

The Effects of Demographic Factors on Leveraging Digitalization for Financial Inclusion in Nigeria

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Abstract

This paper examined financial digitalization in Nigeria and how the demographic characteristics of the various segments of the population influenced leveraging digitalization to enhance financial inclusion in Nigeria. The methodology adopted was the collection and analysis of secondary annual data on demographic, financial digitalization and financial inclusion from the National Bureau of Statistics (NBS), the Central Bank of Nigeria (CBN) and Enhancing Financial Innovation & Access (EFInA). The study revealed that the differences between the demographic characteristics of the various segments of the population influence the pace of leveraging digitalization for financial inclusion. To bridge the observed financial inclusion gaps for the various demographic segments, the paper recommended providing among others, the need for building and expanding more digital infrastructure to boost connectivity to the underserved population in the rural and sub urban areas, design gender friendly digital products and services, improve regulatory reforms to check cybersecurity challenges and instill confidence in the digital value chain as well as creating more enlightenment, youth and women empowerment schemes to increase their capacity for digital financial services and inclusion.

Keywords: Leveraging digitalization, Demographic characteristics, financial inclusion, Nigeria

Introduction

Banks and other financial institutions are the bedrock for business activities and the agents for financial intermediations between financial deficit and surplus units in the economy. The more the number of participants financially included in the overall intermediation process, the more the boost in economic activities leading to growth and sustainable development (Odumisor et al., 2024). Digital financial technology helps to facilitate financial inclusion through accelerating the speed, accuracy and the capability for large volumes of transactions and therefore accommodating greater participation in economic activities by households, individuals, Small and Medium-sized Enterprises (SMEs) and thereby contributing more to economic growth and development by hitherto underserved or unserved business units and populations (Chude & Chude, 2022).

The G20 Summit held in Seoul, South Korea in 2010, recommended that financial inclusion should be one of the nine important pillars of Global Development Agenda. It was on that premise that the Global Partnership for Financial Inclusion (GPFI) was launched recognizing that it would enable individuals, groups and business enterprises to have access to financial services inclusion, business opportunities through expanded access to hitherto underserved populations. Demirgüç-Kunt et al (2012) posited that financial inclusion ensures that everyone benefits from financial services that goes a long way for poverty reduction and bridging

inequality gaps. In Nigeria, as part of Federal Government response, the Central Bank of Nigeria introduced the Payments System reforms in line with the Payments Systems Vision 2020 strategy that was expected to boost the application of FINTCH apps such as the use of Automated Teller Machines (ATMs), Credit and Debit Cards, Electronic Funds Transfer such as the Western Union, Mobile payments and Point of Sales (POS) terminals (Nwosu, & Ike 2023, CBN,2022). In Kenya, the emergence and growth of digital financial services dated back to 2007 when Safaricom launched the M-Pesa for offering mobile-based financial services that greatly enhanced financial inclusion and efficiency in financial services (Tiony & Yin, 2023).

Statement of the Problem

Financial inclusion allows for the provision of all forms of financial services at affordable prices in a flexible manner convenient to the users in the right places including the financially vulnerable individuals, notwithstanding their locations or income levels (Aparicio et al., 2016; Ghosh & Dixit 2014; Talledo 2015). Many of the potential beneficiaries of these opportunities have not embraced the technologies to take advantage in spite of Government reforms and developments in the financial sector of the economy. The CBN Cashless Policy put in place since 2012, the Covid-19 pandemic that disrupted a wide range of access to the traditional banking habits between 2020 and 2021 during the period of economic lockdown in Nigeria and the Currency Redesign Policy enforcement in late 2022 provided ample opportunities for innovative behavioural change towards the usage of alternative banking and financial services through digitalization. The cashless policy reform and its related challenges were expected to drive greater uptake and use of financial technology, as these challenges created an opportunity to leverage digitalization for boosting financial inclusion. Despite the apparent capability of financial digitalization as a leverage to financial inclusion, there has remained a wide gap between demographic segments in Nigeria and other Sub Sahara African countries in comparison as follows: South Africa (98%), Kenya 84.8%), Ghana (85%) Rwanda (85%) as at 2023. The lagged position of Nigeria (74%) and some few other African countries have been attributed to such challenges as inadequate infrastructure, power supply, poverty, low level of financial literacy, lack of trust and lack of confidence (Shaikj et al., 2023, Tione, 2023).

In spite of the obvious benefits of digitalization, the pace of adoption and use of digitalization have remained slow with wide demographic differential gaps in developing countries particularly in Sub Saharan Africa compared to more advanced countries.

In addition to the barriers of physical infrastructure, other factors that could influence the pace of digitalization and uptake of digital financial inclusion have been attributable to demographic characteristics such as age, gender, location and educational background peculiar to certain segments of the country. One of the major constraints noted in Kenya was the influence of gender disparity that exhibited a negative correlation of -15% for women compared to men because of economic vulnerability and inequality (Tiony & Yin (2023). Previous studies in Nigeria have not given adequate attention in demographic dimensions.

Nigeria having the largest vibrant youth population and with the largest number of individual enterprises, MSMEs, SMEs have the greatest potentials to take advantage of digitalization and financial inclusion to grow its economy and sustainable development. To achieve this objective, there is need to provide insights to the current level of financial digitalization and level of financial inclusion among specific demographic segments in Nigeria as well as understanding the constraints militating against leveraging digitalization for financial inclusion. This justifies the need for this study. The outcome of the study would go a long way to proffering policy

recommendations on taking advantage of technology for financial inclusion towards economic growth and sustainable development in Nigeria and other Sub-Saharan African countries.

Theoretical Framework

The Unified Theory of Acceptance and Use of Technology (UTAUT), the Diffusion Innovation and the Technology Acceptance Model (TAM) both described how the choice, intention and usage are determined by convenience, affordability, understanding and availability that form the basis for digitalization and financial inclusion analysis. This paper is anchored on the Unified Theory of Acceptance and Use of Technology proposed by Venkatesh et al (2003) that the choice of use of any technology is determined by the advantages of its performance expectancy, simplicity expectancy and social influence, all of which are moderated by demographic factors such as age, gender, income level and social behaviour that this paper addresses. Drawing from this theory, the methodology for this study is both exploratory and quantitative. The variables for digitalization in line with Demirgüç-Kunt et al (2008) and the World Bank (2018) are mobile phone ownership, mobile banking, debit cards, ATM, internet, home banking, platform lending, number of subscribers (off take), number of users and digital infrastructure that facilitate digital financial transactions, while financial inclusion variables are account ownership, usage of mobile phones, insurance services, credit availability, usage of financial services and financial literacy. The empirical methodology involved the classification and presentation of the relevant data and information into the demographic segments using simple tabulation and percentage comparative analysis to draw inferences on the extent of mobile phone ownership, age, gender, rural, urban, geopolitical zone and educational status and financial inclusion in biennial data series of 2020 and 2023.

Review of Literature

The concept of digital financial inclusion implies the use of digital technology to provide access to financial services to the entire population who need financial services without limitation or discrimination. The combination of digital inclusion and financial inclusion is referred to as digital financial inclusion that enables provision of financial services at all levels of economic and business activities to grow the economic and enhance sustainable development (Tay et al., 2022, Gallego et al., 2023). Financial inclusion enhances social and economic participation and thus reduces inequality and poverty. Digital channels include smart phones, the internet or the world-wide web, and all electronic payment devices that are powered by the availability of broad band connectivity and regular and reliable sources of power supply. The level of availability, affordability, ownership, adoption rate, usability and workability, knowledgeability of users of these devices for financial transactions determines the level of digitalization of financial services.

The most consensus definition of digitalization and financial inclusion is the application of technology to carry out financial services far above the traditional methods by increasing speed, efficiency, accuracy and carrying out large volume of multiplicity transactions with minimum costs by leveraging on modern information communication technology.

Mobile banking is simply using an online internet financial services technology that allows persons to undertake financial transactions such as funds transfer, payment or settlements of bills, and checking of account balances, as well as mobile wallets and loan application apps. Digitalization therefore enhances the promotion of financial inclusion which the World Bank and the United Nations define as the capacity to inclusively provide access to financial services including savings, credit payments, transfer and other related transactions that is affordable,

flexible and conveniently meeting the needs of financial consumers (World Bank, 2018, AFS, 2018).

The World Bank's Global Financial Index defines financial inclusion to include formally establishing account relationships, use of financial services and access to quality affordable, flexible financial services conveniently available to users of financial service (World Bank, 2018).

Digitalization of financial services, a major response to the growing demand for extending financial services delivery is majorly driven by the application of modern information communication technological devices that enhances speed, accuracy, multiple simultaneous transactions that are beneficial to both financial services providers and users of the services by accelerating and facilitating business activities.

Digitalization and financial inclusion have attracted lots of studies world-wide as a result of their potential capacity to boost financial transactions and thus contributing greatly to the growth and sustainable development in the global economy.

In the United Arab Emirates, Aloulou et al. (2024) researched into the effects of Fintech in promoting financial performance and revealed that not only did Fintech increased competition but also contributed greatly to banking sector performance during the Covid 19 Pandemic. In the research emphasis was placed on how Fintech contributed greatly in driving financial services at that time and not particularly on digitalization and inclusion.

In Kenya, Tioney et al (2023) researched into the impact of Digital financial services on financial inclusion in Kenya using secondary data to examine adoption and usage patterns and how it imparted on financial inclusion. The results showed that there was an increase in access to banking services through the use of digital platforms such as the mobile money M-Pesa that resulted in boosting of savings, access to credit facilities and inclusion to hitherto underserved populations in Kenya. However, several challenges including poor infrastructure, low literacy levels, demographic disparity, security concerns and regulatory considerations were highlighted as major constraints.

In Ghana, Shaikh et al (2023) examined the role of mobile money service providers to boosting financial inclusion and the result showed that the use of mobile money phones boosted the financial economic activities and greater financial inclusion.

In Nigeria, Nnaoman et al (2024) in their research compared digital banking and financial inclusion practices in Nigeria and the USA. The results indicated that the differential level of inclusion resulted from the differential levels of technological advancement recognizing the more technological adoption and the robust regulatory framework in the USA compared to Nigeria. The result of their findings calls for further research on leveraging on the relative level of digitalization in Nigeria to boost financial inclusion.

In India, Gupta (2022) examined the effects of mobile banking revolution on empowering financial inclusion and reported that ownership of mobile phones brought about by the rapid growth in wireless in migration common others.

Nwabufu and Amadi (2024), in their study on impact of financial inclusion on the growth and development of the SMEs in Lagos State, revealed that although digitalization has enhanced access to financial inclusion and has boosted the operational efficacy and growth of the SMEs, specialized areas like insurance and venture capital are limitedly not adequately inclusions.

Also, Asekome (2011), in his research on impact of financial literacy on economic empowerment in Nigeria, revealed that financial literacy in all its ramifications including the use of technology enhances economic empowerment and recommended that all stakeholders in the financial sector should embark on various training and enlightenment schemes for financial product users (Asekome, 2011).

Christopher, Baba and Olugbenga (2023), carried out their research on financial inclusion and economic growth in Nigeria. Their study revealed that while access to and usage of financial services significantly contributed to economic growth, the current level of banking penetration did not have a significant impact. This underscores the need to enhance banking penetration and strengthen efforts toward financial inclusion.

Studies by Organization for Economic Cooperation and Development (OECD) in 2024 revealed that an increase of 10% in digital penetration in the financial sector leads to a 0.1% growth in productivity growth of the average industry. This result is even more significant in intangible intensive industries (downstream). It has also been reported that digitalization in the financial sector significantly improves access to credit, particularly for intangible-intensive SMEs, by easing constraints related to credit allocation and eligibility requirements. Financial sector digitalization also promotes innovative business models, boosts competition, skills acquisition and further increases productivity among 21 OECD countries between 1995 and 2018.

Gaps in Literature

Most studies in the subject of digitalization have been generally based on broad insights into digitalization and financial inclusion (Tione, 2023, Shaikh et al, 2023) while others were on digitalization and productivity (OECD, 2024) as well as on growth and development of SMEs (Nwabufor & Amadi, 2024). There has been no specific focus on disaggregated demographic factors that could influence the impact of digitalization on financial inclusion. Other studies attributed the slow pace of digital financial inclusion on inadequate technological infrastructure (Nnaoman et al., 2024), low level of illiteracy, poverty and inequality (Tione, 2023). The outcomes of these various researches revealed that digitalization enhances financial inclusion and also showed that there were barriers arising from physical digital infrastructure deficiencies, poverty and level of internet penetration and to some extent demographic behavioral situations. They did not adequately and specifically expose how the challenges of demographic factors such as age, gender, residential and locational disparities could influence the affordability, choice and usage of digital devices and how such barriers could be narrowed in leveraging financial inclusion on digitalization such as ownership of mobile devices, connectivity, income and earnings differentials. This paper attempts to address these gaps by exposing more insights specifically into these barriers and formulating strategies specifically tailored to leverage financial inclusion on digitalization.

Methodology

The methodology is based on the comparative data analysis of secondary annual data collected from the Central Bank (CBN) Statistical Bulletin, National Bureau of Statistics (NBS), and from Enhancing Financial Innovation & Access (EFInA) on demographic characteristics, digitalization and financial inclusion. Unlike most previous studies that addressed financial inclusion and economic growth, this paper focused on how the demographic characteristics of various segments of the population influenced the prospects of leveraging digitalization for financial inclusion.

The sourcing of information and data involves a comprehensive survey and review of existing literature and quantitative data obtained from various sources including EFiNa, the Central Bank of Nigeria (CBN) the National Bureau of Statistics as well as the National Communication Commission (NCC) on access to finance, digitalization and financial inclusion and the demographic characteristics of the various segments of the population that could influence the prospects of leveraging digitalization for financial inclusion in Nigeria.

Result of the Findings

Leveraging on Mobile Phone Access to Inclusion

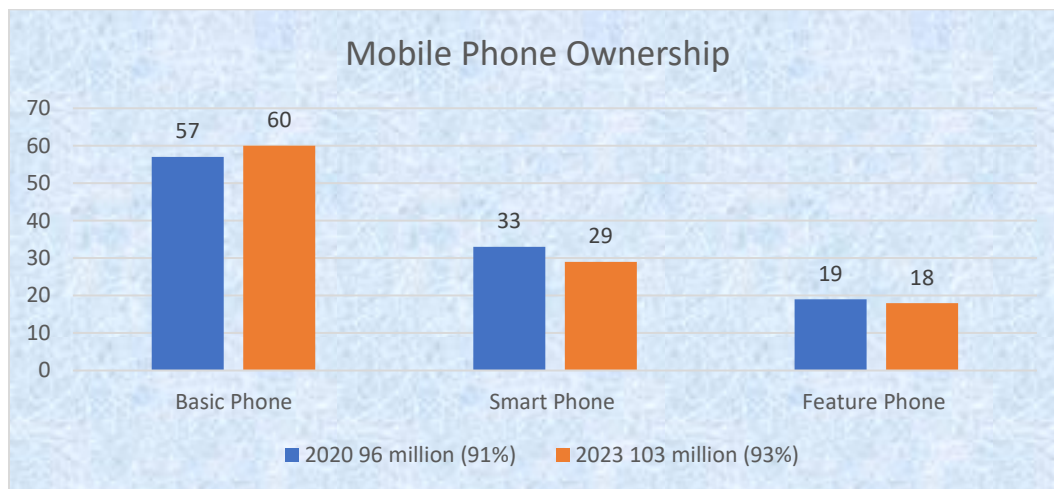


Figure 1. Mobile Phone Ownership

Source: Extracted by the Author from A2F.EFiNa: 2020/2023

Findings of the study in figure 1 reveals that mobile phone ownership in Nigeria increased from 96 million (91%) in 2020 to 103 million (93%) in 2023, reflecting both growth in absolute numbers and penetration. However, the type of phones owned shows a mixed trend. Basic phone ownership rose slightly from 57 million to 60 million, indicating sustained reliance on simple devices, especially among low-income and rural users. In contrast, smartphone ownership declined from 33 million to 29 million, highlighting affordability challenges, high data costs, and economic constraints that limit access to advanced digital services. Feature phone ownership also dropped slightly from 19 million to 18 million, suggesting a slow shift away from mid-level devices. Overall, while mobile access is expanding, the decline in smartphones signals a widening digital divide that could hinder opportunities in mobile banking and financial inclusion.

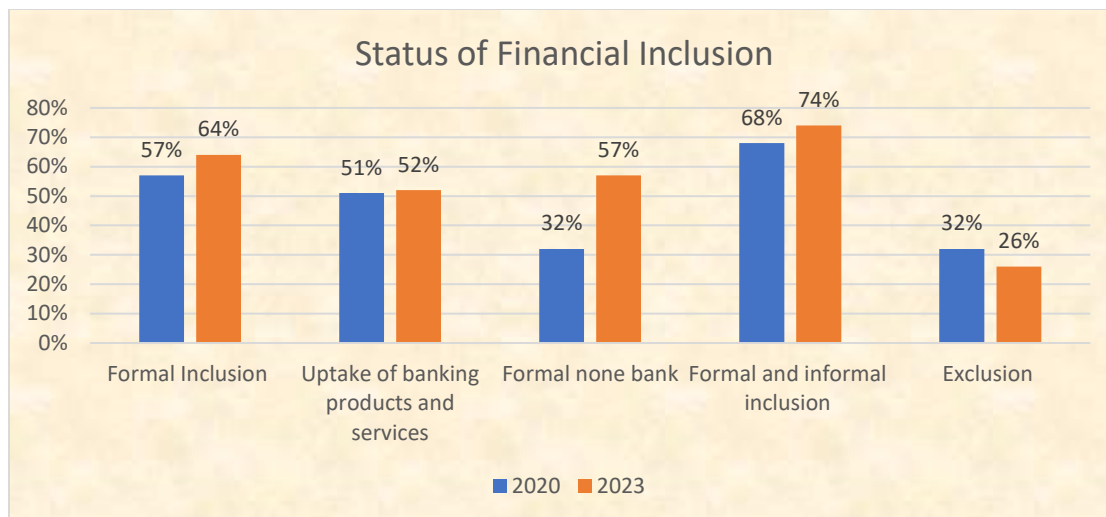


Figure 2. Status of Financial Inclusion

Source: Extracted by the Author from A2F.EFInA: 2020/2023

From the information in figure 2, financial inclusion recorded significant progress from 2020 to 2023. Formal inclusion rose from 57% to 64%, equivalent to 71.7 million adults, reflecting broader access to regulated financial services. Uptake of banking products increased only marginally from 51% to 52%, showing limited progress in traditional banking. In contrast, formal non-bank inclusion made a remarkable jump from 32% to 57% (62.9 million adults), underscoring the critical role of digital finance and fintech solutions. Overall, combined formal and informal inclusion rose from 68% to 74%, while financial exclusion fell from 32% to 26%. This trend highlighted the growing importance of digital financial services in bridging access gaps, even though a quarter of the population still remains excluded.

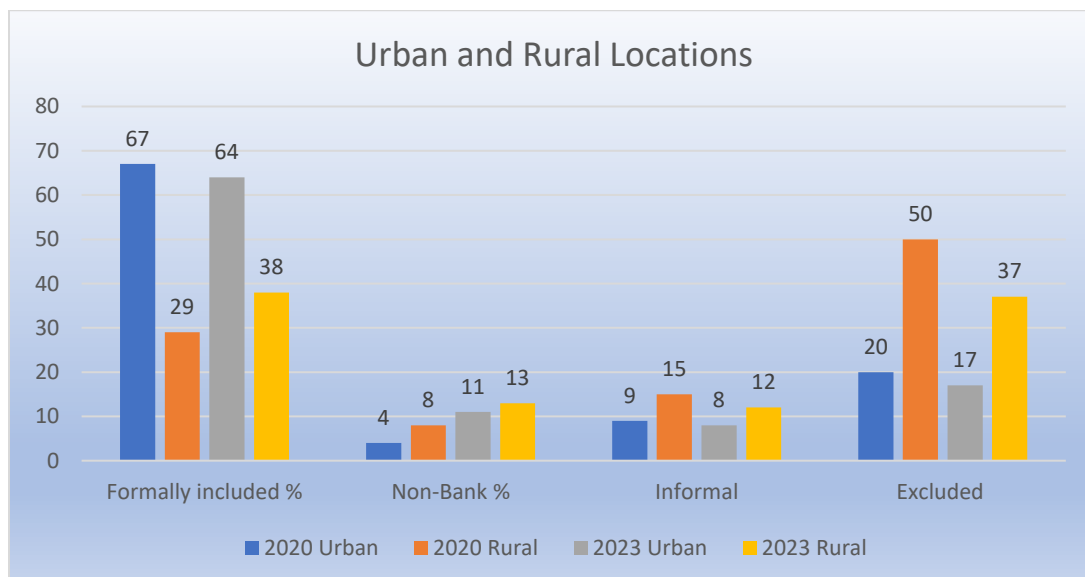


Figure 3. Urban and Rural Locations

Source: Extracted by the Author from A2F.EFInA: 2020/2023

Looking at the data information in figure 3, financial inclusion improved in both urban and rural areas from 2020 to 2023, though disparities remained between rural and urban areas. Urban residents continue to dominate formal financial access (64% in 2023), while rural areas lag behind (38%). Non-bank financial services are increasingly used in both contexts, particularly in rural areas (8% -13%), reflecting alternative access where banks are limited. Informal financial participation remained relatively stable, and exclusion rates, though decreasing, remain high in rural areas (50% -37%), highlighting persistent barriers. Overall, while progress has been made, targeted efforts are needed to enhance rural access to formal financial services and reduce exclusion.

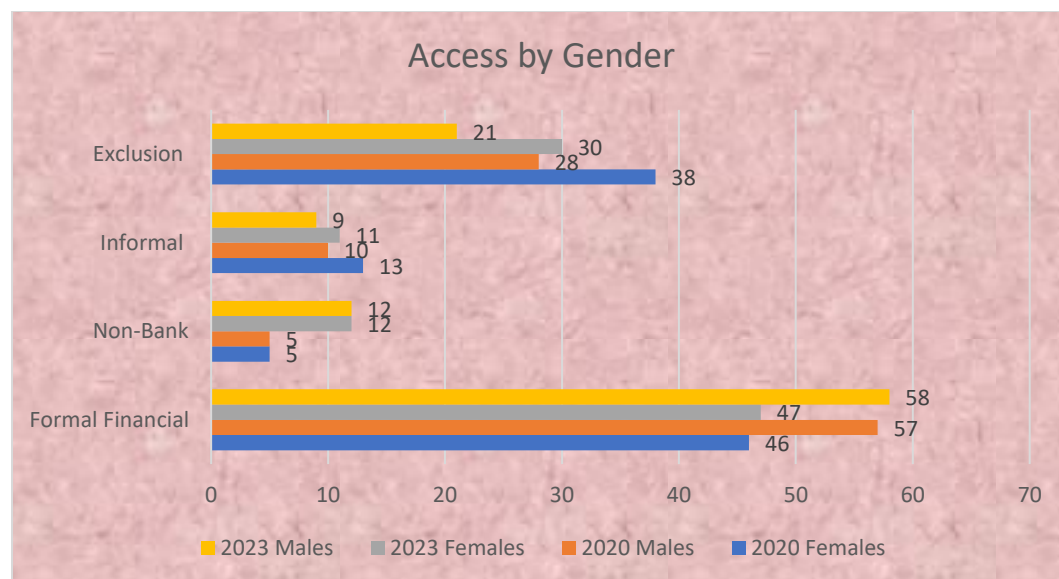


Figure 4: Access by Gender

Source: Extracted by the Author from A2F.EFIInA: 2020/2023

Findings of the study in figure 4 reveals that financial inclusion for both genders improved slightly from 2020 to 2023, but a persistent gender gap remained between males and females. Formal financial access was higher for males (58% in 2023) than females (47%). Non-bank financial services are equally used by both genders (12%), indicating their role in bridging access gaps. Informal participation is slightly higher among females (11%) than males (9%), while exclusion remains higher for women (30%) compared to men (21%). These trends highlight the need for targeted initiatives to enhance financial literacy and formal access for women, reducing gender disparities in financial inclusion.

Table 1. Access by Age Bracket

Access by Age					
		Formal	Non- Bank	Informal	Exclusion
2023	56 and above	50	12	13	25
	26 – 55	55	12	10	24
	18 – 25	45	14	8	33
2020	56 and above	48	6	12	35

	26 – 55	55	5	12	28
	18 – 25	43	6	10	41

Source: Extracted by the Author from A2F.EFInA: 2020/2023

Based on age considerations as shown in Table 1, financial inclusion improved across all age groups from 2020 to 2023, though disparities persist. Formal access is highest among the 26–55 age group (55% in 2023), followed by those 56 and above (50%), and lowest among youth 18–25 (45%). Non-bank financial services are most used by youth (14%), reflecting alternative avenues for accessing finance. Informal participation is slightly higher among older adults (13%), while exclusion remains highest for youth (33%), indicating barriers to formal financial services. These trends suggest a need for targeted strategies to enhance financial literacy and access for both young and older populations.

Table 1 and fig. 1, 2, 3 & 4 shows how demographic factors: gender, age and rural, urban residential locations impacted on formal and informal inclusion. In both circumstances, females are less included than males, population aged between 26 to 55 years have the highest inclusion of 55% while ages between 18 to 25 years have the lowest inclusion of 43%. The policy implications are to devise strategies for addressing the peculiar constraints of age brackets

Rural Inhabitants

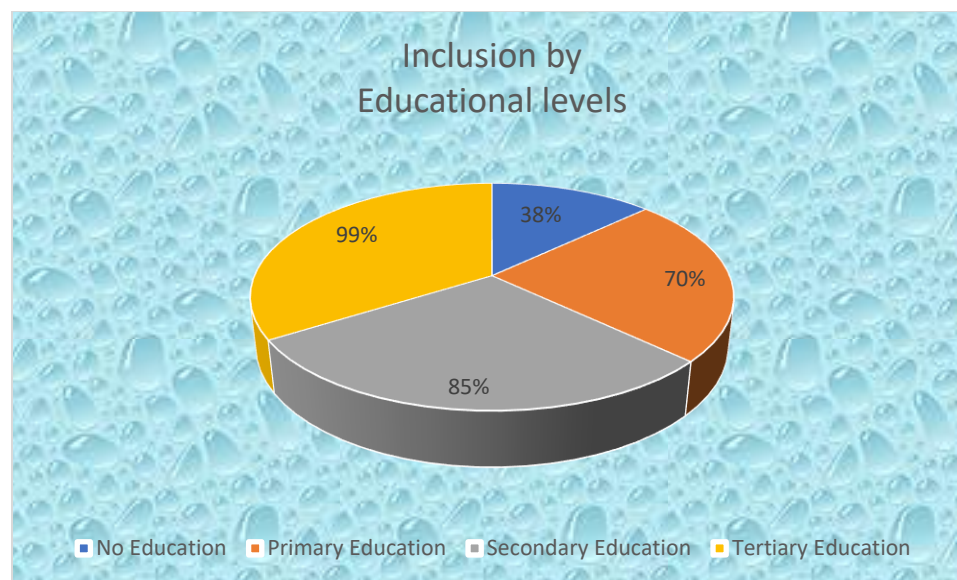


Figure 5: Inclusion By Educational Levels

Source: Authors' computation from EFInA: 2020/2023 data

The findings of the study from fig. 5 reveals that the financial inclusion among rural inhabitants increased significantly with educational attainment. Individuals with no formal education have the lowest inclusion at 38%, while those with primary education reach 70%. Secondary education further raises inclusion to 85%, and tertiary-educated individuals achieve near-universal access at 99%. These patterns highlight education as a key driver of financial literacy and access to formal financial services. Targeted financial literacy and inclusion programs for those with lower education levels can help reduce disparities and promote equitable access in rural communities.

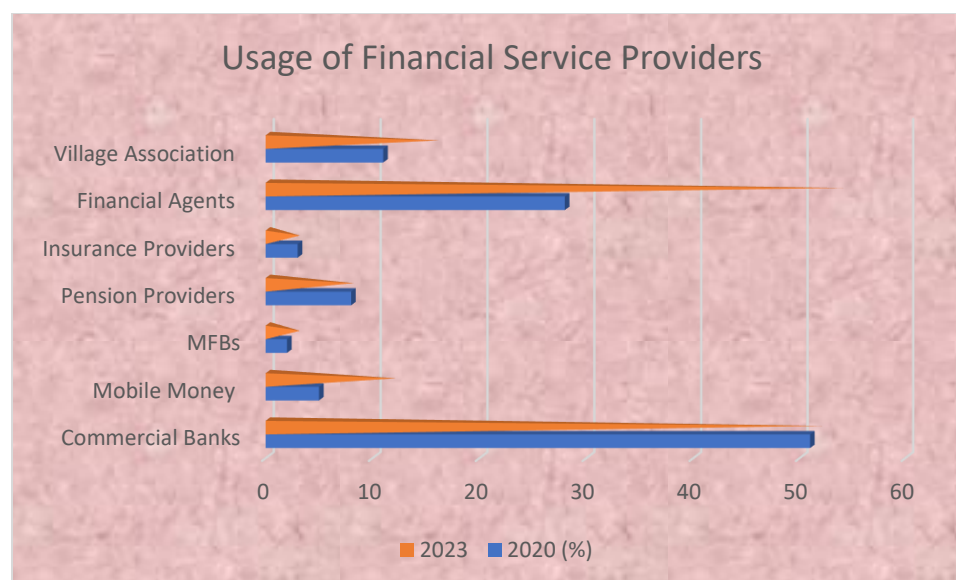


Figure 6: Usage of Financial Service Providers

Source: Authors' computation from EFINA: 2020/2023 data

Based on figure 6, the usage of financial service providers showed notable shifts from 2020 to 2023. Commercial bank usage remained stable at around 51–52%, while mobile money adoption more than doubled from 5% to 12%, reflecting the growing role of digital financial services. Financial agents also saw a substantial increase from 28% to 54%, highlighting their importance in expanding access. Usage of microfinance banks, pension, and insurance providers remained relatively low and stable, while village associations increased moderately from 11% to 16%, indicating continued relevance of community-based financial solutions. These trends suggest that digital and agent-based services are key drivers of financial inclusion and should be leveraged alongside traditional institutions.

Table 2. Financial Inclusion by Geo-Political Zones

Zone	Conventional Banked	Formal banked	Non- banked	Informal banked	Non- banked	Exclusion	2023 Inclusion	2020 Exclusion
South West	63%	5%		15%		5%		16%
South-South	55%	6%		17%		10%		22%
South East	58%	5%		11%		17%		26%
North Central	51%	7%		17%		19%		26%
North East	33%	4%		13%		38%		50%
North West	16%	7%		9%		47%		68%

Source: A2F, EFINA: 2020/2023

As indicated in Table 2, financial inclusion across Nigeria's geo-political zones improved between 2020 and 2023, but regional disparities remain pronounced. Southern zones show the highest access, with South West and South East reporting 63% and 58% conventional bank usage and exclusion rates of only 5% and 17%, respectively. Northern zones lag behind, particularly North West (16% banked, 47% excluded) and North East (33% banked, 38% excluded), where informal and non-bank services play a larger role. These patterns indicate a persistent north-south divide, highlighting the need for targeted interventions such as expanding

banking infrastructure, agent networks, and financial literacy programs in the northern regions to reduce exclusion and promote equitable access.

Conclusion

The objective of this paper was to examine the effects of demographic factors in leveraging digitalization for financial inclusion. Based on a comprehensive exploratory review of existing literature and data analysis, the paper noted that there were several demographic circumstances that influenced their capacity to leverage digitalization for financial inclusion. Unlike previous studies, this paper specifically placed emphasis on the extent of digital financial services uptake by the various demographic segments based on their peculiar characteristics such as age bracket, gender, urban, rural or geopolitical location and as well educational background. The policy implications arising from the study are centered on the need to put in place strategies that are deliberately tailored to address the specific peculiar characteristics and obstacles to the demographic segments. The paper therefore recommended among others the need to enhance the provision of digital infrastructure to boost connectivity to the underserved, poor illiterate population in the rural areas, design gender friendly digital products and services to attract more female participants into financial inclusion, improve on regulatory reforms to check cybersecurity challenges and other forms of scams in the digital value chain with a view to ensuring confidence, creating more awareness and enlightenment as well as youth and women empowerment schemes to boost income generating activities to increase their capacity for digital financial services uptake.

Recommendations

Based on the findings of the study, the following recommendations area made;

- i. Expanding digital infrastructure particularly the broadband to increase and extend connectivity to rural and sub urban residents to reduce geographical locational constraints.
- ii. Enhancing access to uptake by addressing the peculiar circumstances of the various demographic segments in the use of digital payments, mobile money, electronic funds transfer and P.O.S services such as illiteracy, proximity, affordability and ownership of mobile phones.
- iii. Develop gender friendly digital products and services such simplicity, affordability, access to credit in less cumbersome terms and flexibility towards attracting an increase in female inclusion.
- iv. Encouraging large numbers of financial service provider agents across the nooks and corners of Nigeria by easy access to cheaper digital facilities, less cumbersome registration processes, fast speed connectivity network in rural areas Encourage partnership and collaboration between Telcom network providers, financial institutions and digital payment providers to reduce barriers peculiar to the poor and vulnerable people in order to promote inclusion.
- v. Enlightenment and awareness creation to encourage uptake of digital products and services to population segments with little or no formal educational qualifications. Strengthening regulatory framework and cybersecurity to allay the fears of prospective users by ensuring safety, privacy, consumer protection, fair pricing, market competition and enhance confidence in the system

- vi. Collaboration between stakeholders to train or support low income and vulnerable populations in gaining financial literacy and digital skills to enhance digitalization for inclusion
- vii. Addressing infrastructure gaps between rural and urban areas and promoting affordable connectivity to narrow the gap between inclusion in the urban and rural areas
- viii. Empower women, youths and vulnerable persons through various skills acquisitions, self-employment or job opportunities to have access to higher sources of income towards digital financial inclusion
- ix. Developing new digital platforms that are user friendly, new flexible products and services that are more convenient and at affordable to enhance inclusion.

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