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Unlocking Financial Inclusion in Malawi: A Comprehensive Socio-Economic Analysis

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ABSTRACT

Financial inclusion is a pivotal factor in fostering economic growth and reducing poverty, yet many developing countries, including Malawi, face significant challenges in this domain. This study investigated the determinants of financial inclusion in Malawi using 2021 data collected by the National Statistics Office in collaboration with the World Bank. By employing the Probit regression model, it analyzed the impact of various socio-economic factors such as age, gender, education level, income, geographic location, and workforce participation on the likelihood of individuals and households accessing financial services. The results reveal that education, workforce participation, geographic location, and access to the internet are key determinants of financial inclusion. Specifically, individuals with higher educational attainment, those in the workforce, and those residing in urban areas are more likely to access formal financial services, while those outside the workforce and living in rural areas face significant barriers. Moreover, mobile banking presents a viable tool for expanding financial services, particularly in rural and underserved areas, where formal banking services are limited. Based on these findings, the study offers several recommendations: prioritizing education and financial literacy programs, expanding internet access and digital infrastructure, promoting workforce participation, developing tailored financial products for marginalized groups, and strengthening the mobile banking ecosystem. These recommendations aim to address the socio-economic barriers to financial inclusion, with a focus on reducing inequalities and fostering inclusive economic growth. This comprehensive analysis contributes to a broader understanding of financial inclusion in Malawi and provides a foundation for future research and policy development.

Keywords: Financial inclusion, Malawi, socio-economic factors, mobile money, poverty reduction.

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INTRODUCTION

Financial inclusion has come to the fore in development discourse as it has been identified as one of the pieces that is needed in the poverty puzzle.[1] Financial inclusion can loosely be understood as the ability to participate in the formal financial system. The level of participation is affected by factors on both the supply side and demand side of financial services. The supply side may have constraints in the level or extent of reach and the simplicity or sophistication of the system itself for an ordinary person. The demand side may also have its limitations in terms of literacy and cultural factors. Financial inclusion is recognized

[1] Asli Demirgüç-Kunt and Leora F Klapper, "Financial Inclusion in Africa: An Overview," *World Bank Policy Research Working Paper*, no. 6088 (2012); Tinuade Adekunbi Ojo, "Digital Financial Inclusion for Women in the Fourth Industrial Revolution," *Africa Review* 14, no. 1 (February 9, 2022): 98–123, https://doi.org/10.1163/09744061-20220204.

as a crucial driver of sustainable economic development and poverty alleviation. By enabling individuals and households to access essential financial services such as savings accounts, credit facilities, and insurance, financial inclusion fosters economic empowerment, enhances resilience, and contributes to reducing income inequality.[2] However, despite its importance, financial exclusion remains a pervasive challenge in many developing countries, including Malawi, where access to financial services is disproportionately low among certain socio-economic groups.[3]

Globally, financial inclusion efforts have gained momentum in recent years, supported by initiatives such as the United Nations Sustainable Development Goals (SDGs), particularly Goal 1 (No Poverty) and Goal 8 (Decent Work and Economic Growth). These initiatives emphasize the importance of inclusive financial systems in fostering economic growth and empowering marginalized communities.[4] However, in sub-Saharan Africa, systemic barriers such as inadequate infrastructure, low financial literacy, gender disparities, and rural isolation hinder progress toward achieving universal financial inclusion.[5]

In Malawi, where agriculture dominates the economy and rural poverty remains widespread, the challenge of financial inclusion is particularly acute. According to the World Bank's Global Findex Database, a significant proportion of Malawians remain unbanked, with only 23% of adults owning a formal bank account.[6] Gender inequities, geographic disparities, and income inequalities exacerbate this issue, leaving vulnerable populations excluded from the formal financial system. Furthermore, while mobile banking has emerged as a promising tool for addressing financial exclusion in rural areas, its adoption remains uneven due to technological and socio-cultural constraints.[7]

While significant progress has been made in understanding financial inclusion globally, research specific to Malawi remains limited. There is insufficient data on the effectiveness of informal financial systems, such as Village Savings and Loan Associations (VSLAs). Additionally, the role of cultural factors in shaping financial behaviour is underexplored. Longitudinal studies assessing the long-term impact of financial inclusion initiatives on poverty and inequality are also notably lacking, highlighting an urgent need for more targeted research in this area.

It is upon this basis that this study seeks to examine the determinants of financial inclusion in Malawi, focusing on socio-economic factors such as age, gender, education, income, and geographic location. By employing a Probit regression model and utilizing 2021 World Bank data, the study aims to uncover critical insights into the barriers and facilitators of financial inclusion. Additionally, the analysis will explore the potential of mobile banking as a mechanism for expanding financial access, particularly in underserved rural areas. The findings of this research will contribute to the existing literature by offering a deeper understanding of financial inclusion dynamics in Malawi and shedding light on specific policy interventions to address socio-economic inequalities. By emphasizing gender disparities, the influence of education, and the role of digital finance, this study aims to provide evidence-based recommendations for promoting inclusive economic growth in Malawi and similar contexts.

LITERATURE REVIEW

Financial inclusion has garnered significant attention in development economics due to its transformative potential for both the supply and demand sides of financial systems, particularly in its role in improving the lives of the poor.[8] For households and individuals, access to financial services is critical for building

[2] Asli Demirguc-Kunt et al., *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution* (World Bank Publications, 2018).

[3] Asli Demirgüç-Kunt et al., "Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19," *World Bank Report*, 2021.

[4] United Nations, "United Nations, The Sustainable Development Goals Report 2021," 2022, https://unstats.un.org/sdgs/report/2021/.

[5] Patrick Opoku Asuming, Lotus Gyamfuah Osei-Agyei, and Jabir Ibrahim Mohammed, "Financial Inclusion in Sub-Saharan Africa: Recent Trends and Determinants," *Journal of African Business* 20, no. 1 (January 2, 2019): 112–34, https://doi.org/10.1080/15228916.2018.1484209.

[6] World Bank, "The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19," 2021, https://www.worldbank.org/en/publication/globalfindex.

[7] GSMA, "State of Mobile Internet Connectivity Report 2020," 2020.

[8] Sumit Agarwal et al., "Banking the Unbanked: What Do 255 Million New Bank Accounts Reveal about Financial Access?," *SSRN Electronic Journal*, 2017, https://doi.org/10.2139/ssrn.2906523; M. Mostak Ahamed and Sushanta K. Mallick, "Is Financial Inclusion Good for Bank Stability? International Evidence," *Journal of Economic Behavior & Organization* 157 (January 2019): 403–27,

economic resilience and improving financial well-being. Just as organizations and corporations benefit from access to equity and credit lines for growth and innovation, individuals and households with access to financial products are better equipped to manage risks, invest in education or business opportunities, and escape poverty cycles.[9] The concept of financial inclusion is broadly understood as the process of ensuring that individuals, households, and businesses can access and effectively use affordable and appropriate financial products and services that meet their specific needs, including transactions, payments, savings, credit, and insurance.[10] Beyond providing these services, financial inclusion enables individuals to participate in the broader economic system, offering them tools to better manage their income, plan for future expenditures, and respond to economic shocks.

Globally, financial inclusion has been acknowledged as a cornerstone of socio-economic development, particularly in low- and middle-income countries. Its impact extends beyond individual benefits, contributing to macroeconomic stability and inclusive growth. By reducing income inequality, financial inclusion fosters economic resilience and empowers marginalized communities, enabling broader participation in economic activities.[11] Research also indicates that increased financial inclusion is associated with poverty reduction, higher levels of household investment, and enhanced economic mobility, all of which are critical for achieving sustainable development goals in resource-constrained settings.

In addition to these direct benefits, financial inclusion also serves as a means of closing socio-economic disparities, particularly for disadvantaged groups such as women and rural populations.[12] These groups often face systemic barriers to accessing financial services due to social, cultural, or geographical factors, making targeted financial inclusion strategies essential for fostering equity and social progress. The interplay between financial inclusion, poverty alleviation, and economic empowerment has made it a central policy focus for governments, international organizations, and development practitioners aiming to unlock economic potential and address structural inequalities.

Overview of Financial Inclusion in Sub-Saharan Africa

Sub-Saharan Africa has witnessed remarkable progress in financial inclusion over the past two decades, primarily driven by the widespread adoption of mobile money platforms. This transformation has positioned the region as a global leader in leveraging digital technology to expand financial access. According to the Global Findex Database, more than 33% of adults in Sub-Saharan Africa now use mobile money accounts, a stark contrast to the global average of just 4%.[13] This trend highlights the region's innovative use of technology to bridge financial service gaps, especially in rural and underserved areas where traditional banking infrastructure is often lacking. The rise of mobile money began in the early 2000s, with the launch of M-Pesa in Kenya serving as a pioneering model that has since been replicated across the region. Today, countries such as Ghana, Tanzania, and Uganda have become major players in mobile money adoption, integrating digital platforms into their financial ecosystems.[14] Mobile money services have facilitated person-to-person transfers, bill payments, savings, and even access to credit, significantly reducing transaction costs and improving financial accessibility for low-income populations.

Despite this progress, the region still faces persistent challenges that hinder the full realization of financial inclusion. Low literacy rates remain a significant barrier, as many individuals struggle to understand and effectively use financial products and services. Limited digital infrastructure, particularly in remote and rural areas, restricts the reach of mobile money networks and the internet, which are critical

https://doi.org/10.1016/j.jebo.2017.07.027; Adolfo Barajas et al., "Financial Inclusion: What Have We Learned so Far? What Do We Have to Learn?," 2020; Ojo, "Digital Financial Inclusion for Women in the Fourth Industrial Revolution."

[9] Jabir Ibrahim Mohammed, Lord Mensah, and Agyapomaa Gyeke-Dako, "Financial Inclusion and Poverty Reduction in Sub-Saharan Africa," *African Finance Journal* 19, no. 1 (2017): 1–22.

[10] World Bank, "Industrialization in Sub-Saharan Africa: Seizing Opportunities in Global Value Chains," World Bank Group, 2021.

[11] Demirguc-Kunt et al., *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*.

[12] Anthony Yaw Nsiah and George Tweneboah, "Determinants of Financial Inclusion in Africa: Is Institutional Quality Relevant?," *Cogent Social Sciences* 9, no. 1 (December 31, 2023), https://doi.org/10.1080/23311886.2023.2184305.

[13] World Bank, "The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19."

[14] Olga Morawczynski and Mark Pickens, "Poor People Using Mobile Financial Services: Observations on Customer Usage and Impact from M-PESA," 2012.

for accessing digital financial services.[15] Furthermore, the high costs associated with financial transactions, mobile data, and service fees deter many low-income individuals from fully utilizing available services. Gender disparities also continue to impede financial inclusion in Sub-Saharan Africa. Perrin and Hyland argues that women particularly those in rural areas, are less likely to own mobile phones or access financial services due to socio-cultural norms, limited digital literacy, and restricted financial autonomy.[16] According to the World Bank, the gender gap in financial account ownership in the region remains at approximately 12 percentage points, highlighting the need for targeted policies to bridge this divide.[17]

Nonetheless, recent developments indicate a promising trajectory for financial inclusion in Sub-Saharan Africa. Governments and international organizations have increasingly prioritized financial inclusion as a development goal, implementing policies to enhance digital infrastructure, improve financial literacy, and encourage private sector innovation. Initiatives such as the African Union's

Financial Inclusion in Malawi: Current Status and Context

Malawi remains one of the least financially included countries in Sub-Saharan Africa. According to the Financial Access Survey, only 33% of the adult population in Malawi has access to formal financial services. Rural areas, which house approximately 83% of the population, face significant barriers due to limited banking infrastructure and digital connectivity.[18] Despite these challenges, initiatives such as mobile money services and village savings and loan associations (VSLAs) have started to improve access to financial services.

Barriers to financial inclusion in Malawi

Financial inclusion in Malawi faces a multitude of challenges stemming from socio-economic, infrastructural, and cultural factors. Economic barriers, such as high levels of poverty and unemployment, restrict individuals' ability to participate in formal financial systems.[19] Infrastructure challenges further exacerbate the problem, with unreliable internet access, especially in rural areas, limiting the effectiveness of digital financial platforms. Additionally, socio-cultural issues, including pronounced gender disparities in access to resources and education, disproportionately exclude women from financial systems.[20]

Key stakeholders in Financial Inclusion

The advancement of financial inclusion in Malawi necessitates a collaborative effort among key stakeholders. The government plays a pivotal role through policy reforms, such as the Financial Sector Development Strategy (FSDS), which aims to enhance access to financial services for marginalized populations. Financial institutions, including banks and microfinance organizations, contribute by offering tailored products designed for low-income households.[21] Moreover, technology providers like Airtel Money and TNM Mpamba have revolutionized the financial landscape by delivering financial services to underserved communities through mobile money platforms.

Impact of financial inclusion on socio-economic development

Empirical evidence underscores the transformative role of financial inclusion in improving socio-economic outcomes. Access to financial services helps reduce poverty by enabling households to manage risks, smooth consumption, and invest in productive activities.[22] It also empowers women by enhancing

[15] Harwood Kajirwa Isabwa, "Effect of Mobile Banking on Financial Inclusion among Commercial Banks in Kenya," *International Journal of Business, Management and Economics* 2, no. 3 (2021): 184–97.
[16] C. Perrin and K. Hyland, "World Bank - Gendered Laws and Women's Financial Inclusion," Policy Paper , 2023, https://documents1.worldbank.org/curated/en/099419001242331405/pdf/IDU01137fc5100ae204e9a0a0c20b39dddd48f92.pdf.
[17] World Bank, "Industrialization in Sub-Saharan Africa: Seizing Opportunities in Global Value Chains."
[18] Reserve Bank of Malawi, *Financial Stability Report 2021* (Lilongwe: Malawi, 2021).
[19] Sydney Chikalipah, "What Determines Financial Inclusion in Sub-Saharan Africa?," *African Journal of Economic and Management Studies* 8, no. 1 (2017): 8–18.
[20] FinMark Trust, "FinScope Consumer Survey Malawi 2023 Report," FinMark Trust, 2023.
[21] Helex Kayembe et al., "Factors Affecting the Sustainability of Microfinance Institutions: A Case of Malawi Microfinance Institutions," *Journal of Financial Risk Management* 10, no. 2 (2021): 117–34.
[22] Thorsten Beck, Asli Demirguc-Kunt, and Ross Levine, "Finance, Inequality, and Poverty: Cross-Country Evidence" (National Bureau of Economic Research Cambridge, Mass., USA, 2004).

their decision-making authority and fostering entrepreneurial ventures.[23] On a macroeconomic scale, higher financial inclusion rates correlate with stronger economic growth due to increased savings, investments, and consumption.[24]

METHODOLOGY

In order to address the main objective of the study, the study utilized secondary data collected by the National Statistics Office (NSO) of Malawi in 2021 through nationwide household surveys. The dataset provided comprehensive information on financial access and usage patterns, including variables such as household income, banking access, mobile money usage, and socio-economic characteristics like gender, education, and geographic location. The NSO employed stratified random sampling to ensure national and regional representativeness. Statistical analysis, including descriptive and inferential methods, was conducted to identify key trends and determinants of financial inclusion, such as income disparities, rural-urban divides, and gender-based differences. Ethical guidelines were adhered to, ensuring confidentiality and compliance with NSO data-sharing protocols.

Model Specification

To model financial inclusion in Malawi, a binary dependent variable, *Financial Inclusion*, is employed. This variable takes the value of 1 if a household or individual has access to financial services such as a bank account, mobile money account, or credit facility, and 0 otherwise. The Probit regression model is utilized to estimate the probability of being financially included, with the success category defined as 1.

Independent Variables (Determinants)

1. **Demographic Factors:**
    - *Age*: Continuous variable, expected to have a non-linear relationship with financial inclusion.
    - *Gender*: Binary variable (1 = male, 0 = female), to analyze gender disparities.
2. **Socio-Economic Factors:**
    - *Education Level*: Categorical variable (e.g., no formal education, primary, secondary, tertiary).
    - *Income Level*: Continuous or categorical variable (e.g., income quintiles or log-transformed income).
    - *Employment Status*: Binary or categorical variable (e.g., employed, unemployed, self-employed).
3. **Geographic Factors:**
    - *Location*: Binary variable (1 = urban, 0 = rural) or categorical (e.g., urban, peri-urban, rural).
    - *Distance to Financial Services*: Continuous variable (e.g., measured in kilometers or travel time).
4. **Technological Factors:**
    - *Mobile Phone Ownership*: Binary variable (1 = owns a mobile phone, 0 = does not).
    - *Access to Mobile Banking*: Binary variable (1 = uses mobile banking services, 0 = does not).

Probit Regression Model

The Probit model, suitable for binary dependent variables, estimates the likelihood of financial inclusion based on the above determinants. The general functional form is as follows:

[23] Pascaline Dupas and Jonathan Robinson, "Savings Constraints and Microenterprise Development: Evidence from a Field Experiment in Kenya," *American Economic Journal: Applied Economics* 5, no. 1 (2013): 163–92.
[24] Beck, Demirguc-Kunt, and Levine, "Finance, Inequality, and Poverty: Cross-Country Evidence."

$$P(Y = (1|X) = F(X\beta)$$

Where:

$P(Y = (1|X)$ is the probability that Y equals 1 (the success outcome, given the values of X

$F(.)$ is the cumulative distribution function (CDF) of the standard normal distribution

$X\beta$ is the linear predictor which is a combination weighted explanatory variables and the coefficients

Can also be expressed as

$$P(Y_i = 1|X) = \Phi(\beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots \beta_k X_{ki}$$

Where:

- $P(Y_i = 1|X)$ Probability of financial inclusion.
- Φ is the Cumulative distribution function (CDF) of the standard normal distribution.
- β0 is the intercept term
- β1,β2,...,βk are Coefficients of independent variables.
- X1,X2,...,Xk are independent variables.

PRESENTATION OF FINDINGS AND DISCUSSION

This section presents the descriptive results of the study, providing an overview of the key characteristics of the sampled households and individuals. The results include demographic factors such as age and gender distributions, socio-economic variables like education levels, income categories, and employment status, as well as geographic factors, including urban versus rural location and proximity to financial services. Furthermore, technological factors such as mobile phone ownership and access to mobile banking services are analyzed to highlight their role in financial inclusion. These descriptive insights set the stage for the subsequent inferential analysis by illustrating trends and disparities in financial access across different segments of the population.

Descriptive statistics

Table 1: Tabulation results of urbanicity

Respondent lives in a rural area	Frequency	Percent	Cum.
Rural	640	64.00	64.00
Urban	360	36.00	100.00
Total	1000	100.00	

The distribution of respondents presented in Table 1 reveals that a significant majority, 64% (640 respondents), reside in rural areas, while 36% (360 respondents) live in urban areas. This highlights the predominantly rural composition of the surveyed population, which is reflective of Malawi's broader demographic structure. These figures provide crucial context for analyzing financial inclusion, as rural households often face greater challenges in accessing financial services compared to their urban counterparts. The results align with existing literature, which consistently highlights that the majority of Malawi's population resides in rural areas, where access to financial services is limited. Rural households face several barriers, including inadequate infrastructure, longer distances to financial institutions, and lower levels of financial literacy.[25] These challenges contribute to the financial exclusion of rural populations, despite ongoing policy efforts to enhance financial access through mobile banking and agent banking services.[26]

Moreover, studies have shown that urban residents in Malawi are more likely to access formal financial services due to better connectivity, higher income levels, and greater financial literacy.[27] This

[25] Chikalipah, "What Determines Financial Inclusion in Sub-Saharan Africa?"

[26] Reserve Bank of Malawi, *Financial Stability Report 2021*.

[27] Alexandra Zins and Laurent Weill, "The Determinants of Financial Inclusion in Africa," *Review of Development Finance* 6, no. 1 (2016): 46–57.

urban-rural divide underscores the need for targeted interventions to address rural exclusion, such as expanding digital financial services and investing in rural banking infrastructure. The 64% rural representation in the dataset reflects this broader demographic challenge, reinforcing the importance of focusing financial inclusion strategies on underserved rural areas.

Table 2: Tabulation of summarized categorical variables

Variable	Category	Frequency	Percent	Cumulative Percent
Account Ownership	No	524	52,4	52,4
	Yes	476	47,6	100
Financial Institution Account	No	772	77,2	77,2
	Yes	228	22,8	100
Mobile Money Account	No	615	61,5	61,5
	Yes	385	38,5	100
Debit Card Ownership	Yes	93	9,3	9,3
	No	905	90,5	99,8
	(Don't Know)	2	0,2	100
First Account for Government Money	Yes	40	24,69	24,69
	No	122	75,31	100
wage payment received from an account	Yes	78	48.15	48.15
	No	84	51.85	100
Save money using a mobile	Yes	203	42.56	42.56
	No	273	57.23	99.79
	Don’t know	1	0.12	100

Table 2 presents the results of the summarized variables as follows:

1. Account Ownership

Account ownership results indicate that 47.6% of the population has an account, while 52.4% do not. This suggests a relatively balanced split between individuals with and without accounts. However, the higher percentage in the population without a bank account indicates low formal financial participation, which further reflects on structural barriers. The results are consistent with World Bank data showing limited financial access in developing economies.[28] Factors influencing account ownership could include access to banking infrastructure, financial literacy, and income levels. Literature suggests that barriers to account ownership often stem from the costs associated with maintaining an account and geographic limitations, particularly in rural areas.[29]

2. Financial Institution Account

Financial institution account ownership indicates that 22.8% of respondents have an account at a financial institution, while 77.2% do not. The relatively low penetration of formal banking suggests a significant level of financial exclusion, with only about a quarter of respondents utilizing formal financial services. This trend is common in many developing regions, particularly in Sub-Saharan Africa, where institutional banking penetration remains low.[30] The high percentage of non-bank account holders points to several barriers that individuals face in accessing traditional banking services. These barriers can include high bank fees, geographical inaccessibility to bank branches (especially in rural areas), and a lack of trust in formal financial institutions. This phenomenon is consistent with broader trends across Sub-Saharan Africa, where many individuals rely on informal financial services such as community savings groups or even cash-based transactions as alternatives to formal banking systems. Research suggests that the cost of

[28] World Bank, “Industrialization in Sub-Saharan Africa: Seizing Opportunities in Global Value Chains.”
[29] Dupas and Robinson, “Savings Constraints and Microenterprise Development: Evidence from a Field Experiment in Kenya.”
[30] Beck, Demirguc-Kunt, and Levine, “Finance, Inequality, and Poverty: Cross-Country Evidence.”

banking, combined with the distance to financial institutions, can significantly limit the uptake of formal bank accounts, which may contribute to low financial inclusion.[31] Additionally, the lack of trust in formal institutions often leads individuals to prefer informal systems, despite the lack of security or official protections. This points to the need for inclusive financial systems that can offer affordable, accessible, and trust-building services, such as mobile banking or microfinance.[32]

3. Mobile Money Account

Ownership of Mobile money accounts shows that 38.5% of respondents use mobile money accounts, while 61.5% do not. The relatively lower percentage of mobile money adoption compared to account ownership might be due to various factors, including the digital literacy of users, the availability of mobile networks, and economic constraints.[33] The widespread use of mobile money in many developing economies, especially in Africa, has been credited with expanding financial inclusion where traditional banking infrastructure is lacking. However, challenges like access to mobile phones and the cost of mobile data can limit its reach.

4. Debit Card Ownership

Ownership of debit accounts results show that 9.3% of respondents own a debit card, while 90.5% do not, and 0.2% are unsure. Debit card ownership is quite low in this population, which may reflect a preference for cash transactions or limited access to formal banking services. This low level of debit card usage might indicate that individuals rely more on cash-based transactions, possibly due to financial exclusion or concerns about security and trust in electronic systems.[34]

5. First Account for Government Money

On account ownership for government money payments results indicate that 24.69% of respondents receive government money through an account, while 75.31% do not. A smaller proportion of individuals use accounts to receive government payments, which could suggest that many government assistance programs still distribute payments in cash. Literature indicates that digital payment systems can reduce leakages in government aid programs, increase transparency, and empower recipients, especially for women.[35] The low adoption here could reflect challenges in policy implementation or barriers to accessing banking services.

6. Wage Payment Received from an Account

On wage payments received through an account, results indicate that 48.15% of respondents receive their wages via an account, while 51.85% do not. Almost half of the population receives wages via formal banking channels. This suggests some level of financial inclusion in the formal sector, but many still receive wages through informal methods, such as cash, which could indicate a lack of access to financial institutions or reluctance from employers to adopt formal wage payment systems. Digital wage payments can contribute to financial inclusion, reduce costs, and improve financial planning for workers.[36]

7. Save Money Using Mobile

Save money using mobile results indicate that 42.56% of respondents save money using mobile platforms, while 57.23% do not, and 0.12% are unsure. The use of mobile platforms for saving money is less common, although still significant. This could be due to the evolving nature of mobile money platforms

[31] Demirguc-Kunt et al., *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*.
[32] Dean Karlan et al., "Impact of Savings Groups on the Lives of the Poor," *Proceedings of the National Academy of Sciences* 114, no. 12 (2017): 3079–84; Demirguc-Kunt et al., *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*.
[33] William Jack and Tavneet Suri, "Mobile Money: The Economics of M-PESA" (National Bureau of Economic Research, 2011).
[34] Chuka Ifediora et al., "Financial Inclusion and Its Impact on Economic Growth: Empirical Evidence from Sub-Saharan Africa," *Cogent Economics & Finance* 10, no. 1 (December 31, 2022), https://doi.org/10.1080/23322039.2022.2060551.
[35] Tavneet Suri and William Jack, "The Long-Run Poverty and Gender Impacts of Mobile Money," *Science* 354, no. 6317 (2016): 1288–92.
[36] Jeffrey S Allen, "Pay It Forward (Digitally): Sizing up the Global Impact of Electronic Wages on Digital Payment Usage," *Journal of Economics and Finance* 48, no. 1 (2024): 107–28.

and the need for further financial literacy and trust in digital savings mechanisms.[37] The high percentage of non-users could reflect a lack of awareness, inadequate mobile savings products, or other barriers such as internet costs or lack of smartphone access.

Table 3. Gender distribution

Respondent is female	Freq.	Percent	Cum.
female	589	58.90	58.90
male	411	41.10	100.00
Total	1000	100.00	

The data in Table 3 reveals a higher proportion of female respondents, representing 58.9% of the sample, compared to 41.1% male respondents. This gender distribution is important for interpreting results in studies where gender may influence the outcomes, such as in financial inclusion, access to services, or social and economic factors.

Table 4: Tabulation of education levels

Respondent education level	Freq.	Percent	Cum.
completed primary school or less	598	59.80	59.80
completed secondary school	385	38.50	98.30
completed tertiary education or more	14	1.40	99.70
(rf)	3	0.30	100.00
Total	1000	100.00	

The data in Table 4 on education level reveals that a significant portion of respondents, 59.8%, have completed primary school or less, while 38.5% have completed secondary school, and only 1.4% have attained tertiary education or higher. This distribution highlights a potential barrier to financial inclusion, as lower educational attainment is often associated with limited access to financial services, financial literacy, and employment opportunities. According to research, individuals with lower levels of education tend to have less knowledge about financial products and services, which can limit their ability to engage with formal financial institutions.[38] Furthermore, financial literacy is a crucial factor for accessing bank accounts, credit, and other financial products, and the lack of education may exacerbate financial exclusion in populations with low educational attainment.[39] These findings underscore the need for targeted financial education programs aimed at improving financial literacy, especially among individuals with lower educational levels, to enhance their access to financial services and promote inclusion.

Table 5: Tabulation of employment status

Respondent is in the workforce	Freq.	Percent	Cum.
in the workforce	748	74.80	74.80
out of the workforce	252	25.20	100.00
Total	1000	100.00	

Table 5 presents results on employment status. The data shows that 74.8% of respondents are in the workforce, while 25.2% are out of the workforce, indicating a relatively high level of workforce participation. However, it is important to note that this data does not specify the type of employment, which could range from formal to informal, and may include seasonal employment. In countries like Malawi, which are heavily dependent on agriculture, many individuals might be engaged in seasonal work

[37] Isaac Mbiti and David N Weil, "Mobile Banking: The Impact of M-Pesa in Kenya," in *African Successes, Volume III: Modernization and Development* (University of Chicago Press, 2015), 247–93.
[38] Leora Klapper and Annamaria Lusardi, "Financial Literacy and Financial Resilience: Evidence from around the World," *Financial Management* 49, no. 3 (2020): 589–614.
[39] Annamaria Lusardi and Olivia S Mitchell, "The Economic Importance of Financial Literacy: Theory and Evidence," *American Economic Journal: Journal of Economic Literature* 52, no. 1 (2014): 5–44.

tied to the planting and harvesting cycles. This type of employment can lead to income instability, affecting individuals' ability to access formal financial services. Those with irregular income might find it more difficult to open and maintain bank accounts, access credit, or participate in other financial products, which are often more accessible to those in stable, formal employment.[40] Additionally, the large proportion of respondents working in informal and seasonal employment may face greater financial exclusion, highlighting the need for tailored financial solutions that consider the unique challenges of agricultural and seasonal workers.[41] Financial inclusion strategies should therefore address these barriers by offering more flexible financial products and increasing financial literacy among individuals in informal or agricultural sectors.

Regression Results

Table 6: Probit regression results

Account	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Respondent is fema~a	0	.	.	.	.	.	
male	-.007	.092	-0.07	.941	-.188	.174	
Respondent educati~s	0	.	.	.	.	.	
completed secondar~l	.596	.097	6.15	0	.406	.785	***
completed tertiary~	1.334	.643	2.07	.038	.074	2.594	**
(rf)	.395	.772	0.51	.609	-1.118	1.907	
Within-economy hou~	0	.	.	.	.	.	
Second 20%	.027	.145	0.18	.854	-.258	.311	
Middle 20%	.274	.147	1.86	.062	-.014	.562	*
Fourth 20%	.201	.142	1.42	.157	-.077	.48	
Richest 20%	.583	.142	4.10	0	.304	.862	***
Respondent is in w~s	0	.	.	.	.	.	
out of the workforce	-.51	.104	-4.89	0	-.715	-.306	***
Respondent lives i~:	0	.	.	.	.	.	
Urban	.212	.094	2.25	.024	.027	.396	**
Internet access : ~s	0	.	.	.	.	.	
no	-.924	.113	-8.18	0	-1.145	-.702	***
(dk)	-.063	.761	-0.08	.934	-1.555	1.429	
(ref)	-1.91	1.051	-1.82	.069	-3.971	.15	*
age	.012	.003	3.93	0	.006	.018	***
Constant	-.184	.18	-1.02	.306	-.536	.168	

Mean dependent var	0.475	SD dependent var	0.500
Pseudo r-squared	0.196	Number of obs	999
Chi-square	270.731	Prob > chi2	0.000
Akaike crit. (AIC)	1141.773	Bayesian crit. (BIC)	1215.374

*** p<.01, ** p<.05, * p<.1

Table 6 presents detailed regression results of our paper as follows:

Gender (Respondent is male): The first independent variable is the gender of the population. The gender breakdown of the sample shows that 58.9% of respondents are female, and 41.1% are male. The coefficient

[40] Demirguc-Kunt et al., *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*.
[41] Beck, Demirguc-Kunt, and Levine, "Finance, Inequality, and Poverty: Cross-Country Evidence."

for male respondents is -0.007, which is not statistically significant (p-value = 0.941). Gender does not seem to significantly affect account ownership in this model. Existing literature highlights that women tend to have lower access to financial services compared to men, particularly in low-income or developing regions.[42] However, this result may indicate a more balanced situation in this particular dataset, or it could suggest that other factors, such as education or wealth, may have more significant impacts on financial inclusion than gender alone.

Education Level: The second independent variable is education level. Descriptive results show that 59.8% of respondents completed primary school or less, 38.5% completed secondary school, and only 1.4% completed tertiary education. The regression results show that those with secondary and tertiary education have significantly higher odds of owning an account (coefficients of 0.596 and 1.334, respectively), with tertiary education being highly significant (p-value = 0.038). This translates to that Education is a strong predictor of financial inclusion. Lusardi and Mitchell emphasize that financial literacy, often correlated with education level, is crucial for understanding and accessing financial products.[43] Higher education levels increase the likelihood of individuals having the skills and knowledge to engage with formal financial services. The results align with Klapper et al. who find that education positively correlates with financial inclusion, as it may lead to better job opportunities and higher financial capability.[44]

Wealth Quintiles (Within-economy Household Wealth): The third independent variable is wealth quintiles. Respondents were divided into wealth quintiles, with the richest 20% showing the highest likelihood of account ownership (coefficient = 0.583, p-value = 0.000). The middle 20% had a marginally significant result (coefficient = 0.274, p-value = 0.062), while the second 20% and fourth 20% showed no significant differences in account ownership. This means that wealthier individuals are significantly more likely to own an account, which is consistent with Demirguc-Kunt et al., who argue that financial inclusion is often skewed toward wealthier segments of society.[45] Higher income allows for more stable financial behavior and access to banking services. The results suggest that income inequality remains a key barrier to financial inclusion, as those in lower wealth quintiles are less likely to access formal financial services.

Workforce Status (Respondent is in the workforce): The fourth independent variable is employment status (workforce). Descriptive results show that 74.8% of respondents are in the workforce, while 25.2% are out. The regression result shows that those out of the workforce are significantly less likely to own an account (coefficient = -0.51, p-value = 0.000). Employment plays a critical role in financial inclusion. Individuals who are employed, especially in the formal sector, have more stable incomes and are better positioned to engage with the formal financial system.[46] This is consistent with Demirguc-Kunt et al., who found that individuals with regular income are more likely to access financial services.[47] The negative coefficient for those out of the workforce highlights the importance of employment for improving financial access.

Urban vs. Rural Residency (Respondent lives in urban areas): Location variable shows that shows that urban residents are more likely to own an account (coefficient = 0.212, p-value = 0.024), and the proportion of respondents in urban areas is likely to be higher than in rural areas. The positive coefficient for urban residency supports the argument that geographic location is a significant determinant of financial inclusion. Urban areas tend to have better infrastructure, more financial institutions, and greater access to financial products.[48] Conversely, rural areas often lack access to formal banking services, and individuals may rely more on informal financial systems, limiting their financial inclusion.

[42] Demirgüç-Kunt and Klapper, "Financial Inclusion in Africa: An Overview"; Demirguc-Kunt et al., *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*.
[43] Lusardi and Mitchell, "The Economic Importance of Financial Literacy: Theory and Evidence."
[44] Klapper and Lusardi, "Financial Literacy and Financial Resilience: Evidence from around the World."
[45] Demirguc-Kunt et al., *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*.
[46] Beck, Demirguc-Kunt, and Levine, "Finance, Inequality, and Poverty: Cross-Country Evidence".
[47] Demirguc-Kunt et al., *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*.
[48] Demirguc-Kunt et al., *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*.

Internet Access: Internet access shows that significantly fewer respondents reported having access to the internet (coefficient = -0.924, p-value = 0.000). The lack of internet access is strongly correlated with lower account ownership. This result underscores the importance of digital access in financial inclusion. According to Beck et al., access to the internet facilitates financial inclusion by providing individuals with the ability to access online banking and mobile money services.[49] The significant negative coefficient for respondents without internet access highlights how the digital divide can exacerbate financial exclusion, especially in regions where digital banking and mobile money are increasingly crucial to financial participation.

Age: Lastly the age coefficient (0.012, p-value = 0.000) suggests that older respondents are more likely to have an account, albeit with a small effect size. Age has a positive impact on account ownership, possibly due to increased financial stability and familiarity with financial institutions as individuals age. Lusardi and Mitchell argue that older individuals may have had more opportunities to engage with formal financial systems over time, leading to greater financial inclusion.[50] However, the effect size is relatively small, suggesting that other factors may play a more significant role in financial inclusion than age alone.

Conclusion of Regression Results

The regression results reveal several significant factors influencing financial inclusion in Malawi. Education level emerges as a strong predictor, with individuals who have completed secondary or tertiary education being more likely to have access to financial services. This highlights the importance of education in enhancing financial literacy and inclusion. The findings also suggest that individuals outside the workforce, those without internet access, and those in rural areas are less likely to engage with formal financial systems. This is consistent with broader trends of financial exclusion in Malawi, where barriers such as low education levels, limited access to digital infrastructure, and employment in informal sectors hinder financial participation.

These results are particularly important for Malawi, a country where a significant portion of the population is dependent on agriculture, and access to financial services is often limited. The findings suggest that improving education, increasing internet access, and addressing employment challenges could significantly boost financial inclusion in the country. To foster a more inclusive financial system, policymakers should focus on expanding educational opportunities, enhancing digital infrastructure, and creating policies that support workforce participation, particularly in rural areas. By addressing these factors, Malawi can increase access to formal financial services, which is crucial for economic empowerment and poverty reduction.

RECOMMENDATIONS

Based on these findings, several recommendations can be made for Malawian policy makers to improve the financial inclusion problems:

Prioritize Education and Financial Literacy: Improve educational opportunities, particularly focusing on financial literacy programs, to enhance understanding and utilization of financial services among the population.

Expand Internet Access and Digital Infrastructure: Focus on expanding internet connectivity and digital infrastructure, especially in rural areas, to facilitate access to mobile banking, online financial services, and digital payment systems.

Promote Workforce Participation: Implement policies aimed at increasing workforce participation, particularly in rural areas where informal employment is common, to boost income levels and access to formal financial services.

[49] Beck, Demirguc-Kunt, and Levine, "Finance, Inequality, and Poverty: Cross-Country Evidence."
[50] Lusardi and Mitchell, "The Economic Importance of Financial Literacy: Theory and Evidence."

Develop Tailored Financial Products: Design financial products and services that are tailored to the needs of marginalized groups, such as women, low-income households, and those living in rural areas, to increase inclusivity.

Strengthen Financial Institutions in Rural Areas: Encourage the establishment and expansion of financial institutions and mobile money services in rural regions to bridge the gap between urban and rural financial inclusion.

Improve Access to Mobile Money: Strengthen the mobile money ecosystem, which has proven effective in providing financial services to unbanked populations and ensure that mobile money services are accessible and affordable for rural and low-income users.

Enhance Policy and Regulatory Framework: Strengthen the policy and regulatory framework that supports financial inclusion, ensuring that it is inclusive and protects vulnerable groups from financial exploitation and discrimination.

CONCLUSION

This study has examined the patterns and determinants of financial inclusion in Malawi, utilizing secondary data from the National Statistics Office (NSO) of Malawi. The dataset, which covers a wide range of financial access variables, provided valuable insights into the barriers and opportunities surrounding financial inclusion in the country. Descriptive statistics highlighted that a significant portion of the population remains excluded from formal financial systems, with notable disparities based on education and geographic location. For instance, while access to mobile money is relatively higher, formal banking services such as financial institution accounts and debit card ownership remain limited, particularly among individuals with lower levels of education and those living in rural areas.

The regression analysis, using a probit model, revealed that education, workforce participation, geographic location, and access to the internet significantly impact the likelihood of financial inclusion. Specifically, individuals with higher educational attainment, those living in urban areas, and those with internet access were more likely to participate in the formal financial system. Additionally, individuals outside the workforce or living in rural areas faced greater barriers to accessing financial services. The findings underscore the importance of addressing educational disparities, enhancing digital infrastructure, and supporting workforce participation, especially in rural regions, to foster greater financial inclusion.

Malawi faces significant challenges in achieving financial inclusion, but addressing key determinants such as education, digital infrastructure, and workforce participation could pave the way for a more inclusive financial system. By implementing targeted policies and interventions, the country can enhance financial access, reduce poverty, and promote economic development.

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