

Gendered Financial Inclusion and Urban Resilience: Evidence from The 2022 Tanzania Demographic and Health Survey

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Abstract

Financial inclusion is a key indicator of sustainable urban development and resilience. The Tanzanian government has recognised its importance by establishing a national framework to promote affordable and accessible financial services and foster an inclusive financial system. Despite these efforts, a gender gap persists in access to and use of formal financial services, hindering progress toward gender equality and other Sustainable Development Goals (SDGs), including poverty reduction, equitable economic growth and urban resilience. This study examines the socio-economic determinants of gender disparities in financial inclusion in urban Tanzania. It draws on data from the 2022 Tanzania Demographic and Health Survey and applies logistic regression analysis to investigate gender gaps in financial access and utilisation. Guided by Sen's capability approach and insights from behavioural economics, the analysis explores how socio-economic factors shape individual access to financial products and services, thereby influencing both individual and community resilience. The results show that women are 4.38 percentage points more likely than men to be financially excluded, with mobile phone ownership exerting the strongest positive effect on financial inclusion and household resilience. These findings highlight the need for policies that address gender specific barriers, including enhancing financial literacy, expanding access to digital financial services and challenging socio-cultural norms that limit women's financial participation.

Keywords: gender disparity, financial inclusion, digital services, urban resilience, urban development.

Introduction

Tanzania is undergoing rapid transformation driven by urbanisation, population growth and economic diversification. This transformation offers opportunities for promoting gendered financial inclusion and resilience by providing access to resources and decision-making for all (Were et al., 2024). Financial inclusion and resilience are critical for promoting inclusive growth and advancing gender equality, especially sustainable development goals (SDG5) (Tripathi &

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Rajeev, 2023). Financial inclusion “is defined as having a bank account, regular use of the account, ease in making payments, and affordability of financial service access” (Tripathi & Rajeev, 2023:2). On the other hand, financial resilience is the capacity of an individual and community to withstand and recover from temporary financial adversity and shocks (World Bank, 2020). It involves not just surviving challenges, but also adapting in ways that foster long-term sustainability and growth,

Despite Tanzania having made advancements in financial services, notable disparities persist in access to and utilisation of financial services between genders (Were et al., 2024). Women are less likely to access formal financial services than men, and individuals with lower levels of education face greater barriers to accessing banking services and digital financial technologies (Kilamlya et al., 2024). The growth of mobile money has made it easier for more people to access these services; however, access to digital financial services remains unequal across different social and economic groups (Joseph et al., 2026; Were et al., 2024). These disparities raise a concern regarding the ability of financial inclusion initiatives to promote equitable economic participation and financial resilience across the population, including women (Derefa et al., 2025). Understanding the determinant factors that influence financial inequalities is essential for designing policies that promote inclusive financial systems.

The rapid urbanisation of Tanzania necessitates integration of individuals into the financial system to reduce poverty levels, generate employment, and strengthen families (Were et al., 2024; MCDGC, 2008). Women play a vital role in managing family welfare; thus, enhanced access to financial services can substantially impact their lives. Access to financial services enables them to effectively manage their finances and engage in both personal and productive activities (Deshpande et al., 2023; Naseef et al., 2025). Access to finance can also strengthen their decision-making power in areas such as employment, family life, and reproductive choices (Naseef et al., 2025). It can also help women grow their businesses, find better jobs (Were et al., 2026), and lower their risk of poverty while raising their income and productivity (Osabutey & Jackson, 2024).

However, there is still a gap in the provision of financial services to the underprivileged, especially women, as financial products remain inaccessible or unsuitable for their specific needs, such as microloans or tailored savings accounts (Tripathi & Rajeev, 2023). Accessible and efficient financial services for managing savings and credit, conducting transactions and mitigating risks are essential for strengthening women’s empowerment. (Holloway, Niazi & Rouse, 2017). The gendered determinants affecting access to and use of financial services include inadequate financial resources (Zeka & Alhassan, 2024), mobile phone ownership (Tripathi & Rajeev, 2023), employment status (Osabutey & Jackson, 2024), inequalities in technical capacities (Rowntree & Shanahan, 2020), varying levels of digital skills influenced by levels of education (Kuroda et al., 2019) and differences in financial literacy (Hasler & Lusardi, 2017).

The Global Findex Database from 2011, 2014, 2017, and 2025 showed that women are always less likely than men to have bank accounts and use financial services worldwide (Joseph et al., 2026). In 2024, about 700 million women did not have a bank account. In low- and middle-income countries (LMICs), more than half of women with bank accounts also have digitally enabled accounts, which are accounts that allow online access and transactions, making it easier and more convenient for them to use their accounts. In Sub-Saharan Africa, about 48% of

women remain unbanked, and only half of them own a mobile phone, which suggests that efforts to promote account ownership should coincide with initiatives to improve mobile connectivity (Kapper et al., 2025). In Tanzania, in 2024, about 55% of women own bank accounts, 22% saved money at financial institutions, and only 13.6% use mobile money to pay bills (Kapper et al., 2025). Economic vulnerabilities, including a lack of financial securities and patriarchal norms, intensify women's financial exclusion, particularly in urban Tanzania (Were et al., 2024). Comparative studies conducted in Zimbabwe and Burkina Faso show that informal work and a lack of social security programs continue to limit urban women's financial engagement (Siwela & Njaya, 2021; N'dri & Kakinaka, 2020).

A shortage of comprehensive, gender-disaggregated insights to urban areas persists despite an increasing amount of research on gender equality, financial inclusion and resilience, and existing research concentrates on rural and urban differences (Allen et al., 2016; Tripathi & Rajeev, 2023; Were et al., 2024; Zeka & Alhassan, 2024). Empirical research is needed to examine context-specific factors such as education, socio-cultural norms, digital literacy and family decision-making authority (Zeka & Alhassan, 2023). Building on the highlighted gap, this paper examines key determinants influencing women's financial inclusion in urban Tanzania and the magnitude of the gender gap, using nationally representative data from the 2022 TDHS.

2. Financial Inclusion, Resilience and Gender Gaps

To promote gender equality, financial inclusion is essential since it improves women's capacity to invest, save, and withstand economic shocks (Matekenya et al., 2021). Nevertheless, sociocultural norms that prohibit women from interacting with formal financial institutions, a lack of collateral and inadequate educational attainment all contribute to the persistence of gender gaps (Morsy, 2020). Although ownership of accounts has grown globally, the gender gap is still substantial in a number of regions, notably Sub-Saharan Africa (Osabutey & Jackson, 2024). Mobile money platforms have made access easier, but women are still hindered by low levels of digital literacy and phone ownership (Were et al., 2024). In examining determinants of financial inclusion, existing literature identifies educational attainment, income level and technological adoption (ownership of mobile phone) as pivotal drivers (Matekenya et al., 2021). Urban areas frequently present more financial access options because of the presence of mobile networks and banking services. However, women's use of financial services is hindered by deeply rooted gender stereotypes and informal employment status (Siwela & Njaya, 2021). For example, women's reduced ownership of property in Tanzania results in their reduced eligibility for formal credit, which limits their ability to start their own businesses and generate income (Were et al., 2024).

A growing body of research demonstrates a strong relationship between financial inclusion, gender equality and poverty reduction (Field et al., 2021). As nations increasingly adopt digital financial technologies to expand access to affordable financial products and services, including credit, insurance, savings, transfers, and payments, significant progress has been made toward financial inclusion. (Joseph et al., 2026). It has been demonstrated that financial empowerment enhances well-being, fights socioeconomic marginalisation, and increases women's involvement in societal decision-making (World Bank 2015, 2020a). Financial inclusion has been primarily driven by the usage of digital financial services (GSMA 2020; World Bank 2020a, 2020b). In addition to enhancing the efficiency of service delivery, recent technological advancements and the growing adoption of digital financial services such as mobile money,

online banking, and other digital payment systems have reduced transaction costs and expanded access for underserved populations (Sahay et al., 2020; World Bank, 2020a).

The use of digital financial services, such as mobile money like M-Pesa, Mixx by Yas and Airtel money, as well as contemporary technological advancements, has made it easier for the poor to access credit, savings and payment options (Sahay et al., 2020; World Bank 2020a). There are still gender inequalities in financial inclusion in spite of these advancements. The gender gap in ownership of accounts in 2017 was still 7 percentage points worldwide and 9 percentage points in developing nations, demonstrating that the barriers to formal financial services for women continue to exist across all eras (World Bank, 2020a).

Gender-specific barriers to financial access are created by unequal social interactions and chances, and in the majority of situations, these have led to missed opportunities for development and persistent disparities (Sahay et al., 2020; World Bank 2008, 2020b). The significant digital disparity and lost opportunities have been brought to light by the transition to digital technology, during the COVID-19 pandemic, especially for urban populations and unbanked women (Agur et al., 2020; GSMA 2020; World Bank 2020a). As nations continue to adopt the “new normal”, digital financial services will become increasingly important as a means of providing women with access to a range of financial services and products (Were et al., 2024) With a rise from 58% in 2013 to 65% in 2017, Tanzania is among the African nations that have made significant strides in increasing access to formal financial services, primarily because of mobile money services (Were et al., 2024).

However, financial inclusion in Tanzania has not been gender-inclusive, even with deliberate attempts to improve access to formal financial services (Were et al., 2024). When it comes to using and gaining access to financial services, women continue to fall behind. The crucial role that women play in reducing poverty and promoting economic growth is undermined by gender differences in financial inclusion (Were et al., 2024). Given that women make up just over 50% of the population, this is especially true in Tanzania. There are still issues with women’s access to and usage of financial services, despite Tanzania’s National Financial Inclusion Framework for 2018–2022 goal of increasing adult population access to financial services to 92% by 2022 (NFIF, 2018). Part of the reason the eradication of gender disparities in financial inclusion remains challenging is unequal access to and use of digital financial channels, particularly in the context of the rapid shift toward digital financial services (Were et al., 2024).

In urban centres, resilience is important- the ability of people and communities to confront, adapt to, and even transform in response to environmental or socioeconomic shocks (UN-Habitat, 2016). Encouraging urban resilience requires gender equality since women’s economic empowerment can promote social unity, inclusive urban growth and better coping strategies in the household. For example, women can invest in both daily home necessities and long-term revenue-generating businesses when they have stable access to credit or savings mechanisms (Kabeer, 2016). By increasing investment, consumption and social protection networks, this in turn strengthens not only their own resilience but also the resilience of the larger community.

Resilience, financial inclusion and gender equality all interact in ways that reinforce one another. Women’s economic independence and autonomy are increased through financial inclusion, which ultimately leads to improved equality (Tripathi & Rajeev, 2023; Zeka & Alhassan, 2024). Women who have access to traditional or digital banking services in an urban environment are better equipped to handle emergencies, build assets and achieve financial

stability (Sikka & Bhayana, 2024). These changes promote resilience at the household and at the community level, as women's income increases, their likelihood of spending also rises on housing improvements as well as healthcare, and education for their children, all of which support sustainable urban growth (Osabutey & Jackson, 2024). On the other hand, lack of financial inclusion undermines larger initiatives to create resilient urban communities by sustaining vulnerabilities, particularly for marginalised women living in urban areas (Tripathi & Rajeev, 2023).

3. Theoretical Framework

This research is based on three interconnected theoretical perspectives: Sen's Capability Approach, Behavioural Economics, and the Resilience Framework. Collectively, these frameworks provide a comprehensive study of gender imbalances in financial inclusion and resilience within urban Tanzania. They facilitate the examination of how women access and use financial services, how their actions are influenced by socio-cultural factors, and how financial inclusion enhances their ability to endure and recover from economic difficulties.

3.1 Sen's Capability Approach

Proposed by Amartya Sen, the Capability Approach highlights the importance of individuals' freedom to pursue the type of life they deem valuable and have justifiable reasons to value (Sen, 1999). Within this framework, the focus is on evaluating how women's access to, or absence of, financial services affects their capacity to make significant choices, participate in income-generating activities, and attain financial independence. Consequently, financial inclusion is viewed not just as access to formal accounts, but as a means to enhance women's capabilities in various domains, including education, health, entrepreneurship, and agency.

The strategy emphasises the improvement of individuals' genuine freedoms and capabilities to obtain resources and opportunities. It facilitates an assessment of both the accessibility of opportunities and the true freedom that women possess to make use of financial services. By empowering women through financial access, household dynamics can be transformed, and participation in social and economic activities can be enhanced, thereby contributing to urban resilience and promoting gender equality (Robeyns, 2005).

3.2 Behavioural Economics

Behavioural economics examines the impact of psychological, cultural, and social elements on individual decision-making in situations characterised by risk and uncertainty (Thaler & Sunstein, 2008). This research sheds light on how socio-cultural norms, gender roles, and attitudes towards money and risk influence women's participation in formal financial institutions and financial technologies, including mobile money. This analytical framework is especially relevant in Tanzania, where patriarchal values, low levels of financial literacy, and informal employment influence women's financial decision-making processes. A significant number of women, despite having access, continue to face financial exclusion due to ingrained beliefs, apprehension towards formal institutions, or reliance on male heads of households. Behavioural Economics provides insights into these behavioural obstacles and emphasises the necessity for more contextually relevant financial inclusion strategies (World Bank, 2014).

3.3 Resilience Framework

The Resilience Framework pertains to the ability of individuals and communities to absorb, adapt to, and recover from shocks such as job loss, illness, or economic disruptions (Bahadur et al., 2015). In the context of this study, financial resilience is characterised as the capacity of women to endure and recuperate from such disruptions, facilitated by access to savings, credit, and various financial instruments.

This framework holds particular significance in urban environments where numerous women engage in informal economies lacking formal safety nets. Financial inclusion bolsters resilience by allowing women to accumulate assets, stabilise household consumption, and invest in long-term necessities such as education and health, thus enhancing both individual and collective capabilities to manage future uncertainties (Moser, 2008).

3.4 Theoretical model

Financial inclusion can be understood as a result of individual abilities, economic background, and behavioural factors that affect access to and use of financial services. According to Sen's Capability Approach, access to financial services relies on personal capabilities like education, economic resources, and access to technology. Behavioural economics highlights those social norms, perceptions of risk, and decision-making limits that affect how people interact with financial institutions. Moreover, the resilience framework indicates that access to financial services helps households handle and respond to economic shocks. From these theoretical views, financial inclusion can be described as influenced by gender, socio-economic background, and available resources. Formally, the theoretical relationship can be expressed as:

Whereas FI_i represents the financial inclusion of individual i , G_i represents gender characteristics, C_i represents capability-related factors such as education and employment, S_i represents socio-economic characteristics such as wealth, marital status, and household size, and T_i represents enabling technological resources such as mobile phone ownership. This theory suggests that financial inclusion is affected by structural and behavioural factors. These factors influence people's ability to access and use financial services. Based on this relationship, the empirical model estimates the likelihood of financial inclusion, considering gender and other socio-economic traits.

4. Methods, data and variable measurements

4.1 Data and variables

This study draws on data from the 2022 Tanzania Demographic and Health Survey (TDHS), a nationally representative household survey that provides extensive information on the demographic, health, and socio-economic characteristics of the population. The survey is conducted by the National Bureau of Statistics (NBS) and the Office of the Chief Government Statistician (OCGS) in partnership with the Ministries of Health of Tanzania Mainland and Zanzibar. Technical support is provided by ICF through the Demographic and Health Survey Program, funded primarily by the United States Agency for International Development (USAID), with additional support from other international partners.

The 2022 TDHS employs a two-stage stratified sampling design to ensure national representativeness. In the first stage, enumeration areas (EAs) derived from the 2012 Tanzania Population and Housing Census were selected as clusters. A total of 629 clusters were sampled,

comprising 211 urban clusters and 418 rural clusters. In the second stage of sampling, 26 households were systematically selected from each cluster, yielding an anticipated sample of 16,354 households. Before the implementation of the main survey, a household listing exercise was carried out in all selected enumeration areas to develop the sampling frame. This sampling strategy ensures that the TDHS provides reliable estimates at national, urban–rural, zonal, and regional levels.

Since this study uses secondary data, the core variables of interest were defined based on the standardised indicators available in the TDHS dataset. The dependent variable in this study is financial inclusion, representing an individual's access to and utilisation of formal financial services. Consistent with prior research on financial inclusion, this variable is operationalised as a binary indicator, taking the value 1 if an individual reports owning or using formal financial services, such as a bank account, mobile money account, or credit services and 0 otherwise. Financial inclusion is widely recognised in economic theory as an important mechanism for improving access to financial resources, promoting savings, facilitating investment, and enhancing economic participation.

The independent variables were selected based on theoretical and empirical studies on the determinants of financial inclusion. Gender is included as a categorical variable (male or female) to capture potential gender disparities in access to financial services, as highlighted in gender and financial development literature. Socio-economic status is proxied by the wealth index, which is constructed in the TDHS using principal component analysis based on household asset ownership and housing characteristics, and categorised into five quintiles (poorest, poorer, middle, richer, and richest).

Education level is classified into four categories: no education, primary education, secondary education, and higher education, reflecting differences in human capital that may influence financial literacy and access to financial institutions. Employment status is categorised as employed, self-employed, or unemployed, capturing differences in income-generating opportunities that may affect the ability to access and utilise financial services. Marital status is categorised as single, married, or divorced/widowed, as household structure may influence financial decision-making and resource access.

The analysis also controls for several additional variables. Urban residence is included as a binary variable indicating whether an individual resides in an urban area (1 = urban, 0 = rural), given that financial infrastructure and service availability are often concentrated in urban areas. Age is measured as a continuous variable in years, reflecting life-cycle differences in economic participation and financial behaviour. Mobile phone ownership is also included as a binary variable (1 = owns a mobile phone, 0 = otherwise), since mobile technology plays a critical role in expanding access to digital financial services such as mobile money.

4.2 Empirical model

This study estimates the factors that affect financial inclusion using a logistic regression model. The theoretical framework suggests that financial inclusion is influenced by gender, socio-economic characteristics, and resources such as education, employment, and access to technology. Following this framework, the empirical analysis models the probability that a person is financially included based on gender and other socio-economic factors.

Financial inclusion is measured as a binary variable that indicates whether a person has access to and uses formal financial services (1 = financially included, 0 = not included). Therefore, the logistic regression model is suitable for estimating the likelihood of financial inclusion. Logistic regression is commonly used in studies that look at the factors affecting categorical outcomes because it effectively captures non-linear relationships between the dependent variable and the explanatory variables while ensuring that predicted probabilities stay between zero and one.

Previous studies have also used logit models to analyse financial inclusion and access to financial services. For instance, Demirgüç-Kunt and Klapper (2013) used a logit model to examine the factors affecting the use of financial services in different countries, while Claessens and Perotti (2007) employed a similar method to analyse access to financial markets and its effects on economic development. In line with these studies, this paper uses a logistic regression model to estimate the factors that determine financial inclusion. The empirical model is specified as follows:

$$\text{Logit}(Y_i) = \beta_0 \text{Gender}_i + \beta_2 X_i + \mu_i \quad (1)$$

Where Y_i represents financial inclusion for individual i , indicating as 1 if the individual is financially included and 0 if otherwise. β_0 indicates the baseline marginal effects of financial inclusion when all predictors are zero. Gender is the independent variable in this paper, and it is measured as a binary variable indicating the gender of individual i where Female = 1 and Male = 0 serves as the reference category. The vector of independent variables (X_i) includes socio-economic factors, including the education level of the head of the household, wealth index, employment status, marital status, urban residence, access to mobile phone ownership, and age of the head of the household. μ_i captures unobserved characteristics that influence financial inclusion for individual i .

5. Results

5.1 Summary Statistics

Table 1 presents the descriptive statistics for the variables used in this paper, drawn from a household dataset comprising 15,254 observations. The mean value of financial inclusion is 0.42, indicating that approximately 42% of the households in the sample are financially included. Regarding gender, 28% of the respondents are female, reflecting the composition of the sample. The average age of the household is 45.53 years, suggesting a relatively mature population, with ages ranging from 15 to 98 years.

Table 1: Summary Statistics

Variable	Mean	Std. dev.	Min	Max
Financial inclusion	0.42	0.49	0	1
Financial resilience	0.68	0.46	0	1
Female	0.28	0.45	0	1
Age	45.53	13.76	15	98
Education level				
No formal education	0.16	0.36	0	1
Primary	0.49	0.50	0	1
Secondary	0.34	0.47	0	1
Higher	0.01	0.12	0	1

Variable	Mean	Std. dev.	Min	Max
Single	0.28	0.45	0	1
Married	0.60	0.49	0	1
Widowed	0.02	0.15	0	1
Divorced	0.06	0.24	0	1
Separated	0.04	0.19	0	1
Poorest	0.15	0.36	0	1
Poorer	0.16	0.37	0	1
Middle	0.20	0.40	0	1
Richer	0.22	0.42	0	1
Richest	0.27	0.44	0	1
Household size	6.18	3.72	1	54
Mobile phone ownership	0.60	0.49	0	1
Urban	0.36	0.48	0	1
Not working	0.37	0.48	0	1
non-agriculture employee	0.13	0.34	0	1
Agriculture employee	0.18	0.39	0	1
manual labour	0.26	0.44	0	1
Others	0.05	0.21	0	1

Source: *Extracted from the Tanzania Demographic and Health Survey (2022)*

The statistics in Table 1 further revealed that education levels vary across the sample, with 16% of the heads of households having no formal education. In addition, 49% of the heads of households have attained primary education, while 34% have completed secondary education. 1% of the heads of households possess higher education. Marital status also shows diversity, with 28% of the heads of households being single and 60% married, the latter representing the majority. Smaller proportions are widowed, representing 2%, (2%), divorced, representing 6% and 4% illustrating varied family structures within the households.

The wealth index reveals a relatively balanced distribution across the five wealth quintiles. Fifteen per cent of households fall into the poorest category, followed closely by 16% in the poorer quintile. The middle quintile accounts for 20% of households, while 22% are in the richer group. The richest quintile comprises 27% of the sample, indicating a modest skew toward wealthier households. The average household size is 6.18 members, with considerable variation ranging from single-member households to larger households with up to 54 members. Mobile phone ownership is prevalent, with 60% of households reporting ownership. Additionally, 36% of the sample resides in urban areas, reflecting a mix of rural and urban households.

The occupational profile of respondents shows that 37% are not working. Agriculture is a significant employment source, with 18% engaged in agricultural work. Non-agricultural employment accounts for 13%, while 26% of the household heads are involved in manual labour. A smaller fraction, 5%, reports other occupations, demonstrating diverse economic engagement within the sample.

Table 2 below indicates the results for the logit regression. This table indicates the marginal effects and illustrates both the magnitude and direction of each variable's influence. From the findings, gender plays a significant role, with females being 4.38 percentage points more likely to be financially included than males, a positive and statistically significant finding ($p < 0.01$). Further results indicated that the age of the household head shows a positive effect, with each additional year increasing the probability of financial inclusion by 0.041 percentage points.

However, this impact, while statistically significant at the 10% level ($p < 0.1$), is relatively small in magnitude.

Table 2: Determinants of Financial Inclusion (Marginal effects)

VARIABLES	(1) Financial inclusion
Female	0.0438*** (0.0074)
Age	0.00041* (0.00023)
Education level (Ref: No formal education)	
Primary	0.0807*** (0.0105)
Secondary	0.111*** (0.0116)
Tertiary	0.301*** (0.0384)
Marital status (Reference=Single)	
Married	0.0449*** (0.00835)
Widowed	0.0641*** (0.0194)
Divorced	0.0572*** (0.0129)
Separated	0.0935*** (0.0148)
Household size	-0.00238** (0.000957)
Mobile phone ownership	0.443*** (0.00696)
Urban residence	0.0464*** (0.00733)
Occupation (Reference=Not working)	
Non-agriculture employee	0.136*** (0.00983)
Agriculture employee	0.112*** (0.00903)
Manual labour	0.0615*** (0.00787)
Others	0.0544*** (0.0139)
Observations	15,254

Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Education emerges as a key determinant of financial inclusion, with its impact increasing substantially at higher levels of education. The results from Table 2 indicate that household heads with primary education are more likely to be financially included than those with no formal education, by 8.07 percentage points. Furthermore, secondary education increases the probability by 11.1 percentage points, and households with tertiary education have the most pronounced effect, increasing financial inclusion by 30.1 percentage points. These results underscore the transformative role of education, particularly higher education, in facilitating access to financial services. Marital status also influences financial inclusion, with married, widowed, divorced, and separated heads of the households showing higher probabilities of financial inclusion compared to single heads of the households Married heads of the households

are 4.49 percentage points more likely to be financially included, widowed heads of the households see a 6.41 percentage-point increase, and divorced heads of the households experience a 5.72 percentage-point rise. Separated heads of households have the largest effect, with financial inclusion increasing by 9.35 percentage points. These findings suggest that marital transitions may affect financial decision-making and access to resources.

Household size exhibits a negative association with financial inclusion, with each additional household member reducing the likelihood of financial inclusion by 0.238 percentage points. This statistically significant effect ($p < 0.05$) may reflect resource constraints in larger households. Conversely, mobile phone ownership shows the strongest positive effect, increasing the likelihood of financial inclusion by 44.3 percentage points, a highly significant finding ($p < 0.01$) that highlights the importance of mobile technology in enhancing financial access. Urban residence increases the probability of financial inclusion by 4.64 percentage points compared to rural households, a statistically significant result ($p < 0.01$). This finding suggests that urban households benefit from better access to financial services, emphasising the rural-urban divide in financial inclusion.

Occupation also plays a significant role, with all employment categories showing positive and statistically significant effects compared to the non-working group. Non-agriculture employees are 13.6 percentage points more likely to be financially included, agriculture employees see an 11.2 percentage-point increase, manual labourers experience a 6.15 percentage-point rise, and heads of households in other occupations have a 5.44 percentage-point increase. These results indicate that formal and semi-formal employment strongly enhances access to financial services.

5.2 Determinants of Financial Resilience

The paper employed logit regression to examine the determinants of financial resilience. Financial resilience was measured from the wealth index variable, whereby those who are in the middle to the richest group are considered to have financial resilience. Table 3 presents the marginal effects for the determinants of financial resilience.

Table 3: Determinants of Financial Resilience (Marginal effects)

VARIABLES	(1) Financial resilience
Female	-0.0689*** (0.00772)
Age (years)	0.000246 (0.000237)
Household size	-0.00499*** (0.000872)
Education level (Ref: No formal education)	
Primary education	0.105*** (0.00928)
Secondary education	0.290*** (0.0106)
Tertiary education	0.383*** (0.0423)
Mobile phone ownership	0.160*** (0.00573)
Marital status (Reference=Single)	
Married	-0.0358***

VARIABLES	(1) Financial resilience
	(0.00865)
Widowed	-0.0341 (0.0210)
Divorced	-0.0572*** (0.0144)
Separated	-0.0216 (0.0179)
Urban	0.359*** (0.00940)
Occupation (Reference=Not working)	
No agriculture employee	0.138*** (0.0125)
Agriculture employee	-0.0471*** (0.00849)
Manual employee	-0.00271 (0.00806)
Others	0.0443*** (0.0155)
Observations	15,254

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results in Table 3 indicate that gender (female) is statistically significant, with a p-value of 0.001. This implies that there is strong statistical evidence that being female is associated with a lower probability of being financially resilient than that of males. This statistically significant result indicates a robust, meaningful difference in financial resilience by gender, highlighting potential systemic disparities affecting women's economic stability and access to financial resources.

6. Diagnostic Test

6.1 Goodness of fit test

To ensure the reliability and validity of the estimated model, several diagnostic tests were conducted. First, the goodness-of-fit of the logistic regression model was assessed using the Hosmer-Lemeshow test. This test evaluates whether the model's predicted probabilities align with the observed outcomes. The results indicate that the model fits the data well, as the p-value exceeds the typical threshold of 0.05. This suggests there is no significant difference between the observed and predicted values. Second, the logistic regression model is frequently used in studies of binary outcomes, such as financial inclusion, which strengthens the credibility of the estimation strategy. The model also includes relevant socio-economic control variables from both theoretical and empirical literature, thereby reducing the risk of omitted variable bias. Third, using nationally representative data from the 2022 Tanzania Demographic and Health Survey (TDHS) enhances the reliability and reproducibility of the results. The TDHS dataset follows standardised sampling procedures and data collection methods, allowing other researchers to replicate the analysis using the same dataset and methodology.

Table 3 below represents the results. The rationale for this test is to evaluate whether the observed data align well with the model's predicted probabilities. The results indicate that the model fits the data adequately. Specifically, the Pearson chi-squared statistic is 12,704.70 with 13,363 covariate patterns, and the corresponding p-value is 0.9200. A p-value greater than 0.05, as observed here, suggests no significant difference between the observed and expected values, demonstrating that the model's predicted probabilities align closely with the observed outcomes. This outcome implies that the logistic regression model provides a reliable fit to the data and lends credibility to the results.

Table 4: Goodness-of-fit test after logistic model

Variables	Number of Observations	Number of covariate patterns	Pearson $Chi^2(13363)$	$Prob > Chi^2$
Financial Inclusion	15,254	13,384	12704.70	0.9200
Financial resilience	15,254	11,585	11756.79	0.1077

7. Discussion of the results

The findings of this study offer valuable insights into the socio-economic determinants shaping financial inclusion in Tanzania. Overall, the results highlight the critical role of gender, education, digital technology, and employment in shaping individuals' access to formal financial services. These findings support the theoretical perspectives guiding this study, particularly Sen's Capability Approach and Behavioural Economics, which emphasise that individuals' capabilities and socio-economic characteristics influence their participation in economic systems.

Gender emerges as a significant determinant of financial inclusion. The results indicate that females are 4.38 percentage points more likely to be financially included than males. This finding may reflect the growing emphasis on gender-focused financial inclusion initiatives in Tanzania. Programs implemented through microfinance institutions, savings groups, and mobile financial services have increasingly targeted women to enhance their economic participation and empowerment. These initiatives have helped many women overcome traditional barriers to accessing financial services, such as limited collateral and restricted mobility. Similar findings have been documented by Dar & Ahmed (2020). India's call for targeted financial inclusion policies has contributed to improvements in women's access to financial services. However, other studies, such as Field et al., (2023), suggest that cultural and institutional barriers may still limit women's access to formal financial institutions in some contexts.

Education also stands out as a major factor driving financial inclusion. The results indicate that individuals with higher educational attainment are substantially more likely to utilise formal financial services. Specifically, primary education increases the probability of financial inclusion by 8.07 percentage points, secondary education by 11.1 percentage points, and tertiary education by 30.1 percentage points compared to individuals with no formal education. These results highlight the importance of education in enhancing financial literacy and improving individuals' ability to understand and utilise financial products and services. From the perspective of the Capability Approach, education expands individuals' capabilities and opportunities to participate in economic activities, including the use of formal financial systems.

In the Tanzanian context, limited education remains a major barrier for many individuals, particularly women, restricting their access to formal financial institutions and financial technologies. These findings are consistent with Klapper et al., (2025), who emphasise that education plays a critical role in improving financial literacy and financial inclusion.

Access to digital technology, particularly mobile phone ownership, shows the strongest positive association with financial inclusion. The results indicate that owning a mobile phone increases the probability of financial inclusion by 44.3 percentage points. This finding underscores the transformative role of digital financial services in expanding access to financial systems in Tanzania. Mobile money platforms such as M-Pesa, Mixx by Yas, and Airtel Money have significantly improved financial access by allowing individuals to save, transfer, and receive money without relying on traditional banking infrastructure. These services have been particularly beneficial for individuals who previously lacked access to formal banking institutions. This finding aligns with the study by Osabutey & Jackson (2024), which highlighted the significant role of mobile money services in promoting financial inclusion across Sub-Saharan Africa.

The results further show that employment status significantly influences financial inclusion. Individuals engaged in non-agricultural employment, agricultural activities, manual labour, and other forms of employment are all more likely to be financially included compared to those who are not working. This suggests that stable income-generating activities increase individuals' engagement with financial institutions by enabling them to save, borrow, and conduct financial transactions (Tamane, 2025). Employment, therefore, plays a critical role in facilitating access to financial services and promoting financial stability

Household characteristics also influence financial inclusion. Household size is negatively associated with financial inclusion, suggesting that larger households may face greater financial pressure and resource constraints that limit their ability to engage with financial services. This finding is consistent with Allen et al., (2016), who argue that households with many dependents may have limited capacity to save or invest in financial services.

Finally, the results reveal that individuals living in urban areas are more likely to participate in formal financial services compared to their rural counterparts. This reflects the greater availability of financial institutions, digital infrastructure, and financial service providers in urban centres. However, the result also highlights the persistent rural–urban disparities in access to financial services in Tanzania. Addressing this gap requires policies aimed at expanding financial infrastructure and digital financial services in rural areas.

8. Conclusion and implications

The findings provide a valuable understanding of the socio-economic factors influencing financial inclusion and resilience in Tanzania. Specifically, gender, education, and access to digital technology stand out as key factors influencing financial inclusion. The strong link between education and financial inclusion indicates that people with higher education levels are better equipped with the financial knowledge needed to access formal financial services. This supports the Capability Approach, which highlights that people's abilities, such as education and knowledge, increase their chances to engage in economic activities. In Tanzania, limited education remains a barrier for many, especially women, limiting their access to formal financial institutions and financial technologies. In addition, owning a mobile phone shows the strongest

positive link to financial inclusion, underscoring the growing significance of digitalising financial services in Tanzania. Mobile money platforms like M-Pesa, Mixx by Yas, and Airtel Money have greatly improved access to financial services, especially for people who lacked access to traditional banks before. These findings corroborate earlier research demonstrating the transformative impact of digital financial technologies on financial inclusion in Sub-Saharan Africa.

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