

## Financial Inclusion in Somalia: A Demand and Supply Side Dynamics

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### ABSTRACT

Financial inclusion is critical to enhancing further economic growth and shrinking the poverty gap, especially in fragile economies similar to Somalia. Regardless, there remains a lack of empirical studies detailing the existing demand and supply factors of financial inclusion in Somalia. This study aims to explore the financial inclusion's key determinants on individual and institutional factors in Somalia. The study employed a cross-sectional research design with random sampling to improve representation and mitigate selection bias. The results indicate that the strongest positive predictors of financial inclusion include income level, trust in the financial service provider, usage, and financial literacy. Meanwhile, the number of bank branches relate positively but insignificantly, highlighting the increasing relevance of mobile and online financial services. The study emphasizes improving financial literacy and public confidence in financial institutions while shifting the focus in Somalia from antiquated banking models to new digital infrastructure.

**Keywords:** Financial Inclusion, Urban Economics, Financial Literacy, Service Usage, Somalia, Access to Finance

**JEL Classification:** G21, O16, D14, E44.

### INTRODUCTION

Financial inclusion refers to the provision of affordable and secure financial services to individuals. It is widely accepted that this approach aids development and reduces income inequality (World Bank, 2018). Several scholars exemplify the role that financial inclusion plays in the improvement of an individual's welfare and poverty alleviation and provide further explanations of the aspect of inequality (Bruhn & Love, 2014; Aterido et al., 2013; Dupas & Robinson, 2013). In particular, Kapoor (2014) and Sinha (2014) advised improving the provision and reducing the pricing of financial products and services to help marginalized and low-income populations access essential services.

This financial inclusion term was first used as a contribution towards inclusive financial systems by Carbo et al. (2005), Conroy (2005), and Leyshon & Thrift (1995) and added by Mohan (2006), focusing on removing the barriers to obtaining formal financial services. Access to credit, deposits, insurance, and payment are some of the most basic parts of these issues. To make them all work, institutional barriers to an equity policy framework need to be taken down, the right infrastructure needs to be built, the right regulatory environment needs to be created, and policies need to be put in place to level financial services. Financial inclusion involves more than just access to banking services, as in the UK and India; it also includes the provision of affordable credit and tailored financial services for guidance. Scholars argue that we must pay attention to the function of financial systems in stimulating inclusive economic growth in a society.

Sinclair (2013) pointed out that people with low income in the UK struggle to access the services offered by banks. Unemployment, as well as unstable income, contributes to greater financial exclusion in Europe, according to Corrado and Corrado (2015). Financial exclusion is a problem in the UK for people without bank accounts, according to Mitton (2008). These insights from various regions pinpoint the worldwide gaps that exist for financial inclusion, which need to be considered for structured economic development.

The African continent has received attention for being financially inclusive, with research documents detailing several other impacts of accessibility to finance and their inclusion. Beck et al. (2014) identified the role of emerging market foreign banks in finance access as positive, unlike their European counterparts and US banks, who had little impact. Zins and Weill (2016) emphasise that financial inclusion is also a demographic issue, as males and wealthier, more educated older individuals are included more. Allen et al. (2014) have, to some extent, countered structural deficiencies through innovative financial services. The inclusion of the internet and mobile phones in finances is stressed by Evans (2018), which also increases financial inclusion. On the contrary, Chikalipah (2017) has reported that illiteracy remains the dominant barrier to financial inclusion in Sub-Saharan Africa.

Economic inclusion of the urban poor is an important enabling factor of financial inclusion in Somalia, given the country's vulnerable socioeconomic environment and dynamic patterns of urban displacement. As pointed out in the social safety nets study for the Banadir region, some sustainable urban integration approaches, especially those linked with social support programs, can substantially improve households' social welfare and poverty levels (Samatar, 2025). Yet, without some form of economy linkages through livelihoods, skills education, and digital financial services, there is a danger of fostering dependency instead of building resilience. This is critical in urban areas of concern, where internally displaced persons (IDPs) and other marginalized populations face the highest poverty levels. Financial inclusion is defined as removing barriers for accessing financial services. Urban economic inclusion combines both demand and supply constraints: on the demand side, trust and financial literacy levels; and on the supply side, access to digital, scalable micro-banking as opposed to traditional banking infrastructure. Therefore, integrating social support interventions through financial inclusion mechanisms aligned with urban social protection frameworks helps to ensure that vulnerable populations are no longer solely aid recipients but active participants in the financial systems. This synergy is critical for the development of Somalia and the sustainable reduction of poverty in the country. (World Bank, 2022; Samatar, 2025).

The exceptional usage of mobile money in the Somali context greatly portrays its influence, as remarked in the work of Mohamed and Nor (2021). They highlight the role of EVC-PLUS in increasing financial service accessibility and use, resulting in an inclusive financial system. Moreover, the study conducted by Abdi et al. (2022) highlights the importance of electronic banking and its components, such as ATMs and mobile banking, in fostering financial inclusion within the commercial banking sphere in Somalia. This supports the claim that technology acts as a notable facilitator of financial access. In addition, the research of Mohamud and Mohamed (2023) brings to light the inclusion of women in entrepreneurial roles and the financial services ecosystem through a gender lens, particularly on supporting women's entrepreneurship. Collectively, these findings illustrate the complex factors that influence financial inclusion from the Somali perspective.

There remains a significant gap between the demand and supply of financial services in Somalia, despite the efforts that are being made for financial inclusion. Limited access to formal financial institutions, low levels of financial literacy, and underdeveloped physical infrastructure further exacerbate this gap. A lot of research has been done on other important issues related to financial inclusion, like gender, digital infrastructure, and policy. However, there doesn't seem to be a framework that looks at how the supply and demand sides interact, especially when it comes to Somalia.

The lack of knowledge regarding financial inclusion delays the creation of sound policies and interventions that address the specific problems faced by different segments of the population, thereby deepening the inequality gap and hindering more advanced developmental objectives. Consequently, there is an urgent need to analyse the interplay between demand and supply factors while addressing the gap in Somalia's financial inclusion ecosystem. This study intends to fill this gap through a comprehensive analysis of financial inclusion that encompasses more than just mobile money services provided by innovative financial service providers, traditional banks, microfinance institutions, and electronic banking. Through this analysis, the study seeks to contribute to the strategies aimed at sustainable economic development and poverty alleviation in Somalia and, thus, advance financial inclusion in the region.

## LITERATURE REVIEW

This literature review analyses the intricate interplay of financial inclusion factors from both the demand and supply sides across different areas and contexts. Exploring the inclusion and access gaps regarding potential social and economic contributions provides an understanding of demand-side factors of financial inclusion. As discussed in the various studies reviewed, the demand for financial services is influenced by income levels, literacy rates, and

the availability of digital finance platforms. Examining the findings from the different studied regions aids in understanding the underlying factors that drive the need for financial services around the world.

Arnold et al. (2019) analysed the social changes targeted toward women and marginalised groups, noting the lack of inclusion and the inclusion gaps that require women and marginalised groups to be integrated into the economy through the transformation of social norms. Bhanot et al. (2012) capture the profound extent to which income level, understanding of self-help groups (SHGs), and education have affected financial inclusion in the self-marginalised areas of Assam and Meghalaya in India. As pointed out by Akileng et al. (2018), the rate of financial literacy and innovation in inclusiveness towards finance determines finances at the household level in Uganda. Additionally, Mohamud and Mohamed (2023) emphasised the extent to which age and education determine the level of financing accessible to women entrepreneurs, thereby highlighting the importance of education regarding the banking services available. Also, Abel et al. (2018) reported that financial inclusion in Zimbabwe is influenced by one's age, level of education, literacy in finance, and accessibility to the internet. In India, Nandru & Rental (2020) state that the ease of physical access to financial services positively contributes to the economic standing of marginalised groups.

Ozili (2018) focuses on the importance of digital finance by describing its potential to improve financial inclusion and stability, especially in developing economies. Supporting the effectiveness of digital finance, Abor et al. (2018) reveal that mobile phone usage and financial inclusivity help reduce household poverty in Ghana.

Furthermore, Park & Mercado (2018) paid particular attention to financial inclusion, studying it at a global level and focusing on Asia's developing regions, while noting the impact of macroeconomics. Concerning barriers in sub-Saharan Africa, Chikalipah (2017) identifies adult illiteracy as one of the major hindrances to financial inclusion and advocates for the role of literacy in inclusionary frameworks. In India, Mukhopadhyay (2016) notes the enormous variation in financial inclusion across states and the lack of policies aimed at the actual use of banking services. Moving forward to Vietnam, Nguyen & Luong (2023) recognised that gender alongside education, income, and trust as important determinants of financial inclusion. Tay et al. (2022) analysed the phenomenon concerning the upsurge in the usage of digital financial services in developing countries during the COVID-19 pandemic with a specific focus on existing cap inequality or a consumptive lens. Grohmann et al. (2018) examine the correlation between financial literacy and financial inclusion in various countries. They show that both of these ideas are important for being able to get money.

Studying the supply-side drivers of financial inclusion is critical to understanding the aspects of the provision and consumption of financial services. This review integrates various studies and explains how banking infrastructure, technological advancements, and legislative activities alter the supply of financial services. Examination of supply-side determinants in various regions broadens our understanding of the diversity of factors that determine the provision of inclusive financial services.

Barik & Sharma (2019) study the post-demonetization phase in India, which shows that there has been considerable advancement in financial inclusion, but there remain disparities across demographic groups in the use of digital payments. At the same time, Chakravarty & Pal (2013) propose an axiomatic measure of financial inclusion and point out the need for bank branches and credit in the Indian states as an important feature. Also, Eldomiaty et al. (2020) study the role of World Governance Indicators' influence on financial inclusion worldwide, underlining the importance of governance. Furthermore, Ghosh (2020) analyses how distance affects financial inclusion in India, observing that distance predominantly influences the use of bank accounts. At the same time, Kumar Nitin (2013) studies the financial inclusion determinants in India and finds that branch networks have a strong positive effect.

In the same fashion, Sarma and Pais (2011) pinpoint several socio-economic aspects affecting the degree of financial inclusiveness in different parts of the world, like human capital development, earnings, education, and even regional development. Additionally, Ozili (2021) provides an examination of the global financial inclusion phenomenon by advancing some emerging issues and controversies in the policy debates. Moving to the Somali situation, Mohamed and Nor (2021) study the effect of mobile money services on financial inclusion in Somalia and observe a positive correlation between EVC-PLUS and financial inclusion. Following that, Abdi et al. (2022) study the effect of ATMs and mobile banking services on financial inclusion in Somalia and focus on electronic banking. In addition, Burns (2018) looks into the effects of particular forms of regulation on the development of more inclusive financial systems and finds that less government control is beneficial to their growth. Coming back to Asia, et al. (2021) advance their studies on the financial inclusiveness of the country and its relation to financial markets and find that access to banking services greatly improves the strength and resilience of banks. Moving towards the southern part of Sahara Africa, Ahmad et al. (2020) analyze how mobile money and economic growth in a country are related and note that it helps enhance the level of participation in economic activities by a larger segment of the society.

Taking everything into account, Feghali et al. (2021) evaluate the neutral to positive effect payments and savings accounts have on stability in financial inclusion and financial stability. To close the gaps in Islamic financial

inclusion in Indonesia, Ali et al. (2020) reveal the relevant determinants of Islamic financial inclusion: supply and demand.

Based on both supply-side and demand-side analysis, Barrik & Lenka (2023) show that literacy and per capita state GDP enhance financial inclusion in the Indian states, whereas unemployment rate and rural population percentage work to decrease it. Also, some of the other factors, like the length of roads, the supply of electricity, expenditure on social services, and the capital grant, were found to significantly and positively contribute to the financial inclusion of the Indian states in the post-liberalization period. For the systematic review, Kim et al. (2018) point out a clear emphasis on institutional and individual preconditions for embracing mobile financial services. In addition, they point out the lack of exploration of the supply-demand balance, along with social consequences, as well as the dearth of variety in research design throughout the analysed studies.

On the other hand, Singh & Stakic (2021) use panel co-integration and regression techniques to prove that in the SAARC countries, as financial inclusion rises, economic growth increases. Similarly, Ahmad et al. (2021) show that, using fixed effects for the regression analysis, greater expenditures on human capital and greater digital financial inclusion are associated with higher growth in the provincial economy of Chinese provinces.

Aziz and Naima (2021) look into the drivers and barriers to digital financial inclusion. They make note of the overly simplistic boundaries of the frameworks provided and the supply-oriented financial infrastructures regarded in understanding the digital financial inclusion ecosystem. Turning to a more comprehensive view of emerging markets, Van et al. (2021) analyse the link between financial inclusion and economic growth in a global context. Their results suggest a positive link exists, especially in low-income countries with lower levels of financial inclusion. Additionally, Nur (2022) examined how the banking industry in Somalia is affected by digital banking services. The study used a descriptive research design and stratified random sampling. The study found that the independent variables accounted for 86% of the variance. Furthermore, there is a noted strong positive relationship between the distribution of digital banking services and the performance of commercial banks in Somalia.

Owen & Pereira (2018) concentrate on the integration of the banking system and its impact on financial inclusion across countries. They demonstrate that a more concentrated banking industry positively translates to greater access to deposit accounts and loans, especially in less restrictive economies. Lastly, Allen et al. (2014) look into the differences in financial development and inclusion within African countries compared to other developing economies, focusing on the impact of mobile banking innovations in overcoming infrastructure barriers and enhancing financial access in Africa.

The analysis of financial inclusion has not attended to the full range of social, economic, political, and technological complexities that create gaps that need to be filled for policy inclusion purposes. There has been progress, but social norms continue to impede gendered financial inclusion, which makes the need for bespoke plans all the more important. Digital finance can fulfill its promises, but inclusive policies must address gaps, particularly in remote regions. Also, policymakers still need to understand the effects of banking policies on financial inclusion and geographical accessibility for further policymaking consideration. The limited scope of availability of data and methods makes it impossible to broaden the focus; hence, it is clear that the approach to financial inclusion policies needs a shift. We also need to pay more attention to finding out how governance indicators affect policy frameworks for financial inclusion. This will help us make policies and work towards universal financial inclusion.

## METHODOLOGY

### Theoretical Framework

This research is fundamentally based on divergent existing theories concerning financial technology adoption and inclusion. Ajzen's (1991) theory of planned behavior (TPB) explains the role of attitudes, subjective norms, and control in intention and behavior formation. Bandura's (1986) social-cognitive theory deals with the social and cognitive aspects that set out a behaviour. Barney's (1991) resource-based approach highlights the importance of a firm's resources for competitiveness. In the context of financial inclusion being accepted, Davis's (1989) technology acceptance model (TAM) claimed that perceived usefulness and ease of use are fundamental factors in accepting new information technologies. Moore and Benbasat (1991) developed instruments to evaluate their perceptions of easier acceptance of innovative technology and later extended TAM. The role of the Demirgüç-Kunt et al. (2018) theory is to show the lack of attention paid to the effect of the Fintech Revolution on society's financial inclusion. North (1990) offers an economic perspective of institutions that aids in understanding economic development, which is essential. Rogers's (2003) theory of the diffusion of innovations simplifies the understanding of the spread of technology in finance. Finally, Venkatesh et al. (2003) introduce the unified theory of acceptance and use of technology (UTAUT), which aims to integrate several models of how people employ information technologies. This study examines not only the social impacts but also the factors that enable them to

occur. These theories assist in analysing the factors that are likely to influence financial technology adoption in Somalia.

### Structural Model of Financial Inclusion

Figure 1 presents the structural equation model and illustrates the various factors that contribute to financial inclusion by blending both structural and behavioural elements. Important indicators for the model were income level, bank branch accessibility, the actual usage of financial services, and financial literacy coupled with trust in service providers. All constructs exhibit a direct path relationship towards financial inclusion, which is confirmed by the standardized path coefficients.

This model captures not only the direct impacts of each determinant but also highlights the need to examine financial inclusion considering both structural elements like bank and finance access and trust and literacy as attitudinal variables. Incorporating such behavioural dimensions enhances the explanation's depth, demonstrating that trust in institutions and financial literacy may outweigh the impact of purely economic measures.

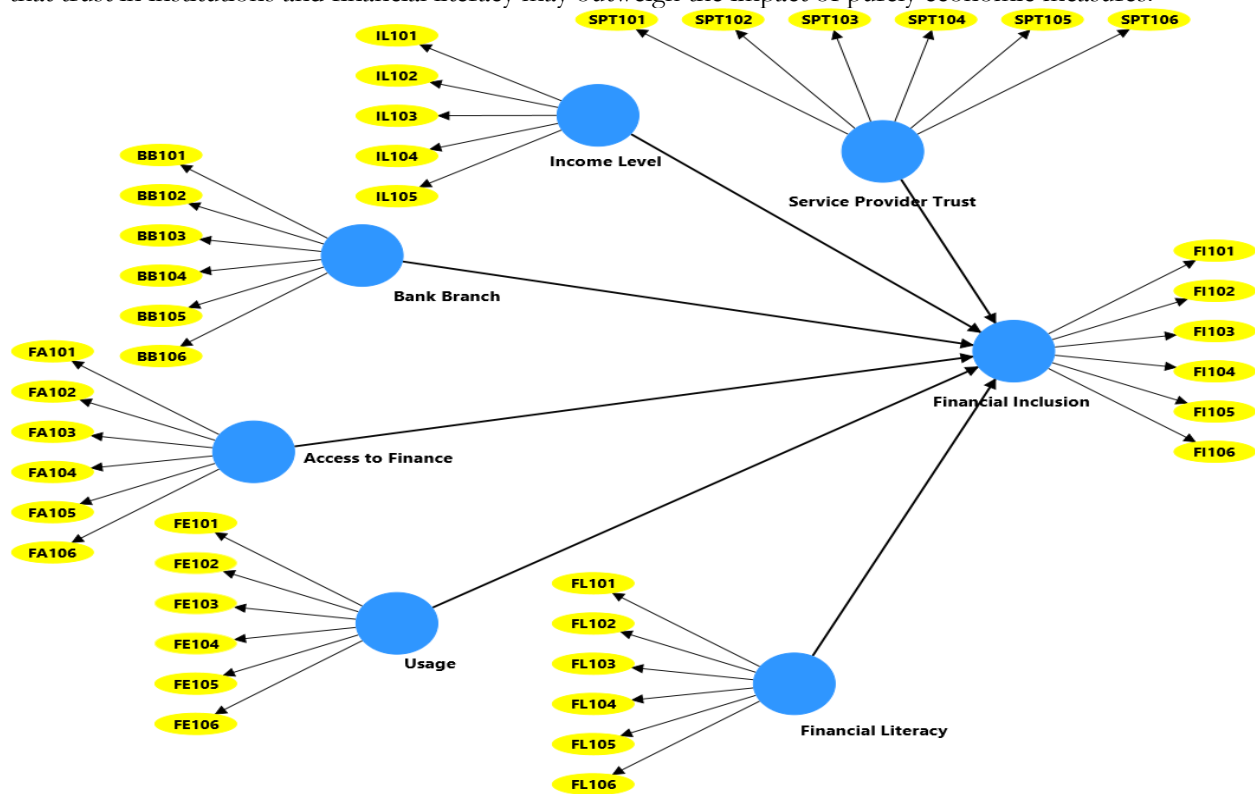


Figure 1 Structural Model of Determinants of Financial Inclusion

### Ethical Considerations

This research was conducted within ethical boundaries and gained approval from the ethics review boards of Tropical Consult. For each respondent, the reason and range of the research was explained to, and voluntary informed consent was acquired. In attempt to safeguard the confidentiality of the participants, respondents were stripped of identifying markers, and all collecting of data was done in a manner that maintained confidentiality and integrity throughout the entire research process.

### Model Specification

This research employs cross-sectional data and applies the Ordinary Least Squares (OLS) regression technique to examine the determinants of financial inclusion (FI). The model assumes that some of the included variables, such as income level, financial literacy, utilization of financial services, trust towards service providers, access to bank branches, and access to allied services, affect Financial Inclusion.

$$FI = f(IL, FL, SPT, U, BB, AF) \tag{1}$$

$$FI_i = \beta_0 + \beta_1 IL_i + \beta_2 FL_i + \beta_3 SPT_i + \beta_4 U_i + \beta_5 BB_i + \beta_6 AF_i + \mu_i \tag{2}$$

Where: FI is financial inclusion the dependent variable, IL is the income level of individuals, FL is the financial literacy level of the individual, SPT service provider trust, and U is the usage of service. BB is the bank branch and AF is the access to finance.

Similarly,  $\mu$  is error term,  $\beta_0$  is Intercept term,  $\beta_1, \beta_2$  to  $\beta_6$  is Coefficients to be estimated

The preceding model presumes that financial inclusion depends on these variables and that the OLS regression will determine the association between financial inclusion and each of the predictors. The residual captures other possible influences on financial inclusion which remain unmeasured.

### Variables Definitions and Notations

**Table 1 Variable Definitions**

Nature of the Variable	Variable	Definition	Notation	Expected Relation
DV	Financial Inclusion	Ensuring access to affordable financial services for all	FI	
IV	Income Level	The earnings of an individual or household affecting financial access	IL	Negative (+)
IV	Financial Literacy	Knowledge and skills to make informed financial decisions	FL	Positive (+/-)
IV	Usage	The extent of active use of financial products and services	U	Negative (+)
IV	Service Provider Trust	Customer confidence in financial institutions' reliability	SPT	Positive (+/-)
IV	Bank Branch	A physical location offering banking services	BB	Positive (+/-)
IV	Access to Finance	The ability to obtain financial services and credit	AF	Positive (+)

### Research Design and Data Collection Method

To collect primary data, the study used a structured survey and semi-structured self-administered questionnaires directed to a sample population of individuals, financial institutions, policymakers, and industry experts from different areas of Somalia. The design of the questionnaires was based on the literature to include variables such as Income Level, Financial Literacy, Financial Service Usage, Trust in Service Providers, Bank Branch Accessibility, and Access to Finance, which were potential determinants of financial inclusion. Additionally, the data captures the demographic and socio-economic characteristics of respondents.

For data collection, a cross-sectional design was employed, and random sampling was used to maximize representation while reducing selection bias. The study applied the KoboCollect software for the administration of the survey forms, which increased the precision of the data collection process. To enable the quantification of respondent financial inclusion, the survey included a Likert scale, further enhancing the ability to quantify the factors. The sample size was computed using the Z-score method, which ensures the accuracy and representative coverage needed for appropriate statistical analysis analyses.

This method consists of determining a desirable confidence level, margin of error, and its associated z score to calculate the sample size with the following formula:

$$n = \frac{Z^2 \times p \times (1 - p)}{e^2}$$

Where  $n$  is the required sample size and  $Z$  is Z – score (2.05 for 96% confidence level)

$p$  is Estimated proportion (to be 0.5 for maximum variability) and  $e$  is Margin of error (5%)

Employing these parameters, the study calculates an ideal sample size that guarantees statistical accuracy and credibility when examining financial inclusion in Somalia.

$$n = \frac{(2.05)^2 \times 0.5 \times (1 - 0.5)}{(0.05)^2}$$

$$n = \frac{4.2025 \times 0.5 \times 0.5}{0.0025}$$

$$n = \frac{1.050625}{0.0025}$$

$$n = 420$$

In light of these figures, the computed sample size for the study is 420 respondents. A convenience sampling method was employed to access these respondents most efficiently.

### Data Estimation Method

To describe the central tendency and distributions of the important variables, descriptive statistics were computed for the central key variables. To test validity and reliability, Cronbach's Alpha, Kaiser-Meyer-Olkin Measure of sampling adequacy, and test of variance inflation factors were employed. Using Pearson correlation analysis, the study examines the correlation between the study variables. The ordinary least squares (OLS) regression method is used to find out how income level, financial literacy, usage, service provider trust, bank branch availability, and access to finance affect financial inclusion. This method enables us to determine financial inclusion concerning socio-economic, technological, and institutional variables in a non-biased and efficient manner. The study used normality tests, histograms, Kolmogorov-Smirnov (KS), and Shapiro-Wilk test to evaluate the residual distribution. The study completed all the analyses using SPSS v28 and SmartPls.

## EMPIRICAL RESULTS

### Demographic Characteristics

Table 2 presents the breakdown of gender and reveals that the sample included 62% males and 38% females. Males tend to engage with mobile money and financial technologies compared to females. In terms of age, 50% are 18-30 years old, while 47% are between 31-40 years old, and that indicates that the younger the more mobile money is being used. Only 3% fall under the 41-50-year-old category, and that suggests there is a problem for older users. In terms of marital status, while 53% are married, this suggests higher usage of financial services among married persons. 30% hold a university degree, and 27% have a vocational qualification; this shows much potential for accepting digital payments. In addition, 74% have been using mobile money for over three years, with 37% using it for three to six years and 37% for six to ten years. This illustrates good, steady usage.

**Table 2. Demographic Characteristics Results**

<b>Gender</b>	<i>f</i>	<i>Percent</i>
Male	262	62%
Female	158	38%
<b>Age group</b>	<i>f</i>	<i>Percent</i>
18-30	210	50%
31-40	196	47%
41-50	14	3%
<b>Marital status</b>	<i>f</i>	<i>Percent</i>
Single	184	44%
Married	222	53%
Divorced	14	3%
<b>Level of education</b>	<i>f</i>	<i>Percent</i>
No formal education	50	12%
Primary education	64	15%
Secondary education	66	16%
Vocational/technical training	114	27%
University degree or higher	126	30%
<b>Years of experience with mobile money</b>	<i>f</i>	<i>Percent</i>
< 1 year	24	6%
1-3 years	60	14%
3-6 years	155	37%
6-10 years	154	37%
10-20 years	14	3%
20 years and above	13	3%

### Descriptive Statistics of Financial Inclusion Demand-Side Variable

Table 3 presents the descriptive analysis of the demand side, outlining the important details regarding financial inclusion, which comprises household income, financial service usage, literacy, trust in institutions, and challenges. The average household income remains moderate (Mean = 3.34, SD = 1.496), however, a considerable number of respondents deem it insufficient to cover the necessities (Mean = 3.10, SD = 1.073). There is clear evidence of economic volatility in income stability (Mean = 2.42, SD = 0.660) and financial strain (Mean = 3.02, SD = 1.393).

The formal financial service usage remains high (Mean = 4.36, SD = 1.009) and the confidence in digital services is also noteworthy as it stands at (Mean = 3.80, SD = 0.955). It is worth noting too, that the respondents display a high interest towards financial literacy programs (Mean = 4.28, SD = 0.831).

The usage of formal financial services is new (Mean = 1.55, SD = 0.852), with issues in accessibility (Mean = 3.32, SD = 0.969) and a moderate level of satisfaction (Mean = 3.34, SD = 0.982). Trust in the institutions is moderate (Mean = 3.73, SD = 1.048), while respondents expressed worry regarding accessibility (Mean = 2.93, SD = 1.475) along with safety (Mean = 3.37, SD = 0.835). These results call for appropriately designed strategies that will specifically aim at increasing the level of financial inclusiveness by improving accessibility, trust, and financial literacy.

**Table 3. Descriptive Statistics of Financial Inclusion Demand-Side Variable**

Code	Structured Questions	$\bar{X}$	$\sigma$
<b>Income Level</b>			
IL101	Our household income is stable and meets our financial needs.	3.34	1.496
IL102	Our income is sufficient for basic expenses	3.10	1.073
IL103	We often struggle with household costs.	3.02	1.393
IL104	Our income has improved this year.	2.42	0.660
IL105	We manage our finances confidently.	3.47	1.319
IL106	Access to suitable financial services is important.	4.19	0.810
<b>Financial Literacy</b>			
FL101	We understand basic financial concepts well.	3.91	.913
FL102	We have attended financial literacy training	3.38	1.069
FL103	We frequently use formal financial services	4.36	1.009
FL104	We are confident in using digital finance.	3.80	.955
FL105	Financial literacy is key to informed decisions	4.02	.745
FL106	We are interested in financial literacy programs.	4.28	.831
<b>Usage</b>			
FE101	How long have you used formal financial services?	1.55	.852
FE102	Have you faced challenges accessing financial services?	3.32	.969
FE103	Are you satisfied with the quality of your financial services?	3.34	.982
FE104	Have you experienced negative incidents with financial services?	2.62	.988
FE105	How often do you face accessibility issues with financial services?	2.93	1.475
FE106	How likely are you to recommend the financial services you use?	3.84	.926
<b>Service Providers Trust</b>			
SPT101	How much do you trust formal financial institutions (e.g., banks, microfinance institutions)?	3.73	1.048
SPT102	What factors influence your decision to trust a financial service provider?	2.58	.818
SPT103	Have you ever experienced fraudulent activities with financial services?	1.93	.742
SPT104	How confident are you in the security of your financial transactions?	3.37	.835
SPT105	How important is it to trust the financial services you use?	3.86	.822
SPT106	How can financial service providers improve trust among their customers?	2.16	.749

### Descriptive Statistics of Financial Inclusion Supply-Side Variable

Table 4 displays the descriptive statistics of provision side elements of financial inclusion. The average bank branch distribution is low at 3.38 (SD = 1.396), but there are imbalances within regions. The average consideration of new branch location criteria is moderate at 3.26 (SD = 1.154). Access in some remote areas is still problematic, as indicated by a mean of 2.98 (SD = 1.363). The effectiveness of the network is poorly evaluated with an average of 2.62 (SD = 1.317). Over five years, branch growth averaged 3.19 (SD = 0.965). There are still challenges to expansion as indicated by a mean of 3.12 (SD = 0.996).

Averages indicate that financial accessibility initiatives have had a moderate impact at 3.19 (SD = 0.952). Access in remote and conflicted areas continues to be problematic at 2.82 (SD = 1.167). There is poor stakeholder collaboration at 2.83 (SD = 1.249). There is steady growth in the customer base which had a mean of 3.53 (SD =

0.649). The availability of ITMs has an average of 3.44 (SD = 1.264). Loan provision to the private sector is considerable at 3.38 (SD = 1.396).

**Table 4. Descriptive Statistics of Financial Inclusion Supply-Side Variable**

Code	Structured Questions	$\bar{X}$	$\sigma$
<b>Bank Branches</b>			
BB101	How does the distribution of your bank branches align with the population distribution in Somalia?	3.38	1.396
BB102	What factors determine the location of new bank branches in Somalia?	3.26	1.154
BB103	How does your institution ensure that customers in remote areas have access to banking services?	2.98	1.363
BB104	How does your institution assess the effectiveness of its bank branch network?	2.62	1.317
BB105	How has the number of bank branches changed over the past five years?	3.19	.965
BB106	What challenges does your institution face in expanding its bank branch network in Somalia?	3.12	.996
<b>Financial Accessibilities</b>			
FA101	What initiatives has your institution undertaken to improve the accessibility of financial services in Somalia?	3.19	.952
FA102	How does your institution address the challenges of providing financial services in remote or conflict-affected areas?	2.82	1.167
FA103	How does your institution collaborate with other stakeholders to enhance the accessibility of financial services?	2.83	1.249
FA104	How many active customers does your institution currently serve?	3.53	.649
FA105	How many Interactive Teller Machines (ITMs) does your institution currently operate?	3.44	1.264
FA106	Does your institution provide loans to the private sector?	3.38	1.396

### Descriptive Statistics of Financial Inclusion Variable

Table 5 displays the descriptive statistics of the variables of financial inclusion. The mean standing at 3.57 (SD = 0.995) indicates that participants have access to formal financial services, although there may be rural constraints. A formal system dependence is also indicated by a mean of 4.27 (SD = 0.992) which depicts high engagement with financial services. The low standard deviation reflects uniformity in the financial practices of the respondents.

Financial transactions represent a mix of cash, mobile and banking services, which is captured by the mean of 2.50 (SD = 0.850). Participants are moderately able to access bank branches with a mean of 3.27 (SD = 1.385) although there are gaps along certain regions. The use of ATMs is preferred less due to the limitation of their availability and greater use of mobile banking, setting the mean at 2.40 (SD = 1.372).

Moderate use of mobile banking captures its emerging significance in financial transactions, setting the mean at 2.99 (SD = 0.987) The former has a greater emphasis as the results show formal financial services in aid of the growing use of mobile banking. Financial service providers should focus on improving the availability of mobile banking and the provision of ATM facilities.

**Table 5. Descriptive Statistics of Financial Inclusion Variable**

Code	Structured Questions	$\bar{X}$	$\sigma$
<b>Financial Inclusion</b>			
FI101	How easily can you access formal financial services in your area?	3.57	.995
FI102	How frequently do you use formal financial services (e.g., banks, mobile money) for your financial transactions?	4.27	.992
FI103	What is your primary mode of making financial transactions?	2.50	.850
FI104	How easily accessible is the nearest bank branch from your residence?	3.27	1.385
FI105	How frequently do you use ATM services?	2.40	1.372
FI106	How often do you use mobile banking services?	2.99	.987

### Reliability and Validity Test

Table 6 presents Cronbach's Alpha reliability results confirming that the internal consistency among the 47 survey items is good, as indicated by the value of 0.738 for Cronbach's Alpha, while its value based on standardized items is even higher, at 0.753, suggesting that the item-specific variability did not adversely impact the reliability of the scale.

**Table 6. Reliability Statistics Results**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.738	.753	47

Table 7 presents the results of the KMO Bartlett's test of Sphericity confirming that the KMO value of 0.665 is regarded as acceptable for factor analysis. A KMO value over 0.6 implies that the sample size along with the inter-correlations of the variables justifies conducting factor analysis. It indicates that there is sufficient sampling adequacy to proceed with factor analysis. Bartlett's test of Sphericity with a Chi-Square of 992.283 and 21 degrees of freedom, had a p-value of  $< 0.001$ . The result is significant ( $p < 0.05$ ), meaning the correlation matrix is not an identity matrix, which confirms important relationships between the variables exist. This strengthens the rationale for performing factor analysis since the test implies meaningful relationships within the data are present.

**Table 7. KMO Bartlett's Test of Sphericity Results**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.665
Bartlett's Test of Sphericity	Approx. Chi-Square	992.283
	df	21
	Sig.	<.001

### Conceptual Structural Model Measurements

Figure 2 shows the conceptual structural model indicating a higher income levels have a modest relationship with improved financial inclusion, as shown by the small positive path coefficient (0.106). Among the income indicators, IL102 (0.742) and IL105 (0.539) contribute the most strongly to the construct. While access to bank branches has strong indicator loadings, it has a minimal and slightly negative relationship with financial inclusion (-0.028). In particular, BB104 and BB105 (0.880) show high contribution, which suggests that physical presence alone does not drive inclusion.

Perceived access to finance has a weak negative direct effect on financial inclusion (-0.044), which adds to the complexity of the issue. Even though FA102 (0.667) and FA103 (0.709) help improve financial inclusion, the negative contributions from FA105 (-0.680) and FA106 (-0.637) might point to bigger issues or mental blocks in accessing finance. Increased usage of financial services has a moderate positive impact on financial inclusion (0.205). The document highlights that FE103 (0.677) and FE106 (0.577) show positive results, meaning that regular involvement helps with inclusion, but concerning signs like FE101 (-0.692) indicate that usage patterns are inconsistent.

Financial literacy has the strongest positive effect on financial inclusion (0.363), demonstrating its fundamental importance. High factor loadings from FL101 and FL102 confirm that financial knowledge promotes participation in the formal financial system greatly. Financial knowledge affects participation in the formal financial system significantly, as confirmed by FL101 (0.796) and FL102 (0.652).

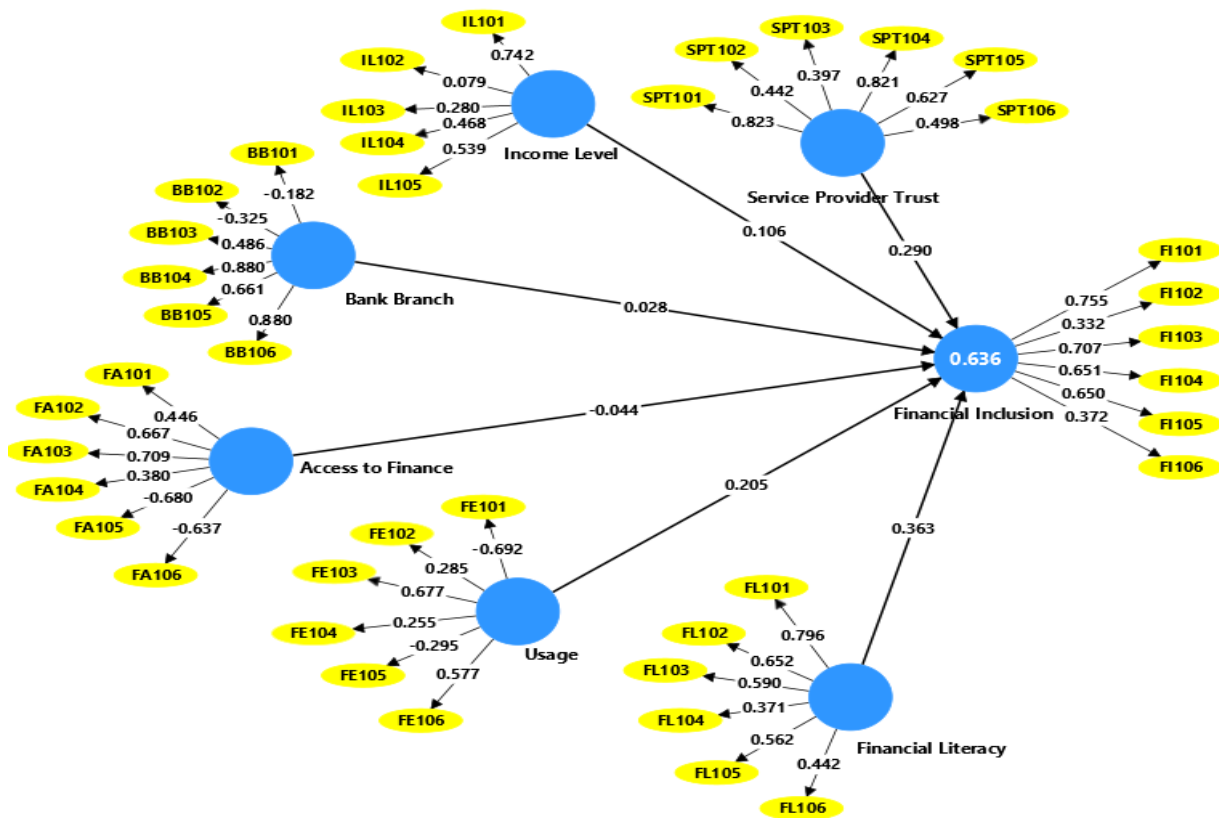


Figure 2 Structural Equation Model Showing Determinants of Financial Inclusion

Collinearity Statistics

Table 8 displays the results of the variance inflation factor (VIF) test result and explains that multicollinearity is not a problem in this model. Particularly, FL (1.719), IL (1.259), SPT (1.367), and U (1.170) have very low VIF and that means there is little multicollinearity. BB (3.029) and AF (3.021) have some multicollinearity, but those numbers are still reasonable. The VIF associated with the constant term (134.969) is noted as normal. All in all, the VIF examination affirms that multicollinearity will not greatly reduce the dependability of the model.

Table 8. Variance Inflation Factor Result

Variable	Coefficient Variance	Uncentered VIF	Centred VIF
FL	0.004	94.748	1.719
IL	0.003	53.577	1.259
SPT	0.003	43.816	1.367
U	0.005	75.108	1.170
BB	0.004	76.582	3.026
AF	0.004	70.177	3.021
C	2.768	134.967	NA

Correlation Test

Table 9 suggests that FI has a positive correlation with FL (0.6177), which implies that people who have a better understanding of finances are more likely to be active participants in the financial system. In the same way, IL has a positive correlation with FI (0.3816) and FL (0.4377), which implies that wealthier people are more likely to understand the financial services being offered and have them offered to them. A person's trust has a positive impact on their participation in the financial system which is demonstrated through the positive correlation found between SPT and FI (0.4998). The correlation that exists between BB and FI (0.3027) is weak, suggesting that physical access to bank branches does not significantly contribute to financial inclusion. Most importantly, AF has a very high correlation with BB (0.8177), which strongly suggests that financial infrastructure determines, to a large extent, financial access.

**Table 9. Correlation Matrix's**

	FI	FL	IL	SPT	FE	BB	AF
FI	1						
FL	0.618	1					
IL	0.382	0.438	1				
SPT	0.500	0.504	0.316	1			
U	0.303	0.378	0.136	0.159	1		
BB	-0.024	-0.059	-0.052	0.017	-0.023	1	
AF	0.003	-0.053	-0.054	-0.001	-0.011	0.818	1

### Model Estimation

Table 10 highlights the regression results and provides factors that influence financial inclusion. The Income Level (IL) variable has a significantly positive impact which is unexpected, as it positively relates to access to financial services at a coefficient of 0.1468 (p-value 0.0059). Financial Literacy (FL), in particular, the study expects to financially include people, and it indeed fulfils expectations as it has a high positive association of 0.4988 (p-value 0.0000). Service Provider Trust (SPT) has a positive impact as well, as its coefficient stands at 0.3015 (p-value 0.0000). This denotes greater trust and higher financial participation. The regression results with the variable Usage (U) included also indicate a positive relationship, as positive results of 0.164 and a p-value of 0.019 are present. Thus, it is shown that greater usage of financial services implies better financial inclusion and is expected. It implies that actively used financial services lead to more financial inclusion. Usage (U) shows a positive significant association with financial inclusion. For Bank Branch Access (BB) with its stimulating of -0.0683 (p-value 0.3031), it does not comply with the expected positive sign, which would state that physical bank access is in this century's most digital stage, less relevant. Access to Finance (AF) remains positively related, yet insignificantly with a coefficient of 0.0825 (p-value 0.1781), suggesting that it does not affect financial inclusion.

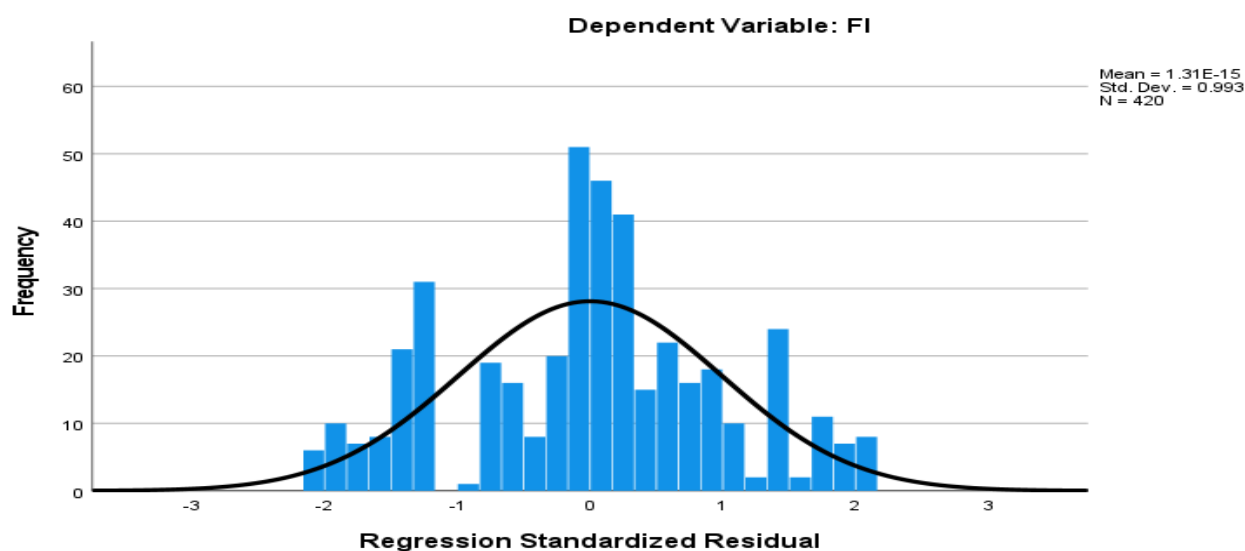
**Table 10. Linear Regression Result**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FL	0.499	0.058	8.580	0.000
IL	0.147	0.053	2.769	0.006
SPT	0.302	0.053	5.697	0.000
U	0.164	0.070	2.347	0.019
BB	-0.068	0.066	-1.031	0.303
AF	0.0825	0.061	1.349	0.178
C	-4.248	1.664	-2.553	0.011

### Normality and Stability Diagnostics Tests

#### Histogram Normality Test

Figure 1 below shows the histogram of standardised regression residuals about the dependent variable (FI), it can be observed that its distribution aligns well with the expected normal distribution. For regression residuals, the ideal features of the mean being around 0 and the standard deviation being roughly 1 approximately 0 and 1 and both show normal distribution characteristics.



**Figure 3 Histogram Normality Test**

**Kolmogorov-Smirnov (KS) and Shapiro-Wilk test**

Table 11 presents the Kolmogorov-Smirnov (KS) and Shapiro-Wilk tests showing wide-ranging divergences from normality in most of the datasets supported by p-values that are less than 0.05. This implies that the normal distribution does not apply to most data points. However, some points, like FI at 12.00 and 19.00, do not display significant major deviations, hinting at normality for these particular points.

The Shapiro-Wilk test, like most tests with significant Shapiro p-values (less than 0.05), also checks for FI degrees of freedom lacking shapes for non-normal distributions throughout most of the data points. Values such as FI at 12.00 and 19.00 and AF at 11.00 and 23.00 exhibit just as many suggestive degrees of freedom, indicating uniformity and thus reflecting the mixed distribution variety.

**Table 11. Kolmogorov-Smirnov Shapiro-Wilk test**

Variable	Kolmogorov-Smirnov (Sig.)	Shapiro-Wilk (Sig.)
IL	<0.001	<0.001
FL	<0.001	<0.001
U	<0.001	<0.001
BB	0.200	0.170
SPT	<0.001	<0.001
AF	0.023	0.139

**EMPIRICAL DISCUSSIONS**

The analysis and results from the regression provided have the greatest insights on the determinants of financial inclusion from both the demand and supply sides, as captured in the literature. The positive effect of income in a financial inclusion context (coefficient = 0.1468, p-value = 0.0059) supports the results of Akileng et al. (2018) and Bhanont et al. (2012), which argued that owning more financial services is easier for the rich. This means, as indicated by Abel et al. (2018), that income significantly improves financial inclusion because people with money are more willing to engage and benefit from systems available to them.

In addition, the strong impact of financial literacy on the model with the level of financial inclusion (coefficient = 0.4988, p-value = 0.0000) reiterates Grohmann et al. (2018), who regard financial literacy as one of the key aspects of financial inclusiveness. A financially literate person is considered to more actively employ various financial services, leading to a greater ability to save, invest, or borrow. This adds to Arnold & Gammage (2019), who stressed the provision of financial education for the formulation of inclusive finance, particularly for the marginalised.

The influence of service provider trust on financial inclusion (coefficient = 0.3015, p-value = 0.0000) aligns with Ozili's (2018) findings. In particular, the author notes that trust in financial institutions is associated with increased participation in the financial system and correlates positively with the active use of financial services. Thus, it is important to note that to achieve greater financial inclusion, particularly in developing economies, consumer trust needs to be nurtured.

It is worth mentioning that the positive effect of usage (coefficient = 0.164,  $p$ -value = 0.019) is a statistically significant effect of the positive impact of usage, which can be attributed to the frequency or extent of financial service consumption. This is following Tay et al. (2022), who argue that financial inclusion can only be meaningfully achieved when there is the actual use of financial services, particularly digitized ones, rather than just access to them.

In the works of Ozili (2021) and Mohamed & Nor (2021), mobile banking and other digital financial services, restated as the periphery effect of bank branch accessibility (coefficient = -0.0683,  $p$ -value = 0.3031), remain at their greatest importance, particularly in rural and remote areas that have little to no bank branch coverage. Chikalipah (2017) also pointed out the rapidly growing importance of digital financial services in solving distance and infrastructural issues.

Ultimately, the dependence on access to finance with a positive impact and negative offset simultaneously (coefficient = 0.0825,  $p$ -value = 0.1781), which has been already illustrated, means that the outcome is ambiguous. It suggests that there can be no doubt that, along with the availability of financial products, elements such as financial education or trust in the providers may be more important for determining financial inclusiveness. This observation also agrees with Abor et al. (2018), which states that mobile telephony, indeed one of the most prominent features of digital finance, is far more impactful than simply providing financial services for deeper financial inclusion.

In summary, the results confirm that the level of financial inclusion is determined by a range of individual attributes like income, literacy, and trust, along with institutional factors such as the availability of digital finance and the provider's credibility. As highlighted by Park & Mercado (2018) and Mohamud & Mohamed (2023), these policymakers must adopt a fully integrative approach concerning both service demand and supply to make meaningful and lasting progress towards financial inclusion.

## CONCLUSION AND POLICY IMPLICATIONS

The results of this investigation highlight the important impact that financial literacy, trust, and digital financial services have on achieving financial inclusion. Financial literacy, for instance, had a strong positive correlation with financial inclusion, which showed that the more people know about financial services and products, the more they will make use of them. This indicates that financial institutions need to pay more attention to education and awareness campaigns through different media channels about what services as well as products they offer since such steps would widen the market. Moreover, other factors, such as the positive contribution of income to inclusion, prove that socioeconomic gaps need to be addressed to widen the coverage of financial services.

Mobile banking is included in the category of digital finance, and it was also noticed to greatly enhance financial inclusion. Banks and financial institutions should give serious attention to the use of mobile money to facilitate financial transactions for people in remote and underserved areas. Telecom and financial services providers should go beyond providing basic cash-out and cash-in mobile money services to paying for savings, loans, and other financial services. With such improvements, overcoming geographical as well as social barriers would become possible, thereby enhancing the levels of financial participation among a large portion of the population.

The prioritization of customers' effective use of financial tools requires financial institutions to incorporate financial literacy training into their customer services. Agencies can enhance individual choices and foster personal and economic development through the implementation of a financial literacy strategic plan.

In addition, trust towards service providers, as mentioned, emerges as a key importance. Through the analysis of the relationship between trust and financial inclusion, it was shown that consumer trust can be developed through transparent and sound customer service that will increase engagement in the financial system. Digital financial service providers have to especially pay attention to the issue of trust as it pertains to security and reliability.

The study assumes that regulatory authorities and decision-makers must organise support for financial literacy programmes and the formulation of new financial products. Strengthening the regulatory framework for mobile banking and digital services should aim to harness new technologies to the public's advantage while protecting consumers' interests.

The government should also consider programs that assist the financially excluded and disadvantaged, such as providing loans to the unemployed to promote self-employment. Income has been identified as a key driver of financial inclusion, so these actions will not only be socially beneficial but also economically advantageous, as these groups will have improved financial prospects and greater access to services.

Furthermore, as far as the proof of the hypothesis is concerned, this study is relevant regarding existing literature on financial inclusion, as it attempts to integrate the relationships that exist between financial literacy, income, trust, and access to finance. Further research needs to delve deeper into the issue of digital financial

services and how particular socio-economic features, like gender or age, impact the use of financial services in different parts of the world.

Finally, this study is important to the general public since it illustrates and breaks down everything about finances, having access to funds, and everything surrounding it. It demonstrates to parents the importance of taking responsibility for their finances, utilising helpful services, promoting financial literacy, and ensuring their children receive proper guidance from their families.

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