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ORIGINAL ARTICLE

Improving women's digital and financial inclusion in Nigeria: a nudging and capacity based human rights framework

Alison T. Lui[1] · Patience Ozor[2] · Obiajulu Emma-Ebere[3] · Sylvia Uzochukwu[3] · Lawrence Ezemonye[2] · Deborah Odejimi[2]

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Abstract
This article seeks to increase access to digital financial payment services for women and minority groups in the informal sector in urban–rural, south–south, south–west and north–central regions of Nigeria. Our data reveal that regardless of the participants' educational level, request for support for digital and financial literacy skills is high across all three regions. Regional variances, the dominance of social and cultural norms, poor enforcement of laws meant that previous attempts to improve womens' digital and financial inclusion having limited impact. Financial inclusion is a key catalyst and enabler for poverty reduction and economic growth. Our article proposes an original two-pronged strategy consisting of soft 'nudging' to influence human behavioural changes and a capacity based human rights framework targeting poverty reduction.

Keywords Capacity perspective · Digital inclusion and literacy · Financial inclusion and literacy · Poverty · Womens' human rights

Introduction

Nigeria has the largest population and economy in Africa, but it offers limited opportunities to Nigerians for several reasons. First, it has the second largest poor population after India at 38.9% poverty rate [1]. Second, job creation is weak and the formal sector of work only employs 8% of adults [1]. As a result, 47% of Nigerians have turned to running their own businesses as entrepreneurs [2]. Third, the Nigerian economy struggled with high inflation, lower growth rates due to lower oil production and increased trade protectionism. The government's economic reforms of 2023 have tried to address these challenges, but the forecast is that poverty rates are expected to rise until 2025 before stabilising in 2026 [1]. It is well documented that poverty is linked to financial exclusion [3].

✉ Alison T. Lui
A.Lui@ljmu.ac.uk

1 LJMU Law School, Redmonds Building, Brownlow Hill, Liverpool L3 5UZ, UK

2 Igbinedion University, Okada, Nigeria

3 Federal University of Oye-Ekiti, Oye, Nigeria

To reduce the poverty rate, promote economic growth and development, financial inclusion is crucial. For this article, we adopt the definition of financial inclusion provided by the Central Bank of Nigeria, which is 'when adult Nigerians have easy access to a broad range of formal financial services that meet their needs' [4]. We agree with this broader definition of financial inclusion, bank account holders can access mobile money payments, savings and borrowings once they have bank accounts. Therefore, the basic definition is one of bank account ownership is insufficient [5].

Individuals without bank accounts rely more on informal financial mechanisms, which are often less reliable, less safe and more expensive. Financial inclusion is more than owning a bank account, because the real goal of financial inclusion is for account holders to enjoy the benefits of having an account, to use the range of financial products and services associated with such an account, which include greater security, privacy and convenience [6].

The Nigerian currency crisis in 2023 caused significant financial inconvenience and hardship to Nigerian citizens. Since the implementation of the new Naira bank notes in February 2023, chaos broke out due to the shortage of new N200, N500 and N1,000 notes, resulting in gun fires and panic. Despite the Nigerian Supreme Court's interim injunction suspending the deadline of the currency swap, many

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Nigerians suffered from the politically motivated and timed currency swap in light of the election. The impact of the currency crisis is particularly harsh on ordinary Nigerians, especially those in living in rural areas. 37% of Nigerian adults living in rural areas do not have bank accounts. While the currency swap is necessary to tackle inflation, the Central Bank of Nigeria underestimated the heavy reliance of Nigerians on cash. Nigerian women in rural areas face the greatest financial inclusion challenges due to low levels of income and education, as well as maternal mortality. Lack of or insufficient financial inclusion for women in Nigeria drives them to the informal economy to earn a living.

The Central Bank of Nigeria has made attempts to improve financial inclusion over the years. In 2010, the financial inclusion rate was 53.7% and by 2024, it has reached 64.1% [3, 4]. This has not hit the target of 80% financial inclusion rate under the Maya Declaration, of which the Central Bank of Nigeria is committed to. Furthermore, the Central Bank of Nigeria's current target, set by Management and stakeholders, is 98% financial inclusion rate by 2024 [4]. Again, the current financial inclusion of 64.1% falls short of this target. The target of 98% inclusion rate is very ambitious, since it has taken 14 years to increase the financial inclusion rate by 10.4% between 2010 and 2024. The Central Bank of Nigeria adopted a new financial inclusion strategy 2021–2024 when it realised from the enhancing financial innovation and access (EFInA) Survey 2020 that there are gaps to address in relation to improving financial inclusion for women, youth, northern Nigeria and rural areas.

We address these gaps with recommendations based on our empirical data. Our recommendations are underpinned by a human rights framework, where we believe that financial inclusion is fundamental to an individual's capability to live in dignity, achieve financial, physical and mental well-being. Exclusion to financial services and products due to poverty can lead to hunger, social exclusion, discrimination and poor education [7]. Indeed, the Committee on Economic, Social and Cultural Rights has affirmed that 'poverty constitutes a denial of human rights', and that a range of economic and social rights are implicated in the eradication of poverty.

The human rights framework is inspired by the work of Amartya Sen. Sen's capability theory, developed in works such as "Development as Freedom" and "The Idea of Justice", introduces several concepts crucial to this discussion [8, 9]. He distinguishes between capabilities (substantive freedoms to achieve valuable states of being) and functionings (actual achievements). This distinction highlights the gap between formal rights and substantive outcomes. He reframes development as the expansion of people's freedoms rather than merely economic growth or legal rights recognition. Finally, Sen emphasises both agency (ability to pursue one's goals and values) and well-being as essential to human development. Sen's theory has the potential to empower women street traders by developing their digital and financial literacy skills, providing them with the freedom and knowledge to use digital payments once they are confident with their skills. This is because we see women moving beyond narrow technical skills to encompass what they can actually do with those skills. Sen's theory recognises literacy as both instrumentally valuable (for economic outcomes) and intrinsically valuable (for agency and autonomy). He also emphasises that literacy involves not just knowledge acquisition but the capability to use that knowledge meaningfully.

However, Sen's model has its limitations. First, Sen pays insufficient attention to how entrenched power structures actively resist women's capability expansion. Secondly, he does not provide adequate frameworks for understanding how patriarchal systems may co-opt or neutralise women's expanded capabilities. As feminist critics such as Alkire note, Sen sometimes underplays the degree to which powerful interests actively work to limit women's capabilities [10]. When applying Sen's theory to women's digital and financial literacy programmes, the broad and contextual nature of capabilities makes standardised measurement difficult. Determining which capabilities matter most for women in different contexts remains challenging. This creates implementation gaps that Robeyns identifies as a persistent challenge in capability applications [11].

We make original contributions to extant scholarship in three ways. First, we adopt an evidence-based approach to discuss recommendations of improving both financial and digital inclusion for women traders in Nigeria. Second, we contribute to the discussion on narrowing the gender gap in financial and digital literacy, and finally, addressing these issues from a new strategy using economics based 'nudging' theory in the first stage and then a capacity perspective-based human rights framework. We adopt a nuanced application of Sen's capability approach to women's digital and financial literacy by identifying and tackling social, cultural and structural factors that prevent women from converting literacy skills into expanded capabilities. We also focus on combining literacy skills training with addressing social conversion factors/barriers (e.g., leaving the house to use the internet; patriarchal structure of Nigeria) through 'nudging'.

Empowering and disempowering informal economy women workers through financial and digital inclusion

Financial inclusion can be a key catalyst and enabler for poverty reduction, economic growth and social development. Evidence supports that increased financial inclusion in Nigeria reduce household poverty levels by 27% and reduces future poverty risks by 28% [2]. Households headed by women experience a more significant reduction in poverty than households headed by men, especially in rural parts of Nigeria Ibid.. Women in Nigeria with bank accounts increases the chance of saving by 37% and women with mobile money accounts are 3% more likely to borrow from financial institutions, rather than from informal channels [12]. The more profound effects of both opening accounts and mobile money accounts are that women are more predisposed to have emergency funds. These statistics reveal that financial inclusion have highly beneficial effects on women.

Indeed, micro-finance such as Grameen Bank, founded by Professor Yunus in Bangladesh, was transformative in enabling the poorest to obtain credit. Grameen Bank differed to traditional banking because it did not require collaterals and created a banking system based on mutual trust, accountability and participation. Grameen Bank can be found in 94% of villages in Bangladesh and provides banking services to almost 45 million people [13]. Yet, there is considerable debate about whether micro-finance programmes empower or disempower women [14–19]. Yousfani et al.'s study reveals that 80% of the women did not start a business, and increase in the loan limit had no significant impact on growth and survival of the female enterprises in Pakistan [20]. Van Rooyen et al.'s research provides mixed impact of micro-finance in alleviating poverty and empowering women in sub-Saharan African countries. This ranges from no impact at all to a positive impact [21]. Ashlanbeigui et al. [22] submit that it is not possible to assess the impact of micro-finance programmes by the concept of empowerment. Changing the lives of the very poor, which is often women, requires cultural changes to patriarchies and social attitudes. Secondly, one must also consider the generational and inter-generational differences in the lives of the borrowers and their families to assess the long-term impact of micro-finance programmes.

Micro-finance institutions need stability and sustainability to continue serving the poor [23]. Sadly, the tension between financial stability and financial inclusion has led to predatory lending practices by some. These practices exploit the poor and abuses the human rights of the poor. Using low interest rates, lax due diligence into the borrowers' financial backgrounds and disregard of the borrowers' ability to repay lead to impossible repayment schemes for borrowers. Oppressive debt levels and financial pressure violate an individual's human dignity [23]. In Cambodia, predatory lending by some micro-finance officers has led to coerced land sales, loss of housing, child labour, debt driven migration and debt bondage [24]. To date, micro-finance thus has mixed impact on empowering women and alleviating poverty in developing countries.

Reducing poverty could improve digital inclusion. Adeleke et al.'s study reveals that women are particularly exposed to digital exclusion, because 60% of Nigerian women constitute the poorest people in Nigeria [25]. They do not enjoy equal rights to education or employment. In many parts of Nigeria, girls as young as six years ago take on domestic responsibilities, because culturally, many Nigerians believe that this type of responsibility is the best educational model. Poor literacy skills are a major hindrance to digital inclusion [25].

Poverty, child labour and child marriages

Girls are often removed from schools because of child labour and child marriages. Poverty is the harbinger of child labour amongst girls. To help their families financially, young girls are often removed from schools and sent to work as street hawkers in markets, especially in rural dwellings. They thus enter the informal economy at an early age, because education is not a 'key variable' [26]. It is estimated that 1.1 million Nigerian children work as child workers, child sex workers and child hawkers [27]. Sections 28 [1] and [2] of the Nigerian Child Rights Act 2003 ban child labour, but enforcement of breaches and sanctions is weak.

Many girls are married at young ages and denied the opportunity to formal education [28]. They do not have any autonomy to marriages, as their parents make the decisions. In many Sharia-legislated states in Nigeria, child marriage is justified on religious and traditional grounds, with the age of adulthood based on puberty. Child marriage is reinforced by unequal gender roles. Nigeria has passed the Child Rights Act in 2003 at Federal level, which bans marriage under the age of 18 years old under Sect. 21. Nevertheless, there are two issues. First, twelve states in northern Nigeria have yet to implement the Child Rights Act. Second, enforcement of any breaches is poor because the Child Rights Act co-exists alongside Nigerian customary laws. The latter contributes to the poor enforcement and sanctions of breaches [29]. All these factors lead to marginisation of such girls and women because they do not have the opportunities, digital skills or financial resources to use the internet. The patriarchal system is particularly damaging for girls in northern Nigeria, because boys are not merely preferred in society, but girls' positions are subjugated. The patriarchal system also means that girls and women do not have the autonomy to access the internet. The empowerment of women through internet access is seen by some men as dangerous. Some husbands forbid their wives accessing the internet, in fear of their wives discovering inappropriate sexual content on the internet [30]. Internet cafes are often accessible points for women to use the internet. Nevertheless, women who cannot leave the house for religious or cultural reasons cannot benefit from these internet cafes. Patriarchy is thus a major cause of discrimination and gender inequality in Nigeria.

The Child Rights Act 2003 forbids child labour and child marriages but poor enforcement and the co-existence of legislation with customary laws, practices and beliefs have led to ongoing incidents of both child labour and child marriages. Therefore, neither the letter nor the spirit of the law of gender equality or anti-discrimination is upheld in Nigeria. As a signatory to the Convention of the Elimination of All Forms of Discrimination against Women 2003, Nigeria commits to eliminating socio-cultural patterns which demote women to the status of second-class citizen. The discussion above however, clearly reveals that there is an enormous amount of work to do before such socio-cultural habits are eliminated to achieve gender equality. This is particularly important to education, which is the most effective way of reducing or eliminating such socio-cultural habits, where under Article 13 of the International Covenant on Economic, Social and Cultural Rights provides that '[e]veryone has the right to education'. It goes on to stipulate certain requirements for education at the various levels of the education system. Article 26 [2] then explains the aim of education: '[e]ducation shall be directed to the full development of the human personality'. Nigeria is a signatory to the International Covenant on Economic, Social and Cultural Rights, which is legally binding. However, many Nigerian girls and young women are denied this right to education due to poverty and related challenges.

Nigerian girls and women working in the informal economy need to be financially and digitally included, because they are often living in extreme poverty and working in the informal economy is the only means of survival for people living in slums [31]. Further, the jobs in the informal sector are often not temporary steps to more opportunities in the formal sector. They are permanent jobs, often disguised as labour rather than entrepreneurs, or as Mader [32] refers to as 'entreployees'. The informal sector is not a true model of independent entrepreneurship, because only 50.3% of the street traders own their businesses [33]. Hire-purchase agreements are common amongst street traders, especially in the northern part of Nigeria. Informal sector workers receive below-average wages, so they are truly operating at a level of survival [34].

It is important to note however, that the informal economy is complex and heterogeneous. On the one end of the scale, there are desperately poor market traders who cannot find work in the formal sector due to poverty and poor education. On the other end of the scale are workers and businesses who consciously chose to work in the informal economy to avoid taxes and competition [35]. Evidence reveals that Nigeria has a double problem of under-education and over-education in both the informal and formal economies [36]. Around 20% of Nigerians working in the informal economy are under-educated. This figure stands at around 8% for over-educated Nigerians in the formal sector [36]. Therefore, there is a skills mismatch as well as skills gap (financial and digital) in the Nigerian formal and informal economies.

Although digital inclusion can bring many benefits such as better digital skills, economic benefits and social mobility [37], access to digital financial services can lead households into debt traps due to increased consumption and credit market participation [38]. Gathergood opines that individuals' financial education can be improved through financial literacy programmes, but individuals cannot be educated on self-control [39]. Therefore, financial illiteracy and lack of self-control lead to non-payment of consumer credit and self-reported excessive financial burdens of debt. Low and unskilled individuals have an increased sense of disempowerment, since they have no power or influence on the processes of digitisation or on the overall presence of technology in many areas [40]. It is important to note that the role of gender in digital access and use is inconsistent due to the intersectionality of the gender digital divide. Protected characteristics such as gender, race, age or disability very often work together [37]. Recent studies show that multiple protected characteristics can exacerbate the gender digital divide [41].

Looking to the future, it is expected that the size of the Nigerian informal economy will remain at 46.11% GDP in 2025, when the global size of the informal economy is projected only at 21.39% GDP in 2025 [42]. Informal economy workers do not enjoy any legal protection in Nigeria. There is no legislation, no official recognition or protection from the government. There are no sick pay or social security benefits. Informal economy workers are thus very vulnerable and marginalised. Particularly vulnerable are women migrant petty traders. Their businesses often perform poorly because migrants are often perceived as informants, cheats and thieves. Women migrant petty traders and children are unfortunately, often victims of human trafficking [43]. Informal economy women and child workers are thus in urgent need of protection.

Legislative and regulatory measures for financial and digital inclusion in Nigeria

The main legislation giving the Central Bank of Nigeria (CBN) powers to supervise and regulate banks and other financial institutions in Nigeria is the Banks and Other Financial Institutions Act (BOFIA) 2020. The BOFIA aims to provide a more transparent and efficient banking system in Nigeria. The BOFIA bestows the CBN with a range of powers in dealing with of commercial banks; licensing and compliance requirements for the establishment of specialised banks; resolution issues and establishing a Special Tribunal for enforcing and recovery of loans. The BOFIA however, does not give the CBN a mandate to promote financial inclusion. The CBN only became committed to improving financial inclusion when it signed the Maya Declaration in 2020. As a signatory, Nigeria agrees to improving financial inclusion, reducing poverty and financial stability for all. It pursues the UN Sustainable Development Goals of no poverty (SDG 1), gender equality (SDG 5), decent work and economic growth (SDG 8) and climate action (SDG 13).

The question of whether UN Sustainable Development Goals are better placed within financial regulatory frameworks is an evolving topic. Placing UN Sustainable Development Goals within financial regulatory frameworks would have the advantage of policy coherence, in that such integration would align with economic and social policy objectives. Secondly, the financial sector's global reach offers mechanisms to direct capital towards sustainable development at scale. Examples of successful integration include Bangladesh Bank's green banking initiatives demonstrate how central banks in developing economies can integrate poverty reduction into monetary policy [44].

Nevertheless, a core purpose of financial regulation is to promote financial stability [45]. Integrating UN Sustainable Development Goals may dilute the core mission of financial regulation. Further, complex social challenges such as poverty require multifaceted solutions beyond what financial regulation alone can address. Easterly opines that 'top-down' regulatory approaches often fail to address complex issues such as poverty [46]. The World Bank Development Report of 2022 emphasised the need for multi-dimensional approaches to poverty elimination beyond financial mechanisms [47]. In particular, it called for using data to transform lives of the poor. In our opinion, effective integration of sustainable development goals requires adequate resources, expertise in development economics and clear connections between the goals and frameworks. Concurrently, there should also be clear social policy frameworks. Financial regulation can provide accountability and incentive structures, while targeted social programmes and policies address the complex roots of poverty. Nigeria had several unsuccessful campaigns to reduce poverty. It will be seen below that corruption led to poor implementation and monitoring of such poverty reduction programmes. In the context of Nigeria, tackling corruption and providing financial stability are crucial to poverty eradication.

In 2012, the CBN launched the National Financial Inclusion Strategy 1.0. As mentioned earlier, the CBN's financial inclusion target was 80% by 2020 and 98% by 2024 but the current percentage of financial inclusion is 64.1% falls short of both the 2020 and 2024 targets. In pursuit of improving accessibility, affordability, choice, convenience and usage, the CBN identified some challenges to increased financial inclusion: first, the lack of income prevented some individuals from opening bank accounts; second, long distance for some Nigerians to access cash points; third, poor financial literacy skills and knowledge; fourth, the high cost of banking services and finally, bureaucratic requirements required for opening accounts [4]. As a result of these challenges the CBN made some regulatory changes, notably launching a National Financial Literacy Framework and a tiered Know Your Customer system, among other initiatives [4].

Focusing on the most vulnerable groups such as women, youth, rural communities and northern Nigeria, the National Financial Inclusion Strategy 2.0 provides more targeted initiatives such as more agent networks in the north–east and north–west, as well as a framework for women to access finance. The CBN also has developed a governance structure for financial inclusion. The Financial Inclusion Steering Committee, Financial Inclusion Technical Committee and Working Groups organise activities and events on financial inclusion. For example, the Financial Literacy Working Group organised fraud management campaigns and World Savings Day [48]. The Financial Inclusion Channels Working Group is working on reintroducing the cashless policy to encourage the uptake of digital financial services in Nigeria. A jump from cash to cashless society may prove too big a step to take. It takes time to shift from a cash to cash *light*, let alone from cash to cashless society. Incentives are good motivators to encourage Nigerian women and petty traders to use digital payments. In Singapore, targeted campaigns such as 'Hawkers Go Digital' and 'Go Digital Campaign' aimed at small- to medium-sized businesses have been launched to encourage these targeted groups to go digital. The percentage of hawkers using online ordering platforms has increased from 34% in 2021 to 47% in 2023 [49].

The Nigerian Federal Competition and Consumer Protection Commission's mandate under the Federal Competition and Consumer Protection Act 2018 is to safeguard consumers' interests and promote fair business practices. Although the Federal Competition and Consumer Protection Commission provides consumer and business education programmes to consumer about their consumer protection rights, there is no financial or digital literacy/educational programmes provided. They have nevertheless, registered a list of approved digital money lenders under the Limited Interim Regulatory Framework and Guidelines for Digital Lending 2022 [50]. This is an attempt to provide consumers with better protection from certain digital money lenders, after reports of harassment and breaches of privacy [51]. It is evident that the CBN and the Nigerian Federal Competition and Consumer Protection are taking active steps to educate and help Nigerians to be more financially and digitally included, as well as being more savvy consumers. Nevertheless, some of the targets for financial inclusion are too ambitious, as seen with the very optimistic target of 98% financial inclusion rate by 2024 and the reintroduction of cashless policy.

We recommend that the CBN takes a more realistic and progressive strategy in tackling financial and digital inclusion challenges. The CBN needs to collaborate and work together with government departments such as the National Steering Committee, to tackle poverty reduction. Poverty is the precursor to poor education levels, child marriages, child labour, working in the informal economy. Previous well-intended poverty reduction programmes such as the Directorate for Food, Road and Rural Infrastructural; Better Life for Rural Women Programme; National Agricultural Land Development Authority; People's Bank of Nigeria; Nigerian Agricultural and Cooperative Bank; Abacha's Family Economic Advancement Programme and Obasanjo's Poverty Alleviation Programme failed because the implementation and monitoring processes were poor and corrupt [52]. Better and regular monitoring of key performance indicators and scrutiny of implementation process are crucial to reducing poverty in Nigeria.

Collaboration and innovation in tackling financial inclusion

Collaboration with non-banks and innovation can also be important to increased financial inclusion and reduced poverty. The mobile money policies of Kenya and Tanzania proved to be successful in increasing financial literacy and inclusion through digital financial services in the form of mobile money accounts. Kenya's innovative and bold style of permitting a non-bank to provide mobile money, creating an extensive network of mobile money agents and regular communication with the industry have paid dividends. This led to a smaller gender gap in financial inclusion among mobile money users in Kenya—half of the gap found for the banked population [53]. This demonstrates that financial literacy is strongly linked to an increased level of financial inclusion, corroborating that financial literacy campaigns are critical [54]. Additionally, using mobile money reduces poverty and vulnerability, improves household welfare, especially in rural areas of Africa [55, 56]. Currently, Nigeria's bank agents offer a combination of banking and mobile services. Fundamental changes to the agent network will need to be implemented to follow Kenya's mobile money success. The CBN updated the Nigerian regulatory framework so that under the Licensing Framework for Super Agents 2013, mobile network operators were given greater roles in mobile money, thus incentivising them to expand the number of digital outlets. Campaigns in local dialects explaining the benefits of mobile money can also be adopted to increase financial literacy and inclusion. In sub-Saharan Africa, mobile money is a key enabler of financial inclusion, especially for women [6]. 3% of sub-Saharan Africans have mobile money accounts [5]. 9% of Nigerians have mobile money accounts, so there is certainly scope for further expansion in this area.

Another area of law that is helping Nigerian women to be more financially included is permitting the use of moveable assets as collateral. Nigerian women often find it challenging to provide immoveable assets such as property and land as collateral for business or consumer credit due to the patriarchal system and social norms [57]. It is often easier for them to provide moveable collateral such as business equipment, stock, livestock or jewellery. The CBN has demonstrated innovation and flexibility by enacting the Secured Transactions in Movable Assets Act 2017 (the STMA). Under the STMA 2017, the Secured Transaction and National Collateral Registry facilitates the use of movable assets as collateral for either business or consumer credit. This legislation should change the way credit is provided to women and is a good example of gender responsive legislation.

A capacity perspective human rights framework for financial and digital inclusion: stage 1

Nigeria's patriarchal system severely restricts women's empowerment and their ability to make decisions outside the household. On paper, the Nigerian Constitution protects women and upholds their rights on the same level as men. In practice however, discrimination, especially economic and societal discrimination of women, is rife. There is no equal pay legislation in Nigeria, nor is there anti-discrimination laws regarding recruitment [58]. Customary norms only permitted men to own land. Women can only own land upon marriage or family. In some northern Nigerian states such as Zamfara state, local governments enforced laws require the separation of Muslim men and women in transportation and health care [58]. Similarly, there are laws protecting children's rights to free education until junior secondary age and against child marriages. However, there are high percentages of children who do not attend schools and not all states have implemented the ban on child marriages due to religious and social reasons.

One of the fundamental challenges in Nigeria is that social norms sometimes prevail over the law due to accepted practice. For example, in certain regions, girls are married at young ages, despite existing law which bans child marriages. Boys are not merely preferred in society—girls' positions are subjugated due to the patriarchal system. Social norms and laws often work together to influence society's behaviour. Individuals engage and comply with the law on condition that others also comply [59]. Laws form the bedrock of acceptable behaviours in a society, and they can change human behaviour because the change gradually becomes accepted by the public. In developed countries, law, regulation and governance have been the response to changing norms. New laws create new expectations. For example, in the UK, smoking in enclosed public places has been banned since the enactment of the Health Act 2006. The expectation is that people smoke less in public and promote a healthier lifestyle. Statistics on the pub smoking ban show that there are now fewer smokers in the UK, fewer young people are taking up smoking and attitudes towards smoking have changed in that many smokers have given up [60]. The ban is particularly effective in raising people's awareness towards the danger of second-hand smoke and actively taking steps to protect others from second-hand smoke [60].

Without the elements of legitimacy, procedural fairness, trust and credibility, it is very challenging to rely on legislation to change social norms. The public will only respect the law if the law is close to the social norm level. If not, the public is unlikely to comply and the law will not deter deviant behaviours, which loses stigma [61]. In a democracy, 'nudging' towards change rather than forcing people to change behaviours has been more successful [62]. 'Nudging' is a concept from behavioural economics that involves subtly guiding individuals towards certain decisions without restricting their freedom of choice [63]. In the context of digital technology, 'nudging' can enhance financial wellbeing by leveraging real-time data, personalised feedback, and user-centric designs. Applications such as Plum and Qapital utilise round-up savings mechanisms that automatically transfer spare change into a savings account after each purchase [64, 65]. This default-based nudge encourages savings without requiring repeated cognitive effort from the user. Some FinTech platforms experiment with showing users anonymised comparisons of their financial habits with those of similar peers, creating pressure to conform to prudent financial behaviours. For example, Mint (by Intuit) offers comparison tools showing how an individual's spending in different categories compares to people in their area with similar income levels [66]. Similarly, the Status Money application is built specifically around anonymous peer comparisons of spending, income, and net worth. Allcott demonstrated the effectiveness of social norms in changing household energy behaviour, a mechanism also applicable in finance [67].

Two stage model to financial and digital inclusion

We propose a two-stage model to enable more Nigerian women to be financially and digital included. The first stage involves 'nudging', where we encourage government officials, community leaders, elders, husbands and men to attend women led events, especially technology related events such as hackathons or digital sandpits to see the benefits of educating women on digital technology. Spousal influence can play a role in excluding women financially, where individuals refrain from banking due to their spouse's preference. The reasons behind this spousal influence can vary. It could be due to traditional gender roles where one partner is expected to handle financial matters, or it could be influenced by past experiences or perceptions of formal financial institutions. The same applies to women using technology. A study conducted by Ya'u and Aliyu [68] found that 55% of men in northern Nigeria opposed their wives using the internet, and 61% of fathers were concerned about their daughter's internet use.

Community and village elders yield a lot of power in deciding whether girls and young women should receive education, so it is important that they are included in these dialogues and events. There should be campaigns and fora where men and women, families, community and village leaders who own mobile money accounts share their experiences of being financially included through mobile money. Campaigns such as TECH4FAMILIES by Equal Access International have been successful in changing attitudes in both men and women in northern Nigeria about women and girls' use of technology [69]. We want to expand that by including community and village leaders to participate in these campaigns, so that their attitudes towards women and girls using technology will also change. Sen's 'capability perspective' promotes participation of the poor in designing, implementing and monitoring of poverty reduction strategies. Many of those who are poor are tired of being asked to participate in government initiatives with low or no returns [70]. Therefore, it is time to enshrine the right to participate as law [71]. Once individuals have the right to participate, they have the capacity to take part in societal and economic activities, which leads to social inclusion.

In the context of Nigeria, forcing behavioural changes have rarely worked in the past because the government has imposed a lot of top-down initiatives without public engagement or consultation. Many members of public do not trust the government, because they do not see any legitimacy, procedural fairness, trust or credibility in the government's measures. Further, Nigeria's colonial history has played a part in the public's distrust in its government [72, 73]. The amalgamation of the northern and southern regions of Nigeria was due to convenience for the British colonial government, and not because it wanted to form a nation. Abuse of power, corruption and impunity have been associated with the Nigerian government for many years [59]. There is a divide of 'they' (the government) and 'us' (the public), with very little interaction, engagement or collaboration between the two sides. Various attempts, especially those made by Muhammadu Buhari's government, have been made to improve trust in Nigerian governments, but it is a work in progress. A second stage is therefore necessary to complement nudging.

A 'Capability perspective' human rights framework for digital and financial inclusion: stage 2

Nudging will take time, but community-based approaches and outreach activities have proven to be effective. Meanwhile, we believe that a human rights-based framework to reducing poverty in Nigeria, the root of poor education, literacy levels, child labour and child marriages, is due. Policy makers have made recommendations on how to improve financial and digital inclusion in Nigeria through regulation, legislation and governance policies. However, it appears that there is very little literature or debate on formulating a human rights-based framework to promote empowerment, dignity and freedom to financial and digital inclusion in Nigeria. A human rights framework tackling poverty is not based on ethics or moral values, but rather on obligations. It forces us to identify the most vulnerable groups in society and to protect them [71]. It provides more weight to global poverty as a human rights concern [74]. The timing is right, because poverty as a human rights issue has been strengthened by several legal international legal treaties such as the Universal Declaration of Human Rights, the International Covenant on Economic, Social and Cultural Right, the International Covenant on Civil and Political Rights (ICCPR) and the Convention on the Rights of the Child.

Underpinning the human rights approach to reduce poverty are values such as empowerment, freedom, control, accountability, equality and participation [74]. These values align to the problems discussed above, so to change social norms, we recommend adopting the UN Human Rights Office's Human Rights and Poverty Reduction Framework, which is influenced by Professor Amartya Sen's work. Sen's 'capability perspective'[75] to poverty provides a bridge between poverty and human rights, because he recognised that poverty is not purely about deprivation regarding shortfalls in income and basic freedoms such as the freedom to read and write. It is wider than that. He expanded the concept of poverty by arguing that poverty includes access to goods and services, resources necessary for human survival and development [74]. His work has inspired theories on avoiding 'capability deprivation' in poverty and aspiring towards 'capability expansion'. On this point, we argue that if individuals are to be capable of developing and expanding their capabilities in the right to education, then digital and financial inclusion and literacy should be included. Individuals are deprived of relevant information to wider services and goods on offer if they cannot access the internet or use mobile apps, payments and other services. Their career prospects are also limited because they do not have the necessary digital or financial skills. They are socially and economically excluded, marginalised and discriminated because of capability deprivation.

However, human rights frameworks can potentially undermine socio-economic and developmental outcomes in financial inclusion, particularly due to their juridical construction. Scholars contend that human rights frameworks reinforce power imbalances [76], fail to address socio-economic disparities [77] and reinforce western hegemony [78]. Roy delivers a powerful critique of how rights-based approaches to financial inclusion can become counterproductive [79]. She demonstrates how rights-based frameworks in financial inclusion often promote what Roy calls the "democratisation of capital"—the idea that providing access to financial services is itself a fulfilment of rights. However, she argues that this framing recasts structural poverty as simply a lack of access to financial markets. It shifts responsibility from systemic economic inequality to individual financial behaviour and transforms social welfare obligations into market opportunities [79]. Recent works found that rights-based financial inclusion programmes often increased debt burdens without improving economic outcomes [80] and how digital financial inclusion initiatives framed as rights fulfilment often created new forms of exclusion [81].

Sen's capability approach offers a significant theoretical framework that both complements and challenges aspects of the critique of human rights frameworks in financial inclusion. He agrees with critics such as Roy and Moyn, a concern that juridical rights formulations are insufficient for addressing socio-economic inequalities. However, Sen does not reject rights frameworks entirely but seeks to reconceive them through the capability lens. His theory focuses on substantive capability (meaningful financial agency); recognises that capabilities are socially contingent and shaped by social arrangements. He also shows how individual freedoms depend on social and economic conditions and rejects both pure individualism and collectivism in favour of "social individualism". This nuanced position provides theoretical grounding for critics who argue that juridical human rights frameworks in financial inclusion isolate economic problems from their social context.

Sen opined that the concept of human rights can exist outside the legal framework and that they do not need to be linked to the international human rights law [75]. Nevertheless, there is increasingly a body of case law and jurisprudence which reinforces the concept of capability to achieve the basic elements for survival and development such as shelter, access to safe water and nutrition and education. Further, governments must respect and protect them individually and collectively. The Human Rights Committee's jurisprudence established positive, as well as negative obligations on the right to life. Article 6 of the ICCPR recognises and protects the right to life of human beings. This article imposes a positive obligation to take steps to safeguard life, as well as a negative obligation to prohibit from interfering with life [74]. Taking the Indian case of Olga Tellis versus Bombay Municipality Corporation, the Indian Supreme Court held that the right to life (guaranteed by Article 21 of the Indian Constitution) should be interpreted as including a right to livelihood. In this case, the State of Maharashtra and the Municipal Council evicted pavement and slum dwellers from Bombay City. The Supreme Court held that the eviction deprived the dwellers' right to livelihood, since they needed housing for their livelihoods to secure the right to life. It continued to say that the deprivation of the right to livelihood can be justified if there is a fair and just procedure in accordance with the law, which there is in this case. The Court denied a right to an alternative site, but called for alternative sites to be provided to residents of twenty years and those with 1976 census cards. Evictions should be delayed until after the monsoon season. This case demonstrates that although there is prima face a deprivation of livelihood by eviction, this is justified by a fair and just legal procedure. Nevertheless, the authorities must achieve progressive realisation of the right to livelihood by providing alternative sites to suitable citizens. Hence, positive obligations on states are subject to (1) The obligation to take reasonable legislative and other measures; (2) Within available resources and (3) To achieve the progressive realisation of rights [74].

Perhaps the strongest authority we can rely on is the Guatemalan case of the requirement of taking special measures to protect children living in poverty [74]. In this case, the National Police Force (NPF) agents murdered five street children in Guatemala. The Inter-American Court of Human Rights accused the NPF agents of breaching Article 4 (right to life) and Article 19 (rights of the child) of the American Constitution, because the state failed to take the necessary precautions. In this case, the street children were subject to various types of persecution such as harassment, threats, torture and murder. The state failed to investigate or convict the NPF agents, thus giving impunity to the continuation of violence against the street children. The state also failed to prevent arbitrary killings by its own forces. Therefore, both Articles 4 and 19 have been breached. This obligation to take special measures against children can be applied in the Nigerian context.

We submit that the Nigerian government must take positive actions in protecting children from child labour and child marriages, both products of poverty, as well as ensuring children are not kidnapped or abducted at schools, thus affecting their right to education. Nigerian's constitution protects the right to life and the Child's Rights Act 2003 protects children's rights. Nigeria has also ratified many international human rights treaties and conventions such as the ICCPR 1993, the International Covenant on Economic, Social and Cultural Rights 1993 and the Convention on the Rights of the Child 1991. The UN Human Rights Office stated that if a state's poverty reduction strategy does not reflect the core obligations such as the rights to education, water and shelter, it is legally inconsistent with a state's binding obligations under international human rights law. Further, the minimum core obligations form the international minimum threshold. States and international organisations are obliged to help and provide support to developing countries to fulfil these obligations and threshold [71].

In the next section, we discuss the methodology of our article, where we have obtained empirical data through a robust survey in Nigeria.

Methodology

Our research aim is to find methods to increase access to digital financial payment services for women and minority groups in urban–rural Nigeria. We specifically target women and minority groups between the ages of 18–72 in the south–south, south–west and north–central, urban–rural regions of Nigeria. The participants work (or used to work) in the private, informal sector.

We adopted a mixed methods approach for this article. The rationale for this is that we use the doctrinal method to critically evaluate existing Nigerian regulations, frameworks and guidelines for financial and digital literacy education. We then use a qualitative research method to collect empirical data on the demographics, banking habits, digital and financial literacy awareness levels of 1,700 women petty traders in the south–south, south–west and north–central regions of Nigeria. We believe that the empirical data add originality to the extant scholarship on digital and financial inclusion in Nigeria.

Target population and recruitment

Women and minority groups, aged between 18 and 72 who are working (or used to work) in the informal, private sector of the south–south, south–west and north–central regions of Nigeria were targeted in this research. Flyers and posters were distributed in local villages, markets and community areas to recruit suitable participants. Community interest leaders and women leaders were used to encourage and engage with women traders in the three regions. Interested parties were given an information sheet to read before committing to the survey. Emphasis was provided to the participants that they can withdraw at any stage of the survey completion.

Sampling

We selected the regions of south–south, south–west and north–central due to our network of research partners. Northern Nigeria is prone to conflicts, kidnappings and terrorist attacks. Therefore, we employed a local Nigerian security company to conduct a thorough risk assessment and used local contacts to minimise the risk to human lives. We were unable to conduct surveys in the other regions as our research funding was only sufficient for three regions.

In this study, we embarked on a rigorous process of collecting and analysing data from a sample of our target group. We assessed the level of financial inclusion as well the FinTech awareness levels of our test subjects by making use of primary data collected from a random sample of 1,20000 women engaged in diverse forms of micro and small-scale businesses across five local government areas in the south–west and south–south regions of Nigeria. Due to political unrest in northern Nigeria, we were only able to collect 500 survey responses.

Data collection, analysis and reporting

To collect data, we made extensive use of a highly structured, anonymous questionnaire designed to extract information on the (a) demographics, (b) financial and banking practices and (c) digital and financial literacy awareness levels of the respondents. The questionnaire has been previously tested and used for another research project. In some questions, we allowed the respondents to select multiple responses. This is to avoid potential bias, such as demand characteristic bias. We did not want the participants to select the answers because they may interpret that is the aim of the survey, and thus change their behaviours in answering the survey. We have obtained ethical approval from Liverpool John Moores University (23/LAW/003) for the project.

We analysed the data using descriptive statistics. This is because we are keen to observe any trends, patterns and relationships. Using tables, we report the responses from our sample according to the regions for the three parts (1) demographic data, (2) banking habits and (3) financial and digital literacy awareness levels Tables.

Results

Demographic data

See Tables 1, 2, 3, 4.

Table 1 Gender of survey respondents

State	Females	Males
South-south region	600	0
South-west region	600	0
North-central region	500	0
Total from all regions	1,700	0

Table 2 Age range of survey respondents

	Responses				
STATE	18–28	29–39	40–50	51–61	62–72
South-south region	133	234	156	61	12
South-west region	87	198	204	71	40
North-central region	60	151	190	86	13
Total from all regions	280	583	550	218	65
% of combined total (1,696 answers)	16.5%	34.4%	32.4%	12.9%	38.3%

Table 3 Highest level of respondents' education

	Response			
State	Primary	Secondary	Tertiary	None
South-south region	128	334	125	12
South-west region	141	294	125	40
North-central region	107	198	140	55
Total from all regions	376	826	390	107
% of combined total (1,699 answers)	22.1%	48.6%	23%	6.3%

Table 4 Whether the respondents had access to a bank within a radius of 3 miles

	Response	
State	Yes	No
South-central region	313	282
South-west region	421	179
North-central region	214	273
Total from all regions	948	734
% of combined total (1,682 responses)	56.4%	43.6%

Banking habits of survey respondents

See Tables 5, 6, 7, 8, 9, 10, 11, 12.

Table 5 Whether respondents use banking services

	Response	
State	Yes	No
South-south region	453	143
South-west region	456	144
North-central region	343	148
Total from all regions	1,252	435
% of combined total (1,687 responses)	74.2%	25.9%

Table 6 Whether respondents have a bank account

	Response	
State	Yes	No
South-south region	451	145
South-west region	478	122
North-central region	332	158
Total from all regions	1,261	425
% of combined total (1,686 responses)	74.8%	25.2%

Table 7 Whether respondents have an ATM/debit card connected to their bank account

	Response	
State	Yes	No
South-south region	63	10
South-west region	415	63
North-central region	283	69
Total from all regions	761	142
% of combined total (903 responses)	84.3%	15.7%

Table 8 If respondents replied NO, how do they handle their business transaction

Responses				
State	OTC in Bank	Mobile Bank Agent	Esusu/ Coopera-tive	Others
South-south region	9	20	122	1
South-west region	15	65	75	28
North-central region	18	29	155	6
Total from all regions	42	114	352	35
% of combined total (543 responses)	7.7%	21%	64.8%	6.4%

Table 9 If respondents replied NO, reasons for not having a bank account

Responses- Strongly Agree/Agree							
State	Proximity to Financial Institution	Cost of Financial Services	Problem of Docu-mentation	Lack of trust in Financial Institu-tions	Religious Obliga-tions	Inadequate Funds	Lack of Interest in Banking Services
South-south region	52	59	83	43	6	60	48
South-west region	64	78	106	94	57	82	85
North-central region	70	68	77	78	23	106	47
Total from all regions	186	205	266	215	86	248	280
% of combined total (1,486 responses)	12.5%	13.8%	17.9%	14.5%	5.8%	16.7%	18.8%

Table 10 Whether respondents have a mobile phone

State	Response	
	Yes	No
South-south region	546	36
South-west region	570	30
North-central region	428	56
Total from all regions	1,544	122
% of combined total (1,666 responses)	92.7%	7.3%

Table 11 Whether respondents use their mobile phone for banking services

State	Yes	No
South-south region	314	261
South-west region	348	222
North-central region	291	145
Total from all regions	953	628
% of combined total (1,581 responses)	60.3%	39.7%

Table 12 If NO, the respondents' reasons for not using mobile phones for business

State	Cost of airtime is discouraging	Internet connectivity is a hindrance	Power supply to charge phone is a problem	No security in phone transactions
South-south region	79	92	52	140
South-west region	104	105	94	110
North-central region	95	65	36	70
Total from all regions	278	262	182	320
% of combined total (1,042 responses)	26.7%	25.1%	17.5%	30.7%

Digital and financial literacy levels

See Tables 13, 14, 15, 16, 17, 18, 19, 20.

Table 13 Whether respondents heard of unstructured supplementary service data (USSD)

State	Response	
	Yes	No
South-south region	278	279
South-west region	382	218
North-central region	291	176
Total from all regions	951	673
% of combined total (1,624 responses)	58.6%	41.4%

Table 14 Whether respondents know they can use their mobile phone for financial transactions without internet connectivity?

State	Response	
	Yes	No
South-south region	382	202
South-west region	411	189
North-central region	321	162
Total from all regions	1,114	553
% of combined total (1,667 responses)	66.8%	33.2%

Table 15 Whether respondents know they can make payment/cash transfer on their mobile phone

State	Response	
	Yes	No
South-south region	442	142
South-west region	469	131
North-central region	341	143
Total from all regions	1,252	416
% of combined total (1,667 responses)	75.1%	24.9%

Table 16 Whether respondents know they can receive payment on their mobile phone

State	Response	
	Yes	No
South-south region	455	129
South-west region	516	84
North-central region	358	126
Total from all regions	1,329	339
% of combined total (1,668 responses)	79.7%	20.3%

Table 17 Whether respondents know they can access soft bank loan with their mobile phone

State	Yes	No
South-south region	300	280
South-west region	387	213
North-central region	306	177
Total from all regions	693	670
% of combined total (1,363 responses)	50.8%	49.2%

Table 18 Whether respondents would be happy to use their mobile phone for financial transactions

State	Yes	No
South-south region	479	107
South-west region	505	95
North-central region	386	90
Total from all regions	1,370	312
% of combined total (1,682 responses)	81.5%	18.5%

Table 19 If respondents replied No, the reasons why they are unhappy to use their mobile phone for financial transaction

State	Responses- Strongly Agree/Agree			
	Worried about privacy issues	Security concerns	Do not know how to use mobile phones for financial transactions	Cost of mobile banking is a problem
South-south region	62	69	73	32
South-west region	63	70	84	46
North-central region	48	48	107	35
Total from all regions	173	187	264	113
% of combined total (737 responses)	23.5%	25.4%	35.8%	15.3%

Table 20 Respondents' answers as to what would encourage them to use (or use more of) their mobile phone for banking purposes

State	Responses- Strongly Agree/Agree			
	Support with Financial Literacy	Support with digital literacy	Reliable internet connection	Cheaper internet/data package
South-south region	456	403	339	367
South-west region	459	504	373	388
North-central region	387	292	272	242
Total of all regions	1,302	1,196	984	997
% of combined total (4,479 responses, where multiple responses were permitted)	29.1%	26.7%	21.9%	22.3%

Discussion

Demographic data

Since this study is aimed at improving women's access to digital financial payments, all the survey respondents are women. Most respondents are between ages 29–39 (34.4%) and 40–50 (32.4%). There are over 54 ethnic groups represented in the survey, from Abi to Yoruba. Occupation wise, there is also a very wide range represented, from bakers to Zobo leaves sellers. Most of the respondents are petty traders, who are very vulnerable because they work in the informal economy and receive very little protection from the government. Due to the wide range of ethnic groups and occupations represented, we have not provided a full list in the Results section. However, the full details can be provided upon request.

Data from our sample in the three regions of Nigeria reveal that 48.6% of them are educated to secondary level. 23.% of them are educated to tertiary level, indicating a fair level of education among the respondents.

We observed that 56.4% of our samples operate their trade within three miles of a bank branch. Physical access to a bank branch for these respondents therefore does not appear to be a major hurdle for them.

Banking habits

Data analysis shows that 74.2% of surveyed respondents use banking services and 74.8% of them have bank accounts. For those with bank accounts, 84.3% of them have an ATM debit card. Reasons for not having bank accounts include proximity to financial institutions (12.5%), cost of financial services (13.8%), documentation problems (17.9%), lack of trust in financial institutions (14.5%), religious obligations (5.8%), inadequate funds (16.7%) and lack of interest in banking services (18.8%). We placed no limit on the number of reasons they could pick from the range of options in our questionnaire to select the most popular alternatives and facilitate financial policy design and implementation. The first six reasons are well documented, so they did not come as a surprise to the authors. What is interesting is the relatively high percentage of those who do not have bank accounts because of a lack of interest in banking services. For the 25.2% who do not have bank accounts, they could be amongst the poorest, least educated and perhaps face cultural or spousal influences not to have bank accounts. Evidence shows that Nigerian women who are more educated are significantly more likely to be financially included and use banking services or products [2]. Conversely, adults with lower levels of education rely heavily on only informal products and services [1].

Regarding the question 'How do you handle transactions if you do not have a bank account?', this question is designed to investigate the alternative transaction patterns for the respondents. We allowed respondents to select more than one alternative if applicable. Data analysis shows the Esusu/cooperative alternative as the most popular with a response ratio of 64.8% and well ahead of the Mobile Agent which is the second most popular with a response ratio of 21%. Esusu practices are informal banking models where groups of individuals contribute to informal savings and credit associations for mutual benefit [82]. Esusu is most common in agricultural production and credit financing. They supplement the formal banking system and rely heavily on trust and allegiance within a community. Over the counter transactions at the bank for unbanked respondents is the least popular with a response ratio of only 7.7%.

Mobile phone ownership is very high at 92.7%. This is very much in line with the EFInA A2F Survey of 2023, where the mobile phone ownership is 93% [2]. Most Nigerian women use basic mobile phones, so text messaging and Unstructured Supplementary Service Data (USSD) are vital to them. 60.3% use their mobile phones for banking services, while 39.7% do not use their phones for mobile services.

We proceeded to investigating the factors limiting the female petty traders who have phones but do not use their phones for their banking services. We placed no restrictions on the number of options they could select from the range of limitations in our questionnaire. The option 'No security in phone transactions' comes up as the most popular answer at 30.7% followed by cost of airtime is discouraging at 26.7%, then internet connectivity is a hindrance at 25.1% and power supply to charge phone is problematic at 17.5%.

Financial and digital literacy awareness levels

We asked all the respondents if they had ever heard of the Unstructured Supplementary Service Data (USSD). Results show 58.6% responded in the YES category and 36% in the NO category as reported in Table 8. We went a step further to investigate the FinTech awareness levels of all the respondents in our sample. 66.8% of respondents are aware that they can conduct financial transactions on their mobile phone without internet connectivity, while 33.2% are not.

In the same vain, 75.1% of respondents are aware that they can make payments and cash transfers on mobile phones and 79.7% of respondents know that they can receive payments on mobile phones. These are high compared to the level of knowledge displayed by respondents regarding their awareness of accessing soft loans via mobile phones. Data analysis returns a total of 50.8% said Yes and 49.2% said No. This question is designed to test the level of financial inclusion via digital technologies. Our aim is to find out if respondents are aware that they can obtain funding and other financial services for their businesses through digital technologies. Soft loans are loans provided by online providers. They have lower interest rates and more lenient terms than traditional banks. Nevertheless, it has been reported that some of these soft loan providers engage in unprofessional and even illegal conduct when recovering the loans [83]. The Nigerian Competition and Consumer Protection Commission have since regulated this area to protect consumers by passing the Limited Interim Regulatory Framework and Guidelines for Digital Lending 2022.

We considered the willingness of respondents in our sample to employ mobile phones for financial transactions. We find 81.5% of them willing to apply these technologies to facilitate their trade. To follow-up on the reasons why the 18.5% do not use their mobile phones for financial transactions, the option "I do not know how to use mobile phones for financial transactions" coded as digital literacy was the most frequently occurring with a response ratio of 35.8%. This is ahead of security concerns at 25.4% and privacy issues at 23.5%. We permitted multiple responses for this question so that we can truly find out the reasons as to why some women do not use their mobile phones for financial transactions.

We concluded our investigation with an enquiry into the factors that will encourage more use of mobile phones for banking transactions among female traders in the three regions of Nigeria. We placed no limitations on the number of options that could be selected (per respondent) from the range provided in our survey to avoid any form of bias such as demand characteristic bias. We did not want the participants to select the answers 'support for financial or digital literacy' because they may interpret that is the aim of the survey and thus change their behaviours in answering the survey.

We would like to make a final observation on financial access by region. We note that the south–west region's respondents displayed the highest level of financial and digital awareness, as well as being the most financially included region. By contrast, the north–central region's respondents displayed the lowest level of financial and digital awareness, the lowest level of financial literacy and are the least financially included region. However, it has the highest percentage of participants having tertiary level education. This suggests that they are well educated but are the least confident in using mobile phones for financial transactions at 28.2%. Table 21 below reveals some of the comparisons:-

Our survey results are once again in line with the EFInA A2F survey 2023[2], confirming the south–west region is the most financially included, mainly because of a drive to increase financial access. This is even though the north–central region has the highest percentage of respondents who are educated to tertiary level. The difference is not huge, but the result challenges the extant evidence that the northern region of Nigeria is poorer and thus fewer women are educated to tertiary level due to child labour being more prevalent in northern Nigeria [84]. One possible explanation could be the influence of patriarchy in northern–central region, where men play a significant role in restricting women's freedom in daily lives and financial matters. Understanding regional nuances is crucial for designing targeted interventions to enhance financial inclusion and address specific challenges faced by each region. The south–west region is more financially included, so campaigns and workshops can move from financial to digital literacy skills. With the north–central region, the emphasis is on financial literacy skills and access to mobile phones.

Recommendations

Our data reveal that our surveyed participants range from the financially excluded and marginalised (no bank account and cannot access banking services because they do not own a mobile phone) at one end to those who are financially included but underserved (own a bank account and use banking services regularly) at the other end. However, 74.8% have bank accounts and 74.2% use banking services. 60.3% of the Nigerian women use their mobile phones for banking services. Therefore, it appears that most of the surveyed participants fall in between the two extremes: they are either financially excluded but have high potential to be so, or financially included but underserved in that they own bank accounts but have not frequently used their phones for financial payments.

It is evident from our data that many are financially included but still prefer using USSD than banking apps. Esusu informal savings and credit groups are more popular than mobile agents, suggesting that trust in informal savings is higher than mobile agents or banks. We know from many studies that mobile money accounts can improve financial and digital inclusion [85]. Therefore, we recommend that campaigns featuring women who use mobile money should share their experiences and the benefits of mobile money accounts. Women champions, village leaders and community leaders (male and female), government officials should have open discussions about mobile money to change perceptions and attitudes towards women using them. In Jordan, women community leaders have been encouraged to become agents for both financial and non-financial services [86]. The Central Bank of Jordan has introduced basic saving accounts for women and the use of women advocates to deal with customer complaints [86]. Women role models are thus important to incentivise more girls and women to be financially included.

Regardless of the educational level of the participants, we found that request for support for digital and financial literacy skills to be high across all three regions of Nigeria. This suggests a major skills gap in the informal economy, especially in the north–central region where there is the highest level of women educated to tertiary level. We believe that workshops and classes for financial and digital literacy for women and girls are crucial for personal and national economic development. With upskilling, women may be able to obtain a job in the formal sector and improve their wages and lifestyles. Economically, there is a better supply of talent for the digital sector with upskilled workers, especially female workers who are under-represented. Regional nuances are important, so more emphasis is on financial inclusion in the north–central region, whereas digital inclusion is in more demand in the southern regions.

Apart from the 'nudging' of behavioural change, the 'capability perspective' of a human rights framework would help Nigeria improve financial and digital inclusion by cementing a legal foundation to reduce poverty. The Committee on Economic, Social and Cultural Rights has affirmed that 'poverty constitutes a denial of human rights'. We believe that Sen's theory is powerful and applicable to the context of women's financial and digital inclusion in

Table 21 Comparison of key variables between the regions

	North-Central region	South-West region	South-South region
Has tertiary level education	35.9%	32.1%	32.1%
Use banking services	27.4%	36.4%	36.2%
Have bank account	26.3%	37.9%	35.8%
Mobile phone ownership	27.7%	36.9%	35.3%
Know it is possible to make payment/cash transfer on mobile phone	27.2%	37.4%	35.3%
Know it is possible to receive payment on mobile phone	26.9%	38.8%	34.3%
Happy to use mobile phone for financial transactions	28.2%	36.9%	34.9%
If not happy to use mobile phone for financial transaction, those selecting the response 'do not know how to use mobile phones for financial transactions'	40.5%	31.8%	27.7%

Nigeria. Poverty and its associated problems such as child labour, marriages, poor education, discrimination and marginalisation must be reduced to empower women, to make them capable of developing their basic rights to freedom and education. We must enable women to participate in power reduction strategies.

Indeed, the UN Human Rights Office's view is that a state's poverty reduction strategy must reflect the core obligations such as the rights to education, water and shelter, to be legally consistent with a state's binding obligations under international human rights law. Further, the minimum core obligations form the international minimum threshold. States and international organisations are obliged to help and support developing countries such as Nigeria to fulfil these obligations and threshold. Developing countries are faced with global market constraints arising from, for example, the rise of sustainable finance, where developed countries dominate sustainable funds. Developing countries such as Nigeria face economic challenges such as debt constraints and reliance on hydrocarbons [87]. Individual governments in these countries cannot possibly address these constraints on their own effectively [88]. A human rights framework thus empowers individuals by giving them entitlements which imposes obligations on states. It calls for collective support for developing countries. The principle of progressive realisation of rights takes into account that development progresses can take time and that one would take into account of resource constraints. The framework also provides a better system of accountability through judicial (judicial review), quasi-judicial system (ombudsmen, international human rights treaty bodies), administrative (scrutiny of human rights impact assessments) and political (through parliamentary processes). It is beyond the scope of this article to discuss which is the best type of accountability for Nigeria. Nevertheless, given that corruption is an ongoing problem in Nigeria despite attempts to tackle it, we believe that this 'capability perspective' human rights framework gives some impetus to improve government accountability.

Conclusion

This article brings a completely new perspective to tackling the gender gap in digital and financial inclusion in Nigeria. As far as we are aware, this is the first attempt in proposing a two-stage strategy to tackle the problem. First, the soft 'nudging' stage where women can be empowered when they can express themselves, participate and change behaviours with men attending and listening. Changes in human behaviour cannot be forced. It is through this 'nudging' stage that key stakeholders will realise that empowering women in using digital financial payments is beneficial for all parties. The second stage of a 'capacity perspective' human rights framework is equally important, because it gives legitimacy, accountability and urgency to development progresses in digital and financial inclusion. Nigeria is a heterogenous and complex country. Attempts have been made to improve corruption and accountability, but to provide an appropriate policy response to improving women's access to digital financial payments, there needs to be a fresh approach. Our article thus contributes to this debate by a new strategy which combines law, economics and development studies.

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Declarations

Conflict of interests The corresponding author and co-authors declare that there are no other conflicts of interest (financial or non-financial) regarding the publication of this article.

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Alison T Lui is a Reader in Corporate and Financial Law at Liverpool John Moores University, Liverpool and the Associate Dean (Global Engagement) for the Faculty of Business and Law.

Patience Ozor is a Lecturer and Head of Economics and Development Studies a Igbinedion University, Okada, Nigeria.

Obiajulu Emma-Ebere is a Lecturer in Economics at the Federal University of Oye-Ekiti, Oye-Ekiti Nigeria.

Sylvia Uzochukwu is a Professor of Food Science and Biotechnology at the Federal University of Oye-Ekiti, Oye-Ekiti Nigeria.

Lawrence Ezemonye is the Vice Chancellor of Igbinedion University, Okada, Nigeria.

Deborah Odejimi if a Professor of Finance and Economic Development and Dean of Postgraduate School and Research at Igbinedion University, Okada, Nigeria.