Bridging the Gender Gap in Digital Finance: The Role of National Strategies and Consumer Protection in Mobile Money Adoption

Abstract

This study examines the determinants of mobile money adoption, focusing on financial consumer protection (FCP), national financial inclusion strategies (NFIS), and national financial education strategies (NFES), alongside demographic factors such as gender, education, and income. Using a cross-country dataset from 2021 to 2025 and employing linear probability, probit, logit, and robustness analyses, we find that NFES strongly promotes adoption, especially among women and less-educated individuals. NFIS has positive but heterogeneous effects, benefiting men and higher-educated populations more, while FCP shows a negative association, suggesting regulatory measures alone may create unintended barriers. Gender, education, and income remain significant predictors, underscoring persistent inequalities in digital financial inclusion. These results highlight the need for integrated, context-specific policies that combine financial literacy, inclusive regulation, and targeted interventions to foster equitable adoption of mobile financial services. The study offers actionable guidance for policymakers seeking to expand mobile money usage and reduce disparities across demographic groups.

Introduction

Public policies to promote financial inclusion, financial education, and financial consumers' protection frameworks may have a considerable influence on the adoption of financial services. These policies provide the implementation guidelines for developing countries. Our study aims to determine how they may affect the adoption of digital financial services and contribute to reducing the financial inclusion gender gap. Our research contributes to the ongoing debate by answering the following key questions: (1) Could national strategies to promote financial inclusion and education enhance the adoption of financial services? (2) Could customers' protection framework lead to greater digital financial inclusion? (3) Could public policies and customers' protection frameworks, combined, influence the adoption of mobile money?

Digital financial inclusion has emerged as a central policy priority in many countries, where large segments of the population remain excluded from formal financial systems. The COVID-19 pandemic accelerated digitalization, transforming financial services, and creating opportunities to reach underserved populations. In response, governments, international organizations, NGOs, and private sector actors have introduced policies and resources to expand access to financial services at national and global levels (Beck et al., 2007). An NFIS is a comprehensive public document formulated at the national level to accelerate financial inclusion, developed through a consultative process involving public and private sector stakeholders. It includes an analysis of the status, constraints, measurable goals, action plans, and methods for assessing progress. Secondly, in addition to NFIS, developing countries have been focusing on implementing NFES through initiatives and programs aimed at enhancing financial literacy. Financial literacy encompasses a set of awareness, knowledge, skills, attitudes, and behaviours that enable individuals to make informed and sound financial decisions, contributing to financial resilience and well-being (OECD, 2005). NFIS often incorporates goals related to digital financial inclusion, such as expanding mobile money and digital payments. NFES similarly integrate digital financial literacy, aiming to equip individuals with the skills needed to use digital tools safely and effectively. These additions reflect the growing importance of digital capabilities in accessing and benefiting financial services. In

several countries, NFES are integrated within broader NFIS because financial education is considered a foundational driver of financial inclusion. The rationale is that improving individuals' financial capabilities enables them to understand, trust, and effectively use financial services, thereby supporting the overall objectives of national inclusion strategies.

Technological advances, particularly in ICTs, have strengthened these efforts by improving access, usability, and penetration of financial services. Nevertheless, scholars highlight the need for a systematic understanding of how these strategies interact with technological innovations to guide policy design and balance formal and informal financial provision (Persaud and Thaffe, 2023; Tram et al., 2023; Ahmad et al., 2020). At the same time, rapid digitization introduces new challenges, emphasizing the importance of robust consumer protection and regulatory frameworks to safeguard vulnerable groups and prevent exclusion. This context underscores the critical need to examine the effectiveness and interaction of national strategies in promoting digital financial inclusion in developing countries.

As financial services become increasingly complex, protecting consumers from emerging risks has become essential (Chaulagain, 2021). A strong financial consumer protection framework may be crucial for empowering individuals, promoting trust in financial institutions, and maintaining financial system stability (Kiril, 2020). Without adequate protection, passive digital consumers, particularly those with limited education, may be at risk of financial harm, victimization, or manipulation. Effective regulation may shift power toward consumers, which may enable them to play a more active role in digital markets. Policies should empower individuals to manage their personal data autonomously and critically evaluate digital firms' practices (Colangelo and Maggiolino, 2019).

It becomes increasingly important to ensure that financial inclusion and consumer protection frameworks extend to the digital sphere. The COVID-19 pandemic has accelerated the shift to digital financial services, making digital financial inclusion a key part for achieving sustainable economic growth (Tay et al., 2022). Within the scope of digital financial services lies mobile money, also known as mobile banking. This service leverages the rapidly expanding access to mobile phones in developing countries to

facilitate banking and payment services use (Demirgüç-Kunt and Klapper, 2012). Mobile money offers accessible and affordable financial and payment services to previously unbanked, low-income segments of society (Munyegera and Matsumoto, 2016). In this context, technological improvement and economic openness are increasingly regarded as opportunities rather than challenges for strengthening consumer protection in the digital age, suggesting that governments should adopt policies that absorb new technologies, encourage innovation, and embrace openness instead of relying primarily on restrictive measures (Dinh et al., 2023).

Gender-based barriers, such as limited financial access and caregiving responsibilities, may show the urgent need for regulatory reform and targeted support to enhance women's financial inclusion (Bin-Humam et al., 2023). Evidence indicates that reducing the gender gap in financial inclusion may lower risks, reduce costs, improve security, increase savings and investments, and generate new business opportunities (Trivelli et al., 2018). Digital financial services may further enhance women's social and economic autonomy (Kulkarni and Ghosh, 2021). Simultaneously, financial education remains essential for informed decision-making, with prioritizing women's education yielding significant welfare improvements through access to credit, micro-finance training, and community support (Mavrinac and Chin, 2004). Women with higher digital financial literacy may be more likely to use formal banking channels (Hasan et al., 2023). Yet, digital financial services carry risks, including scams, data exploitation, algorithmic bias, and digital manipulation, with women potentially facing heightened vulnerability to emotional manipulation online. Addressing these challenges requires targeted consumer education and legal protections against discriminatory pricing and gender-based marketing practices (OECD, 2023).

Despite extensive research on financial inclusion, digital financial services, and financial education, few studies have examined the combined impact of NFIS and NFES on mobile money adoption, particularly for women in developing countries. Most existing research analyses these strategies in isolation, overlooking potential synergies that could amplify their effectiveness, as well as unintended negative effects such as policy overlap, inefficiencies, or exclusionary outcomes. This gap may be especially

urgent given the rapid expansion of digital financial services, the persistent gender gap in financial inclusion, and the substantial investments governments are making in national strategies. Ignoring the interaction between NFIS and NFES may risk fragmented, ineffective, or even counterproductive policies, which may limit the potential to enhance access, reduce inequalities, and promote sustainable economic growth. This may be because NFIS focuses on providing access to financial services, while NFES builds the knowledge and skills needed to use these services effectively. Addressing this gap may therefore be critical for providing actionable guidance to policymakers, ensuring that national strategies are aligned, effective, and inclusive.

Our study focuses on three terms with a special focus on women: financial inclusion**,** digital financial inclusion**,** and mobile money. They are interconnected and crucial for improving access to and the use of digital financial services in an ever-growing digital world, especially for women. These three elements may be essential for promoting greater economic equity and improving people's quality of life, particularly in regions with limited access to financial services (Ababio et al., 2024; Osuma, 2025). Our specific objective is to assess whether the simultaneous implementation of NFES and NFIS translates into greater digital financial inclusion for women in developing countries. By addressing this question, the study seeks to highlight the conditions under which national strategies may reduce gender disparities, while also identifying risks of ineffective or inequitable outcomes if such strategies are poorly aligned.

The paper is organized as follows: Section 2 provides a comprehensive literature review on NFIS, NFES, customer protection, digital financial inclusion, and the gender gap. Section 3 outlines the methodology used to assess the impact of NFIS and NFES on the adoption of mobile money. This section uses an original dataset drawn from the Global Findex 2021, the Global Findex 2025, the Global Financial Inclusion and Consumer Protection Survey 2017 and the Global Financial Inclusion and Consumer Protection Survey 2021 allowing us to capture the effects of the implementations of publics policies and post-COVID19 with a time sensitive approach. Section 4 presents the analysis of results, examining the

influence of public policies and customer protection frameworks on digital financial inclusion, and the gender gap. Finally, Section 5 offers concluding remarks and suggested directions for future research.

Literature review

Financial inclusion refers to the provision of banking and financial services at affordable costs to underserved and low-income populations (Dev, 2006; Gortsos, 2016; Adamo et al., 2024). It plays a pivotal role in reducing inequality, promoting economic growth, and contributing to the United Nations' Sustainable Development Goals, including gender equity and women's empowerment (Siddik, 2017; Roy and Patro, 2022; Aziz et al., 2022). Inclusive financial systems ensure access to savings, credit, payments, and risk management products for disadvantaged groups, which help reduce poverty, enhance social cohesion, and promote sustainable development. Without such systems, low-income individuals and small businesses remain limited to their own resources, constraining investments in education, entrepreneurship, and growth opportunities (Morduch et al., 2009; Demirgüç-Kunt and Klapper, 2012; Sakariya, 2013; Morgan, 2018; Jie, 2024).

To promote financial inclusion, many developing countries have implemented NFIS. These strategies offer a comprehensive approach, addressing not only credit and savings but also other financial services such as insurance and payments, all within the broader financial sector (Porter, 2011). The NFIS involves defining goals, identifying barriers, and outlining prioritized actions to enhance financial inclusion. Their effectiveness is often maximized when developed collaboratively between public and private sector stakeholders, ensuring coordinated, context-specific interventions (Sakariya, 2013; Gradstein et al., 2018). A well-structured and comprehensive NFIS, with clear goals and a solid implementation plan, may play a key role in developing inclusive financial systems that expand access to and use of financial services (AFI 2022). These strategies may be particularly relevant for analysing the adoption of digital financial services, such as mobile money, as they provide the institutional and policy framework that facilitates

uptake. Conceptually, a comprehensive approach to financial inclusion covers three key elements: access to financial services and products, the usage of these services and products, and the quality of financial offerings, which is measured by the consumer's ability to benefit from them (Pearce and Ortega, 2012).

In addition to NFIS, developing countries have increasingly prioritized NFES, implementing initiatives and programs designed to enhance financial literacy. These strategies aim to enhance individuals' awareness, knowledge, skills, attitudes, and behaviours to enable informed financial decision-making, thereby supporting financial resilience and well-being (OECD, 2005; Mishra, 2019; Hambala and Maquiling, 2025). Their effectiveness is often maximized when developed through collaboration between public and private sector stakeholders, ensuring coordinated, context-specific interventions and integration across schools, workplaces, and community programs (Lusardi, 2019; Grifoni and Messy, 2012). A well-structured NFES, with clear goals, a national coordinating body, and an implementation of roadmap, may play a key role in empowering individuals, promoting financial inclusion, and supporting financial system stability (OCDE/CAF, 2020). NFES may be viewed as encompassing three interrelated dimensions: knowledge of financial concepts, practical skills to manage financial resources, and behavioral competencies that allow individuals to apply knowledge effectively in real-life decisions. Effective financial literacy may enhance personal financial well-being, foster inclusive growth, and strengthen financial systems and economies (Sebstad and Cohen, 2003; Hogarth, 2006; Collins and O'rourke, 2010; Remund, 2010; Lusardi and Mitchell, 2014; OECD, 2017 Lusardi and Messy, 2023). Conversely, the absence of financial literacy may lead individuals to make poor financial decisions, overlook suitable financial products, or fail to use them effectively (Di Giannatale and Roa, 2019; Roa and Villegas, 2022).

Alongside these strategies, financial consumer protection frameworks play a crucial role in promoting digital financial inclusion. These frameworks consist of laws, regulations, and systems ensuring fair treatment of consumers within the financial marketplace. Local authorities typically perform several key functions, including enforcing consumer protection laws, issuing regulations and administrative rules, recommending the government on consumer protection issues, educating consumers about their rights, and managing mechanisms for resolving consumer complaints (World Bank, 2012; World Bank, 2017;

Keck et al., 2021). The advancements in financial technologies, the rise of innovative financial products, and the increasing risks in financial services highlight the need for robust consumer protection frameworks, which are still weak. As the industry evolves, safeguarding consumers may become even more critical, particularly in protecting them from exploitation, fraud on digital platforms, and concerns over data security and privacy. These issues may be worsened by imperfect information, flawed contracts, decision-making limitations, or a lack of proper channels for reporting issues (Waldman, 2018; Bongomin and Ntayi, 2020; Chaulagain, 2021; AFI, 2021; Garz et al., 2021; Chalwe-Mulenga et al., 2022; Musonda Domisa et al., 2023).

Collectively, NFIS, NFES, and financial consumer protection frameworks provide the foundation for understanding how policies and regulations may enhance financial and digital financial inclusion, reduce gender gaps, and support the adoption of mobile money in developing countries, especially for women. In some countries, NFES and consumer protection measures are implemented separately, while in others they are integrated within NFIS, reflecting different approaches.

Digital financial inclusion has been widely recognized as a driver of poverty reduction, gender equity, and economic growth, especially in developing economies (Demirgüç-Kunt and Klapper, 2013; Guo et al., 2021; Tay et al., 2022; Ozili, 2022; Sinha, 2023; Kapoor, 2024). The COVID-19 pandemic has accelerated digitization in developing countries, highlighting digital financial inclusion as a key strategy to mitigate negative economic impacts, enhance the resilience of households and SMEs, and maintain banking stability (Banna and Alam, 2021; Mansour, 2022; Dluhopolskyi et al., 2023). Yet, despite considerable progress, the lack of robust consumer protection frameworks remains a critical barrier to the widespread adoption of digital financial services (DFS). However, these benefits may not be automatic, indeed, without robust consumer protection frameworks, financial education, and digital skills, the potential of digital financial inclusion may not be fully efficient. These frameworks may be vital for building trust and confidence. Financial regulators may play a key role in fostering this trust by taking a consumer-centred approach in the design and development of such frameworks (Malady, 2016).

Previous research on financial inclusion and digital financial adoption used diverse methodologies and datasets to assess outcomes and identify determinants. Quantitative studies often rely on household surveys, such as the Global Findex Database, to capture individual access, usage, and barriers to financial services (Demirgüç-Kunt and Klapper, 2012; Demirgüç-Kunt et al., 2022). Administrative banking records and FinTech platform data have been used to evaluate transaction patterns, account uptake, and gender disparities (Kapoor, 2024; Sinha, 2023). Qualitative approaches, including interviews and focus groups, provide insights into behavioural, social, and cultural factors influencing financial service adoption (Magoni et al., 2020; Potrich et al., 2018). Cross-country comparative analyses have also been employed to understand the impact of national policies, regulatory frameworks, and financial literacy programs on adoption rates and financial inclusion outcomes (Banna and Alam, 2021; Ozili, 2022).

By integrating evidence from these diverse methodologies and datasets, previous studies highlight the importance of policy, literacy, and consumer protection in driving financial inclusion. Yet, gaps remain in understanding the combined effects of national strategies, education initiatives, and consumer protection frameworks on digital financial services, particularly in developing economies and for women and underserved populations.

Drawing on these datasets and methodologies, our study proposes three hypotheses:

H1: National strategies to promote financial inclusion and education may enhance the adoption of digital financial services

NFIS and NFES provide structured, coordinated, and context-specific frameworks that facilitate access, usage, and quality of financial services (Porter, 2011; Sakariya, 2013; Gradstein et al., 2018; OECD, 2005; Mishra, 2019; Hambala and Maquiling, 2025). NFES enhances individuals' knowledge, skills, and behavioral competencies, enabling informed decision-making and supporting financial resilience (Lusardi, 2019; Grifoni and Messy, 2012; OCDE/CAF, 2020). Together, these strategies may increase mobile money adoption, particularly among underserved populations (Sebstad and Cohen, 2003; Hogarth, 2006; Collins and O'rourke, 2010; Remund, 2010; Lusardi and Mitchell, 2014; OECD, 2017; Lusardi and

Messy, 2023). While existing studies suggest that NFIS and NFES improve access, usage, and financial literacy, it is not yet clear whether they translate into actual uptake of digital financial services, particularly for women. By investigating this question, our study evaluates the effectiveness of coordinated national strategies in addressing barriers to digital financial inclusion and informs policy design to make interventions more impactful and inclusive.

H2: Customers' protection frameworks may lead to greater digital financial inclusion

For a digital economy to be successful, consumers shall trust the integrity and fairness of digital markets. Effective consumer protection laws may build this trust by addressing information asymmetries, consumer biases, and barriers to best choices. These laws may enforce fairness, accountability, and transparency on providers while granting consumers rights aligned with these values (OECD, 2016; Mendieta, 2020; Keck et al., 2021). In DFS, these frameworks may be essential for a secure online environment, protecting against cyber risks and promoting reliability of FinTech services (Kliber et al., 2021; Bhat et al., 2023; AlSuwaidi and Mertzanis, 2024). Protecting financial consumers may be particularly important especially for women and underserved populations, where concerns about data security and confidence in digital platforms are more pronounced (Magoni et al., 2020; Potrich et al., 2018; Keck, 2021). While consumer protection laws are designed to build trust, ensure fairness, and reduce risks, it remains unclear if these frameworks may be sufficient to encourage the adoption of mobile money. Our study evaluates the effectiveness of consumer protection policies in fostering confidence and usage in digital financial markets.

H3: Public policies and customers' protection frameworks, combined, may influence the adoption of mobile money

The adoption of mobile money depends on both supportive public policies and effective consumer protection. While policies may improve financial access and literacy, consumer protection frameworks may build trust and reduce perceived risks associated with digital platforms (Demirgüç-Kunt and Klapper, 2013; Banna and Alam, 2021; Malady, 2016; Kliber et al., 2021; Magoni et al., 2020; Potrich et al., 2018; Keck, 2021; Consumer International, 2017). Together, these elements create a conducive environment for

the adoption and sustained use of mobile money, particularly among women and underserved populations (Shaikh et al., 2023; Demirgüç-Kunt et al., 2022).

Our study contributes to the ongoing discourse by analysing the influence of regulations and public policies on the adoption of digital financial services, with particular attention to their differential effects on individuals in developing countries. By examining the combined role of national strategies for financial inclusion, financial education, and consumer protection frameworks, the study addresses gaps in previous research that have often overlooked the interaction between these policies and digital financial adoption. Furthermore, it draws on recent evidence from developing economies to inform our study's analytical approach and highlight its practical and theoretical contributions.

Methodology

Our study examines the relationship between financial inclusion, digital financial inclusion, FCP, national NFIS, NFES, and the gender gap. Specifically, we measure how regulations may influence the adoption of mobile money. To investigate this relationship, we employ an econometric model based on microeconomic data, specified as follows:

$$Y = b_0 + b_1 \cdot \text{fcp} + b_2 \cdot \text{nfis} + b_3 \cdot \text{nfes} + b_4 \cdot \text{female} + \sum_j b_j \cdot \text{education level} + \sum_k b_k \cdot \text{income quartile} + \epsilon$$

where:

- y is the binary dependent variable, equal to 1 if the respondent owns a mobile money account and 0 otherwise
- Gender is a binary variable equal to 1 if the respondent is female and 0 if male
- FCP is a composite index of financial consumer protection ranging from 0 to 3, constructed as the sum of three binary variables:

    - *e1_2*: whether a general consumer protection law with explicit reference to financial services exists
    - *e1_3*: whether a stand-alone financial consumer protection law exists
    - *e1_4*: whether a consumer protection provisions within the financial sector legal framework exists
- NFIS is a binary variable indicating whether the country has a National Financial Inclusion Strategy in place
- NFES is a composite variable measuring the depth of a National Financial Education Strategy. It is the sum of:
    - *i10_1*: whether the government explicitly require (i.e. via regulation, guidelines, or circular) financial institutions to provide financial education
    - *i12_2*: whether financial education included as a topic or subject in public school curriculums
    - *i13_2_a*: financial education included as a topic in public school curriculums for Junior secondary
- xk, for k=1, k=..., ,represents a set of control variables, including education level, income level and age
- β and γ represent the coefficients to be estimated by the model

We estimate this model using a dataset that combines the Global Findex 2017, the Global Financial Inclusion and Consumer Protection Survey 2017, the Global Findex 2025 and the Global Financial Inclusion and Consumer Protection Survey 2021, including 113 370 observations from 146 countries (Appendix A). The Global Findex reports provide detailed information on financial inclusion and digital financial inclusion, in a great panel of countries, which allows trends to be studied from 2017 to 2025. The Consumer Protection Surveys provide data on the existence of regulations and laws for financial customer protection along with NFIS and NFES and respondents' financial capabilities. By including regulatory and national strategic variables, we offer a comprehensive analysis of how institutional

frameworks may shape digital financial inclusion. The inclusion of gender as a binary explanatory variable helps us to explore gender-specific adoption patterns to mobile money ownership. Each coefficient should be interpreted as the expected change in the probability of owning a mobile money account associated with a one-unit change in the corresponding variable.

We employ a linear probability model (LPM) for this analysis, as it provides a clear and intuitive interpretation of how explanatory variables influence the likelihood of mobile money ownership. Given the binary nature of the dependent variable, the LPM allows us to interpret each coefficient as the effect on the probability of adoption. We prioritize LPM for its simplicity and transparency. Overall, this approach offers a robust framework for identifying the main drivers of mobile money adoption, with relevance for improving financial inclusion among underserved populations, especially women. We also acknowledge the potential issue of multicollinearity between key explanatory variables, such as NFIS, NFES, and FCP, as they are closely related, all focusing on aspects of financial inclusion and consumer protection, for example, an NFES can be embedded within an NFIS, and FCP tend to often be integrated into either NFIS or NFES framework. The close relationship between NFIS, NFES, and FCP may arise from their interconnected roles in advancing financial inclusion. NFES are often designed as integral components of broader NFIS, supporting efforts to build financial capability. Likewise, Financial Consumer Protection measures are often incorporated within either NFIS or NFES, as safeguarding consumer rights may be essential to building trust in the financial system. In our model, we address this by examining correlations and ensuring model robustness, which helps keep the reliability of our findings.

Results

Table 1 presents the descriptive statistics for the variables in our dataset.

[TABLE 1 about here]

Table 2 presents the estimated coefficients from a linear probability model examining the determinants of mobile money account ownership for the years 2021 and 2025.

[TABLE 2 about here]

The results show that the FCP index is statistically significant but negatively associated with mobile money ownership. Although the magnitude is small, the negative sign suggests that more comprehensive financial consumer protection frameworks may coincide with lower levels of mobile money adoption. In contrast, the presence of a NFIS is positively associated with mobile money account ownership. The coefficient for the NFES is also positive and statistically significant. Countries with more developed financial education frameworks, particularly those integrating financial literacy into public school curricula or requiring financial institutions to provide education, tend to have higher levels of mobile money adoption.

The results further show a negative association between gender and mobile money ownership: being female reduces the probability of owning a mobile money account by 4.5 percentage points. This confirms the persistence of gender gaps in digital financial inclusion, even after controlling socioeconomic characteristics. With respect to the control variables, education exhibits a strong positive gradient. Individuals who completed secondary school are 15.4 percent more likely to own a mobile money account compared to those with primary education or less, while those with tertiary education or higher show an increase of 20.9 percentage points. Income also displays a clear socioeconomic gradient: moving up each income quintile increases mobile money ownership, with the probability rising from 3.4 percentage points (second quintile) to 16.1 percentage points (richest quintile), relative to the poorest group. Finally, the coefficient for the year 2024 dummy suggests an overall upward trend in mobile money adoption relative to the reference year, consistent with broader global diffusion dynamics.

Table 3 presents the estimated results of the regression for 2021.

[TABLE 3 about here]

The FCP index is negatively associated with mobile money ownership. The coefficient is larger in magnitude compared to the model shown in Table 1, indicating that in 2021, more stringent or comprehensive consumer protection frameworks may have been associated with reduced mobile money uptake. The presence of a NFIS shows a positive and statistically significant association with mobile money adoption. NFES is positive and stronger than in the model from Table 1. This may indicate that countries with more developed financial education policies, particularly those integrating financial literacy into school curricula or imposing education requirements on financial institutions, experienced meaningfully higher levels of mobile money account ownership in 2021. Being female is associated with a 3.2-percentage-point lower probability of owning a mobile money account. This confirms the persistence of gender inequalities in digital financial access during this period. The control variables show clear socioeconomic variations. Individuals with secondary education are 11 percentage points more likely to own a mobile money account relative to those with primary education or less, while tertiary-educated respondents show an even larger increase of 16.5 percentage points. Regarding the income levels, moving from the poorest quintile to the richest increases the probability of mobile money ownership by up to 14.2 percentage points.

Table 4 presents the estimated results of the regression for 2025.

[TABLE 4 about here]

FCP is positively associated with mobile money ownership in 2025. Unlike the negative coefficient observed in 2021, this positive sign suggests that, by 2025, more developed consumer protection frameworks may have contributed to strengthening trust in digital financial services, thereby supporting adoption. NFIS also shows a strong and statistically significant positive relationship with mobile money ownership. Interestingly, NFES is negative in 2025, in contrast with its large positive effect in 2021. The gender gap remains substantial. Being female is associated with a 6.2-percentage-point lower probability of owning a mobile money account, a stronger effect than in 2021. Education plays a crucial role, completing secondary school increases mobile money ownership by 19.6 percentage points, while tertiary education or higher increases it by 24.8 percentage points. These effects are larger than in 2021, indicating that educational attainment became an even stronger predictor of digital financial inclusion over time. Regarding the income levels, evolving from the poorest to the richest quintile increases the probability of owning a mobile money account by up to 18.4 percentage points.

A comparison of the 2021 and 2025 results reveals notable shifts in the determinants of mobile money adoption over time. In 2021, financial consumer protection index shows a negative association with mobile money ownership, while by 2025 this relationship had become positive, suggesting that maturing regulatory frameworks may have begun to enhance trust and support adoption. Similarly, NFIS strengthened in 2025, indicating greater policy effectiveness as these strategies expanded and consolidated. In contrast, NFES shifted from a strong positive predictor in 2021 to a negative one in 2025, which might be due to programs not keeping pace with rapid digitalization, limited focus on practical digital skills, or insufficient targeting of underserved groups with low digital literacy or device access. Finally, structural inequalities appeared to widen, gender, education, and income gaps in mobile money ownership increased between 2021 and 2025, highlighting persistent and deepening disparities in digital financial inclusion despite progress in policy implementation.

Table 5 estimates the relationship between mobile money ownership and NFES across 2021 and 2025.

[TABLE 5 about here]

The results show a change in the effect of NFES during this period. In 2021, NFES was strongly positive and statistically significant, suggesting that countries with more developed financial education frameworks had higher rates of mobile money adoption. By 2025, however, the coefficient becomes negative, indicating a reversal in the relationship. This model for 2021–2025 reflects an intermediate picture, capturing the overall positive association across years but masking the contrasting dynamics observed in the separate year-specific models. Overall, Table 5 demonstrates that the influence of financial education on mobile money adoption is dynamic, with strong positive effects in the preliminary period (2021) and weaker or negative effects by 2025. Those results are further described in the appendices B and C.

Table 6 estimates the relationship between mobile money ownership and NFIS across 2021 and 2025.

[TABLE 6 about here]

In 2021, NFIS is positively associated with mobile money ownership, indicating that countries with active financial inclusion strategies experienced higher rates of adoption. By 2025, this positive relationship strengthens modestly, suggesting that national strategies have continued to support mobile money adoption over time, although the year-specific effect shows some moderation. This pattern contrasts with NFES, whose influence declined over the same period, highlighting the sustained effectiveness of policy coordination through inclusion strategies relative to education-focused interventions. Table 6 shows the overall positive association of NFIS with mobile money adoption across years, demonstrating that coordinated national inclusion strategies have a robust and persistent effect on digital financial access, even as other policy factors (like NFES) evolve in importance or direction. Overall, these results

underscore the critical role of national financial inclusion strategies in sustaining mobile money adoption over time, providing a more consistent and enduring impact than education-focused interventions, while persistent gender, education, and income inequalities highlight ongoing structural barriers. Those results are further described in the appendices D and E.

To check the robustness of the linear probability model results, we estimated probit (Table 7) and logit (Table 8) models.

[TABLE 7 about here]

[TABLE 8 about here]

The dependent variable remains binary, equal to 1 if the respondent owns a mobile money account and 0 otherwise. All models include the same explanatory variables: FCP, NFIS, NFES, gender, education levels, and income quantiles.

Table 7 show that FCP is negatively associated with mobile money ownership, NFIS has a positive effect, and NFES is also positive and significant. Being female reduces the probability of owning a mobile money account. Higher education and income levels significantly increase mobile money ownership, with secondary education and tertiary education showing the largest effects. The model is highly significant overall and exhibits a pseudo-R^2 of 0.061, indicating moderate explanatory power for individual-level data.

Table 8 confirm these patterns. FCP remains negative, NFIS positive, and NFES positive. Female respondents are less likely to own a mobile money account. Education and income levels are consistent, with the richest income quintile and tertiary-educated individuals showing the largest positive

associations. The model is highly significant and has a pseudo-R^2 of 0.061, comparable to the probit model.

Overall, the probit and logit estimates support the results of the linear probability model, confirming the positive roles of NFIS and NFES, particularly in early periods, the negative effect of gender on mobile money ownership, and the importance of education and income. The robustness of these findings across multiple estimation methods strengthens the validity of the main conclusions regarding the determinants of digital financial inclusion.

To further assess the relationships among the policy variables, we conducted a robustness check by regressing the FCP index on the NFES and the NFIS, using robust standard errors. The results show that both NFES and NFIS are strongly and positively associated with FCP, indicating that countries with more developed financial education and inclusion strategies also tend to have stronger consumer protection frameworks. The model explains a substantial proportion of the variation in FCP ($R^2 = 0.578$), and all coefficients are statistically significant. This evidence supports the validity of including NFES and NFIS as explanatory variables in the main regressions on mobile money adoption and suggests that these policy measures are closely interrelated in shaping the financial ecosystem.

Conclusions

Our findings confirm that mobile money adoption may be shaped by a complex combination of demographic characteristics, regulatory frameworks, and national strategies, with distinct patterns across gender and education levels. With multiple model specifications, including linear probability, probit, logit, and robustness checks, our results consistently show that gender, education, and income are key predictors of mobile money ownership. Women are less likely than men to adopt mobile money, while higher educational attainment and income increase adoption probability. These patterns confirm persistent inequalities in digital financial inclusion and underscore the need for targeted interventions.

At the policy level, national financial education strategies emerge as the most consistently positive driver of mobile money adoption, particularly for women and less-educated individuals, highlighting the potential of financial literacy programs to enhance digital inclusion. National financial inclusion strategies also positively influence adoption, though effects are heterogeneous, benefits are stronger among men and higher-educated populations, while women and lower-educated individuals experience limited gains. Over time, NFIS effects strengthened, reflecting improved policy coordination, clearer implementation mechanisms, and broader institutional support. In contrast, the influence of NFES declined, potentially due to financial education programs not fully adapting to rapid digitalization, limited emphasis on practical digital skills, or insufficient targeting of women and less-educated populations. In contrast, financial consumer protection regulations show a negative association with adoption, suggesting that regulatory frameworks alone may not be sufficient and may unintentionally create barriers, such as higher compliance costs or misalignment with the practical realities of mobile money users.

These findings emphasize the importance of integrated, context-sensitive policy approaches. NFIS should move beyond account access to focus on active usage and engagement, incorporating gender-sensitive targets and measurable outcomes. NFES should adopt a lifecycle approach, embedding digital financial literacy in school curricula and adult training, with tailored content for women and marginalized groups. Consumer protection frameworks should consider women's lower digital literacy and higher vulnerability, promoting clear disclosure, fraud prevention, accessible redress mechanisms, and data privacy safeguards.

Theoretically, this study contributes to the literature by demonstrating the differentiated effects of financial policies and demographic characteristics on digital financial inclusion, highlighting the importance of intersectionality in adoption patterns. Practically, the results provide actionable guidance for policymakers to design inclusive financial ecosystems that target women, low-income, and less-educated populations, ensuring that regulatory, educational, and inclusion strategies work in tandem to enhance adoption

This study relies on cross-sectional data, which limits causal inference. Key dimensions such as trust, satisfaction, risk management, and usage of intensity are not directly captured. Future research could

employ panel data, experimental designs, or high-frequency transaction data to better understand the causal pathways of adoption and usage. Investigating interactions between policy measures and demographic characteristics, as well as exploring mechanisms to improve women's engagement with mobile financial services, would provide further actionable insights.

Recommendations based of our study

To build more inclusive financial ecosystems, we recommend that NFIS move beyond a focus on access and place a greater emphasis on usage patterns and targets. These strategies should incorporate gender-sensitive design and implementation, setting measurable gender targets, ensuring women's representation in policy dialogue, and promoting accessible, low-cost mobile financial systems that meet the diverse needs of women across various regions and socio-economic groups. National Financial Education Strategies should adopt a lifecycle approach to enhance financial capability, providing tailored educational content for women and girls at critical stages such as adolescence and early adulthood. These strategies should also address cultural and practical barriers to participation, using mentorship programs, local languages, and partnerships with women's networks to increase outreach. Both NFIS and NFES should be based on high-quality, sex-disaggregated data that goes beyond access and usage to include factors like trust, satisfaction, and the ability to manage financial risks. A coordination between the public and private sectors would be essential to aligning these strategies, and governments should incentivize innovations that fit women's real financial needs—such as products that combine savings, insurance, and credit with flexibility for informal income patterns. By integrating consumer protection, inclusive financial education, and gender-intentional policy design, digital financial services could empower women and contribute to building resilient, fair financial ecosystems. Finally, we recommend developing gender-sensitive financial consumer protection frameworks that address the risks faced by women using mobile money services. This may include enforcing clear disclosure of fees, strengthening digital fraud prevention, ensuring accessible redress mechanisms, and promoting data privacy standards. Regulators

should collaborate with mobile money providers to design protections that consider women's lower digital literacy and greater vulnerability to misinformation, especially in rural or underserved areas. An effective and understandable claims process should also be in place to ensure all users, regardless of education or access, can seek redress when needed.

References

Alliance for Financial Inclusion. (2022). National Financial Inclusion Strategies: Current State of Practice. Alliance for Financial Inclusion. https://www.afi-global.org/publication/national-financial-inclusion-strategies-current-state-of-practice-2022/

World Bank. (2017). Global financial inclusion (Global Findex) database. World Bank Group.

OECD/INFE: OECD. (2020). OECD/INFE International Survey of Adult Financial Literacy. Organisation for Economic Co-operation and Development. https://www.oecd.org/financial/education/oecd-infe-2020-international-survey-of-adult-financial-literacy.pdf

OECD (2022), Evaluation of National Strategies for Financial Literacy https://www.oecd.org/financial/education/evaluation-of-national-strategies-for-financial-literacy.htm

Chaulagain, R. (2021). Basics of Financial Consumer Protection in Nepal. *Research Gate*.

Kiril, K. O. S. S. E. V. (2020). OECD/INFE 2020 international survey of adult financial literacy.

Federal Competition and Consumer Protection Commission (FCCPC) https://fccpc.gov.ng/

Alliance for Financial Inclusion. (2022). Financial inclusion strategies: Global trends and country cases.

BBVA. (2021). Five models of financial inclusion in Latin America. https://www.bbva.com/en/five-models-financial-inclusion-latin-america

INDEPABIS. (2008). Ley para el Derecho de las Personas al Acceso de Bienes y Servicios. https://www.indepabis.gob.ve

Banque de France. (2024). Towards sustainable financial inclusion in Sub-Saharan Africa? https://www.banque-france.fr/en/publications-and-statistics/publications/towards-sustainable-financial-inclusion-sub-saharan-africa

Cambridge Judge Business School. (2021). FinTech Regulation in Sub-Saharan Africa. Retrieved from https://www.jbs.cam.ac.uk/wp-content/uploads/2021/11/2021-11-fintech-in-sub-saharan-africa.pdf

Tay, L. Y., Tai, H. T., & Tan, G. S. (2022). Digital financial inclusion: A gateway to sustainable development. *Heliyon*, *8*(6).

Demirgüç-Kunt, A., & Klapper, L. F. (2012). Measuring financial inclusion: The global findex database. *World bank policy research working paper*, (6025). https://ssrn.com/abstract=2043012

Munyegera, G. K., & Matsumoto, T. (2016). Mobile money, remittances, and household welfare: Panel evidence from rural Uganda. *World Development*, *79*, 127-137. https://doi.org/10.1016/j.worlddev.2015.11.006

Bin-Humam, Y., Braunmiller, J. C., & Elsaman, M. (2023). Emerging trends in national financial inclusion strategies that support women's entrepreneurship. *World Bank, Washington, DC https://doi. org/10.1596/39659*

Trivelli, C., Marincioni, M., Pels, F. J., & Di Tella, E. N. I. (2018). Financial inclusión for women: a way forward. *Gender economic equity: An imperative for the G20*, *88*.

Kulkarni, L., & Ghosh, A. (2021). Gender disparity in the digitalization of financial services: challenges and promises for women's financial inclusion in India. *Gender, Technology and Development*, *25*(2), 233-250. https://doi.org/10.1080/09718524.2021.1911022

Mavrinac, S. C., & Chin, W. P. (2004). Financial education for women in Asia Pacific. *Available at SSRN 695042*. https://dx.doi.org/10.2139/ssrn.695042

Hasan, R., Ashfaq, M., Parveen, T., & Gunardi, A. (2023). Financial inclusion–does digital financial literacy matter for women entrepreneurs?. *International Journal of Social Economics*, *50*(8), 1085-1104. https://doi.org/10.1108/IJSE-04-2022-0277

OECD, CONSUMER VULNERABILITY IN THE DIGITAL AGE, OECD DIGITAL ECONOMY PAPERS 2023 https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/06/consumer-vulnerability-in-the-digital-age_85b498eb/4d013cc5-en.pdf

Ababio, J. O. M., Yiadom, E. B., Ofori-Sasu, D., & Sarpong–Kumankoma, E. (2024). Digital financial inclusion and inclusive development in lower-middle-income countries: the enabling role of institutional quality. *Journal of Chinese Economic and Foreign Trade Studies*, *17*(2/3), 133-151.

Osuma, G. (2025). The impact of financial inclusion on poverty reduction and economic growth in Sub-Saharan Africa: A comparative study of digital financial services. *Social Sciences & Humanities Open*, *11*, 101263. https://doi.org/10.1016/j.ssaho.2024.101263

Gould, Bonokai George B. 2024. “The Role of Consumer Empowerment and Its Comparison in Financial Inclusion in the Global South”. Asian Journal of Economics, Business and Accounting 24 (12):369-83. https://doi.org/10.9734/ajeba/2024/v24i121615.

Dev, S. M. (2006). Financial inclusion: Issues and challenges. *Economic and political weekly*, 4310-4313.

Adamo, R., Federico, D., & Notte, A. (2024). Financial Inclusion Literature Review: Definition, Measurement, and Challenges. *The Role of Financial Inclusion for Reaching Sustainable Development Goals*, 28-46.

Siddik, M. N. A. (2017). Does financial inclusion promote women empowerment? Evidence from Bangladesh. *Applied Economics and Finance*, *4*(4), 169-177.

Roy, P., & Patro, B. (2022). Financial inclusion of women and gender gap in access to finance: A systematic literature review. *Vision*, *26*(3), 282-299.

Aziz, F., Sheikh, S. M., & Shah, I. H. (2022). Financial inclusion for women empowerment in South Asian countries. *Journal of Financial Regulation and Compliance*, *30*(4), 489-502.

Gortsos, C. V. (2016). Financial Inclusion: Services of General Economic Interest in the Banking Sector and Citizen's Rights/Inclusion financière: services d'intérêt économique général dans le secteur bancaire et le secteur des droits des citoyens--Financial Inclusion: an introduction. *Revue europeenne de droit public= European review of public law= Eur. Zeitschrift des offtl. Rechts= Rivista europea di diritto pubblico*, *28*(1), 209-220.

Morduch, J., & Karlan, D. S. (2009). Access to finance. *NYU Wagner Research Paper*, (2011-03).

Demirgüç-Kunt, A., & Klapper, L. F. (2012). Financial inclusion in Africa: An overview. *World Bank policy research working paper*, (6088). https://ssrn.com/abstract=2084599

Sakariya, S. (2013). Evaluation of financial inclusion strategy components: Reflections from India. *Journal of International Management Studies*, *13*(1), 83-92.

Morgan, P. J. (2018). Financial inclusion in Asia. *Routledge Handbook of Banking and Finance in Asia*, 353-370.

JIE, T. J. (2024). Bridging the Gap How Financial Inclusion Initiatives Empower Individuals and Drive Economic Growth. *Available at SSRN 4847456*. https://dx.doi.org/10.2139/ssrn.4847456

Demirgüç-Kunt, A., Klapper, L., Singer, D., & Ansar, S. (2022). *The Global Findex Database 2021: Financial inclusion, digital payments, and resilience in the age of COVID-19*. World Bank Publications.

Porter, B. (2011, November). National strategies: where do they get us? a roadmap for financial inclusion. In *United Nations Capital Development Fund, New York. http://www. globalmicrocreditsummit2011. org/ userfiles/file/Workshop% 20Papers/B_* (Vol. 20).

Gradstein, H.L., Randall, D., & Alper, O.P. (2018). Developing and Operationalizing a National Financial Inclusion Strategy. DOI:10.1596/29953

Sakariya, S. (2013). Evaluation of financial inclusion strategy components: Reflections from India. *Journal of International Management Studies*, *13*(1), 83-92.

National Financial Inclusion Strategies: Current State of Practice (2022), AFI, May 10, 2022

Pearce, D., & Ortega, C. R. (2012). Financial inclusion strategies: reference framework.

Fatokun, D. (2013). Viable agent banking and mobile payments system in Nigeria. *Bullion Publication of the Central Bank of Nigeria*, *36*(3), 37.

Aro-Gordon, S. (2017). Implementation of financial inclusion strategy in Nigeria. *SDMIMD Journal of Management*, 27-43.

Osakwe, S. (2020). How Can Developing Countries Reduce Financial Exclusion? A Critical Review of Nigeria's Financial Inclusion Strategy. *A Critical Review of Nigeria's Financial Inclusion Strategy (September 30, 2020). Making Finance Work for Africa*.

Reserve Bank of Zimbabwe. (2016), Zimbabwe National Financial Inclusion Strategy, 2016-2020. Harare, Zimbabwe. Available from: http://www.rbz.co.zw/assets/zimbabwe-national-financial-inclusion-strategy-2016---2020.pdf.

Chitimira, H., & Torerai, E. (2021). The nexus between mobile money regulation, innovative technology and the promotion of financial inclusion in Zimbabwe. *Potchefstroom Electronic Law Journal/ Potchefstroomse Elektroniese Regsblad*, *24*(1).

Chikweche, T., Chaora, B., & Cross, R. (2023). Financial inclusion in Zimbabwe: Re-imagining prospects for inclusive stakeholder involvement and national development. *African Journal of Inclusive Societies*, *2*(1), 61-81.

Chaora, B. R. (2022). Financial Inclusion of Micro, Small and Medium Enterprises in Zimbabwe. *Financial Inclusion Survey Report*.

Chikweche, T., Chaora, B., & Cross, R. (2023). Financial inclusion in Zimbabwe: Re-imagining prospects for inclusive stakeholder involvement and national development. *African Journal of Inclusive Societies*, *2*(1), 61-81. https://doi.org/10.59186/SI.7GSFPXQ0

Reserve Bank of Zimbabwe. (2022), Zimbabwe National Financial Inclusion Strategy, 2022-2026. Harare, Zimbabwe. Available from: https://www.rbz.co.zw/documents/ar/Annual_Report_2022.pdf

Mishra, D. M. K. (2019). Financial literacy and education for improving financial skills. *Available at SSRN 3488670*. https://dx.doi.org/10.2139/ssrn.3488670

HAMBALA, R. O., & MAQUILING, R. R., 2025 Financial Management Practices and Financial Well-Being of Higher Education Institution Employees: the Moderating Role of Financial Literacy.

OECD (2023), "OECD/INFE 2023 International Survey of Adult Financial Literacy", OECD Business and Finance Policy Papers, No. 39, OECD Publishing, Paris, https://doi.org/10.1787/56003a32-en.

Lusardi, A. (2019). Financial literacy and the need for financial education: evidence and implications. *Swiss journal of economics and statistics*, *155*(1), 1-8.

Sebstad, J., & Cohen, M. (2003). Financial education for the poor. *Financial Literacy Project, Working Paper*, *1*, 2-17.

Hogarth, Jeanne M. 2006. Financial Education and Economic Development. Presented at the G8 International Conference on Improving Financial Literacy, November 29, 2006, Moscow, Russian Federation.

Collins, J. M., & O'rourke, C. M. (2010). Financial education and counseling—Still holding promise. *Journal of Consumer Affairs*, *44*(3), 483-498. https://doi.org/10.1111/j.1745-6606.2010.01179.x

Remund, D. L. (2010). Financial literacy explicated: The case for a clearer definition in an increasingly complex economy. *Journal of consumer affairs*, *44*(2), 276-295. https://doi.org/10.1111/j.1745-6606.2010.01169.x

Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *American Economic Journal: Journal of Economic Literature*, *52*(1), 5-44. DOI: 10.1257/jel.52.1.5

OECD (2017), PISA 2015 Results (Volume IV): Students' Financial Literacy, PISA, OECD Publishing, Paris, https://doi.org/10.1787/9789264270282-en.

Di Giannatale, S., & Roa, M. J. (2019). Barriers to Formal Saving: Micro-and Macroeconomic Effects. *Journal of Economic Surveys*, *33*(2), 541-566. https://doi.org/10.1111/joes.12275

Roa, M. J., & Villegas, A. (2022). Financial exclusion: A new approach to the importance of financial literacy. *Research Handbook on Measuring Poverty and Deprivation,(ed. J. Silber), Edward Elgar Publishing*.

Kaiser, T., Lusardi, A., Menkhoff, L., & Urban, C. (2022). Financial education affects financial knowledge and downstream behaviors. *Journal of Financial Economics*, *145*(2), 255-272. https://doi.org/10.1016/j.jfineco.2021.09.022

Council, O. E. C. D. (2005). Recommendation on principles and good practices for financial education and awareness.https://www.oecd.org/finance/financial-education/35108560.pdf

Grifoni, A., & Messy, F. A. (2012). Current status of national strategies for financial education: A comparative analysis and relevant practices.

OCDE/CAF (2020), Estrategias nacionales de inclusión y educación financiera en América Latina y el Caribe: retos de implementación.

Di Castri, S. (2011). Empowering and protecting financial consumers: Bank Negara Malaysia's consumer and market conduct framework. *Available at SSRN 1843281*.

Messy, F. A., & Monticone, C. (2016). Financial education policies in Asia and the Pacific.

Murugiah, L. (2016). The level of understanding and strategies to enhance financial literacy among Malaysian. *International Journal of Economics and Financial Issues*, *6*(3), 130-139.

Financial Inclusion, Bank Negara, https://www.bnm.gov.my/financial-inclusion

Bank Negara Malaysia. (2023a). Financial Inclusion Framework 2023 – 2026: Strategy Paper.

Seman, J. A., 2023, FINANCIAL INCLUSION IN MALAYSIA: PROGRESS, CHALLENGES, AND FUTURE DIRECTIONS. *STUDY OF LIGHT EMITTING DIODE (LED) AND HIGH-PRESSURE SODIUM VAPOUR (HPSV) LAMP BASED ON PHOTOMETRIC METHOD FOR ROAD*, 85.

Promoting Financial Literacy: A Case Study of Bank Negara Malaysia, AFI, 2024.

Financial Education in Latin America and the Caribbean (V.2), AFI, 2024.

Mexico | Financial product ownership goal for 2024, unattainable?, BBVA Research, 2024 https://www.bbvaresearch.com/en/publicaciones/mexico-financial-product-ownership-goal-for-2024-unattainable/

National Financial Inclusion Strategy – Mexico, AFI, 2020

Grohmann, A., & Menkhoff, L. (2017). Financial literacy promotes financial inclusion in both poor and rich countries. *DIW Economic Bulletin*, *7*(41), 399-407.

Sanderson, A., Mutandwa, L., & Le Roux, P. (2018). A review of determinants of financial inclusion. *International Journal of Economics and Financial Issues*, *8*(3), 1.

Shaikh, A. A., Glavee-Geo, R., Karjaluoto, H., & Hinson, R. E. (2023). Mobile money as a driver of digital financial inclusion. *Technological Forecasting and Social Change*, *186*, 122158. https://doi.org/10.1016/j.techfore.2022.122158

Demirgüç-Kunt, A., & Klapper, L. (2013). Measuring financial inclusion: Explaining variation in use of financial services across and within countries. *Brookings papers on economic activity*, *2013*(1), 279-340.

Guo, Q., Chen, S., & Zeng, X. (2021). Does FinTech narrow the gender wage gap? Evidence from China. *China & World Economy*, *29*(4), 142-166. https://doi.org/10.1111/cwe.12382

Tay, L. Y., Tai, H. T., & Tan, G. S. (2022). Digital financial inclusion: A gateway to sustainable development. *Heliyon*, *8*(6).

Ozili, P. K. (2022). Digital financial inclusion. In *Big Data: A game changer for insurance industry* (pp. 229-238). Emerald Publishing Limited.

Sinha, G.K. (2023). DIGITAL FINANCIAL INCLUSION AND INCLUSIVE DEVELOPMENT OF INDIA. BSSS Journal Of Commerce.

Kirti Kapoor. (Volume. 9 Issue. 3, March - 2024) “Digital Financial Inclusion.” International Journal of Innovative Science and Research Technology (IJISRT), www.ijisrt.com. ISSN - 2456-2165 , PP :-74-80.:- https://doi.org/10.38124/ijisrt/IJISRT24MAR069

Banna, H., & Alam, M. R. (2021). Impact of digital financial inclusion on ASEAN banking stability: implications for the post-Covid-19 era. *Studies in Economics and Finance*, *38*(2), 504-523.

Mansour, H. (2022). How successful countries are in promoting digital transactions during COVID-19. *Journal of Economic Studies*, *49*(3), 435-452. https://doi.org/10.1108/JES-10-2020-0489

Dluhopolskyi, O., Pakhnenko, O., Lyeonov, S., Semenog, A., Artyukhova, N., Cholewa-Wiktor, M., & Jastrzębski, W. (2023). Digital financial inclusion: COVID-19 impacts and opportunities. *Sustainability*, *15*(3), 2383.

Malady, L. (2016). Consumer protection issues for digital financial services in emerging markets. *Banking & Finance Law Review*, *31*(2), 389-401.

World Bank, Protection, F. C. Good Practices for Financial Consumer Protection. 2012

World Bank, Good Practices for Financial Consumer Protection, 2017 https://www.mfw4a.org/sites/default/files/resources/Good_Practices_for_Financial_Consumer_Protection_2017_Edition.pdf

Di Castri, S., & Mestanza, J. M. (2023). Financial consumer protection standards and frameworks for digital financial services: Landscape report. *Available at SSRN 4631590*.

Waldman, A. E. (2018). *Privacy as trust: Information privacy for an information age*. Cambridge University Press.

Bongomin, G. O. C., & Ntayi, J. M. (2020). Mobile money adoption and usage and financial inclusion: mediating effect of digital consumer protection. *Digital Policy, Regulation and Governance*, *22*(3), 157-176.

AFI, 2021, Consumer Protection for Digital Financial Services: A Survey of the Policy Landscape, https://www.afi-global.org/publication/consumer-protection-for-digital-financial-services-a-survey-of-the-policy-landscape/

Garz, S., Giné, X., Karlan, D., Mazer, R., Sanford, C., & Zinman, J. (2021). Consumer protection for financial inclusion in low-and middle-income countries: Bridging regulator and academic perspectives. *Annual Review of Financial Economics*, *13*(1), 219-246.

Chalwe-Mulenga, Duflos, & Coetzee. (2022, February 1). The Evolution of the Nature and Scale of DFS Consumer Risks: A Review of Evidence. In Consultative Group to Assist the Poor (CGAP) https://www.cgap.org/research/reading-deck/evolution-of-nature-and-scale-of-dfs-consumer-risks-review-of-evidence

Musonda Domisa, S., Jonathan, P., & Soobramanien Teddy, Y. 2023, DIGITAL FINANCIAL SERVICE CONSUMER RISKS AND TRADE DYNAMICS: AN EXPLORATION OF WOMEN AND YOUTH OWNED MSMES IN ZAMBIA.

UNCTAD, "The Digital Economy Report" (2019)

"44 Cart Abandonment Rate Statistics – Cart & Checkout". Baymard Institute, 2019. https://baymard.com/lists/cart-abandonment-rate/

OECD (2016) Consumer Protection in E-commerce: OECD Recommendation.

Mendieta, E. N. (2020). Towards Tourists Protection in the Digital Age. *Innovation and the Transformation of Consumer Law: National and International Perspectives*, 53-65.

Keck, M., Gillani, S., Dermish, A., & Grossman, J. (2021). The Role of Consumer Protection in the Digital Economy.

CONSUMER VULNERABILITY IN THE DIGITAL AGE OECD DIGITAL ECONOMY PAPERS June 2023 No. 355 https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/06/consumer-vulnerability-in-the-digital-age_85b498eb/4d013cc5-en.pdf

Central Bank of Nigeria Consumer Protection Regulations (2016) https://www.cbn.gov.ng/out/2019/ccd/cbn%20consumer%20protection%20regulations.pdf

Bamodu, G. (2004). Information Communication Technology and E-commerce: Challenges and Opportunities for the Nigeria Legal System and the Judiciary''. *The Journal of Information, Law, and Technology (JILT)*, *2*, 1-24.

Ilobinso, I. K. (2018). Protecting Consumers in the Online Market from Unfair Contract Terms: The Nigerian Perspective.

Nigerian Financial Intelligence Unice, 2015, Cybercrimes (Prohibition and Prevention, etc) Act 2015, https://www.nfiu.gov.ng/images/Downloads/downloads/cybercrime.pdf

OKOLIE, E. (2023). LEGAL REGIME FOR E-BANKING CUSTOMER PROTECTION IN NIGERIA. *CHUKWUEMEKA ODUMEGWU OJUKWU UNIVERSITY JOURNAL OF PRIVATE AND PUBLIC LAW*, *5*(1).

Adekeye, I. (2024). *EXAMINING THE EFFECTIVENESS OF THE FEDERAL COMPETITION AND CONSUMER PROTECTION ACT OF 2018 IN PROTECTING ELECTRONIC CONSUMERS IN NIGERIA* (Doctoral dissertation, University of Portsmouth).

Oyaka, G. (2024). Consumer Protection in E-commerce: Legal Challenges and Prospects in Nigeria. *Available at SSRN*. https://dx.doi.org/10.2139/ssrn.4946731

AFI, 2024, Eswatini National Financial Inclusion Strategy (2023-2028) https://www.afi-global.org/publication/eswatini-national-financial-inclusion-strategy-2023-2028/

Grady, R. C. (2020). Eswatini-Market Conduct Diagnostic Review: Pricing Transparency and Disclosure, and Fairness of Fees and Charges for Savings and Transaction Accounts.

Kliber, A., Będowska-Sójka, B., Rutkowska, A., & Świerczyńska, K. (2021). Triggers and Obstacles to the Development of the FinTech Sector in Poland. *Risks*, *9*(2), 30. https://doi.org/10.3390/risks9020030

Bhat, J. R., AlQahtani, S. A., & Nekovee, M. (2023). FinTech enablers, use cases, and role of future internet of things. *Journal of King Saud University-Computer and Information Sciences*, *35*(1), 87-101. https://doi.org/10.1016/j.jksuci.2022.08.033

AlSuwaidi, R. A., & Mertzanis, C. (2024). Financial literacy and FinTech market growth around the world. *International Review of Financial Analysis*, *95*, 103481.

Magnoni, B., Roa, M. J., Burguess, E., & Quiros, R. (2020). Diagnóstico de la Eficiencia de la Protección a los Usuarios de Servicios Financieros en México. Sparkassenstiftung für internationale Kooperation y Nacional Monte de Piedad.

Potrich, A. C. G., Vieira, K. M., & Kirch, G. (2018). How well do women do when it comes to financial literacy? Proposition of an indicator and analysis of gender differences. Journal of Behavioral and Experimental Finance, 17, 28-41. https://doi.org/10.1016/j.jbef.2017.12.005

Keck, M., Gillani, S., Dermish, A., & Grossman, J. (2021). The Role of Consumer Protection in the Digital Economy.

Consumer International, 2017, Banking on the future: an exploration of FinTech and the consumer interest. https://www.consumersinternational.org/media/598744/banking-on-the-future-full-report.pdf

Beck, T., Demirguc-Kunt, A., & Peria, M. S. M. (2007). Reaching out: Access to and use of banking services across countries. *Journal of financial economics*, *85*(1), 234-266. https://doi.org/10.1016/j.jfineco.2006.07.002

Persaud, A., & Thaffe, W. (2023). The state of financial inclusion research on developing countries. *Transnational Corporations Review*, *15*(4), 22-34. https://doi.org/10.1016/j.tncr.2023.08.002

Tram, T. X. H., Lai, T. D., & Nguyen, T. T. H. (2023). Constructing a composite financial inclusion index for developing economies. *The Quarterly Review of economics and finance*, *87*, 257-265. https://doi.org/10.1016/j.qref.2021.01.003

Ahmad, A. H., Green, C., & Jiang, F. (2020). Mobile money, financial inclusion and development: A review with reference to African experience. *Journal of economic surveys*, *34*(4), 753-792. https://doi.org/10.1111/joes.12372

Dinh, V., Le, D. V., Duong, D., & Pham, D. (2023). Determinants affecting digital financial consumer protection: Evidence from 135 countries. *The Journal of Economic Asymmetries*, *27*, e00301. https://doi.org/10.1016/j.jeca.2023.e00301

Colangelo, G., & Maggiolino, M. (2019). From fragile to smart consumers: Shifting paradigm for the digital era. *Computer Law & Security Review*, *35*(2), 173-181. https://doi.org/10.1016/j.clsr.2018.12.004

Spivak, I., Mihus, I., & Greben, S. (2024). Financial Literacy and Government Policies: An International Study. *Public Administration and Law Review*, (2 (18)), 21-33. https://doi.org/10.36690/2674-5216-2024-2-21-33

Lusardi, A., & Messy, F. A. (2023). The importance of financial literacy and its impact on financial wellbeing. *Journal of Financial Literacy and Wellbeing*, *1*(1), 1-11. https://doi.org/10.1017/flw.2023.8