Bank Policy Research Working Paper* (Issue 6025). www.fdic.gov/news/conferences/consumersymposium/2012/Measuring Financial Inclusion, The Global Findex Database2.pdf

Demirgüç-kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2020). The Global Findex Database 2017 : Measuring Financial Inclusion and Opportunities to Expand Access to and Use of Financial Services. *The World Bank Economic Review*, *34*(2018), 2–8. DOI: 10.1093/wber/lhz013

Deshpande, R., & Koning, A. (2023). *The Impact Of Financial Inclusion On Young Women's Well-Being*. https://www.cgap.org/sites/default/files/publications/WorkingPaper_YoungWomen_FINAL.pdf

Dianda, P., Thiombiano, N., Komlagan, M., & Okey, N. (2025). Electronic money accessibility and financial inclusion in WAEMU countries : does increased access to electronic money lead to greater financial inclusion ? *Cogent Economics & Finance*, *13*(1), 1–20. DOI: 10.1080/23322039.2025.2476089

Elmaasrawy, H. E., Tawfik, O. I., & Ahmed, M. A. (2025). The impact of Disclosing Digital Financial inclusion indicators through mobile banking on deposits , loans and sustainable growth rate The impact of Disclosing Digital Financial inclusion indicators through. *Cogent Economics & Finance*, *13*(1), 1–13. DOI: 10.1080/23322039.2025.2457486

FSDT. (2023). *The state of financial inclusion and key developments - Finscope Tanzania 2023*. https://fsdt.or.tz/wp-content/uploads/2023/07/Finscope-Tanzania-2023-Report-Key-Insights-One-Pager.pdf

Hair Jr, J., Babin, B., Money, A. H., & Samouel, P. (2003). Essentials of Business Research Methods. In *Leyh Publishing* (1st ed.).

Irfan, M., Jawad, S., Kazmi, A., Mehmood, I., & Mirza, M. B. (2024). Fintech , Financial Inclusion , and Income Inequality. *UCP Journal of Business Perspectives*, *2*(1), 73–92.

Kempson, E., & Whyley, C. (1999a). *Kept out or opted out ? Understanding and combating financial exclusion*. https://www.bristol.ac.uk/media-library/sites/geography/migrated/documents/pfrc9902.pdf

Kempson, E., & Whyley, C. (1999b). *Understanding and combating ' financial exclusion ' One and a half million households lack even the most basic of financial. March*.

Kline, R. B. (2011). *Principles and Practice of Structural Equation Modeling* (D. T. Little (ed.); 3rd ed.). The Guilford Press.

Makau, J. M., & Olando, C. O. (2021). Convenience of Digital Financial Services and Financial Inclusion amid Commercial Banks in Kajiado County. *Asian Journal of Economics, Business and Accounting*, *21*(17), 26–36. DOI: 10.9734/AJEBA/2021/v21i1730488

Msacky, R., Kazimiry, C., & Kundy, V. (2024). Influence of Mobile Banking Affordability on Personal Financial Savings in Influence of Mobile Banking Affordability on Personal Financial Savings in Dodoma City , Tanzania. *European Journal of Business and Management*, *16*(1), 14–25. DOI: 10.7176/EJBM/16-1-03

Nguyen, L.-T. (2023). Financial Inclusion through Mobile Money in developing countries : the case of Vietnam. *Finance Publishing House*, 121–141.

Nisa, M., Rahman, S., Haque, E., Sharmin, M., Chowdhury, A., & Mahtab, R. (2025). Assessing the Role of Mobile Financial Services in Promoting Financial Inclusion in Bangladesh. *Business and Economics in Developing Countries*, *3*(1), 1–12. DOI: 10.26480/bedc.01.2025.01.12

Nzilano, K. L., & Magoti, S. N. (2025). Digitalisation of Banking Services and Financial Inclusion Potential of Women Entrepreneurs in Dodoma Municipality, Tanzania. *African Journal of Empirical Research*, *6*(2), 398–411.

Obrien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & Quantity*, *41*(5), 673–690.

Ocharive, A., & Iworiso, J. (2024). The impact of digital financial services on financial inclusion: A panel data regression method. *International Journal of Data Science and Analysis*, *10*(2), 20–32.

Orcan, F. (2020). Parametric or non-parametric: Skewness to test normality for mean comparison. *International Journal of Assessment Tools in Education*, *7*(2), 255–265.

Orio, S., Mori, N., & Swai, T. (2024). The Influence of Financial Self-efficacy on Financial Inclusion in Tanzania. *Business Management Review*, *27*(1), 1–17.

Ozili, P. K. (2020). Theories of financial inclusion. In *Uncertainty and challenges in contemporary economic behaviour* (pp. 89–115). Emerald Publishing Limited. https://mpra.ub.uni-muenchen.de/104257/1/MPRA_paper_104257.pdf

Ozili, P. K. (2023). The acceptable R-square in empirical modelling for social science research. *Social Research Methodology and Publishing Results: A Guide to Non-Native English Speakers*, *115769*, 134–143. DOI: 10.4018/978-1-6684-6859-3.ch009

Raithatha, R., & Storchi, G. (2025). *The State of the Industry Report on Mobile Money*. file:///C:/Users/Manager/Desktop/Publications/Mobile money paper/2025 GSMA - Mobile money - The State of the Industry.pdf

Rani, I., Singh, A., & Revand, S. J. (2024). Unveiling the influence of convenience and accessibility on customer satisfaction in the banking sector. *IPE Journal of Management*, *14*(3), 50–61.

Rao, A. (2006). Multi-attribute analysis of confidence, convenience and price functions of customers of financial services firms: A GLS systems model. *Journal of Financial Services Marketing*, *10*(3), 198–217.

Sarma, M., & Pais, J. (2011). Financial Inclusion and Development. *Journal of International Development*, *23*(July 2011), 613–628. DOI: 10.1002/jid.1698

Siyal, S., Ahmad, R., & Ali, S. (2024). Journal of Open Innovation : Technology , Market , and Complexity Debt trap dynamics : The moderating role of convenience , financial literacy , and religiosity in credit card usage. *Journal of Open Innovation: Technology, Market, and Complexity*, *10*(4), 100392. DOI: 10.1016/j.joitmc.2024.100392

Suri, T., & Jack, W. (2016). The long-run poverty and gender impacts of mobile money. *Science*, *354*(6317), 1288–1292.

TCRA. (2024). *Communication statistics for the second quarter of the financial year 2024/2025* (Issue December). https://www.tcra.go.tz/uploads/text-editor/files/Communication Statistics Report - December 2024_1736975031.pdf

TCRA. (2025). *Communications Statistics Report* (Issue June). https://www.tcra.go.tz/uploads/text-editor/files/Communications statistics Report for Quarter Ending June 2025_1752571885.pdf

Tristan-Lopez, A. (2025). Enhancing Cronbach's Alpha Applications through the Harmonised VOR Framework. *Educational Methods & Psychometrics*, *3*(17), 1–23.

Ussif, R. (2025). Financial Inclusion in Ghana : Financial Technology Improving Access to Finance for Mobile Money Enterprises. *Open Journal of Business and Management*, *13*(1), 49–70. DOI: 10.4236/ojbm.2025.131004

Julius Macha
Faculty of Insurance and Banking
(FIB), Institute of Finance
Management (IFM),
Tanzania.
koroma85@yahoo.com
julius.macha@ifm.ac.tz
ORCID: 0009-0001-4250-2717

Benjamin Nkanda
Faculty of Insurance and Banking
(FIB), Institute of Finance
Management (IFM),
Tanzania.
benjamin.nkanda@ncbagroup.com
bnkanda@gmail.com
ORCID: 0009-0007-3805-9402