



THE ROLE OF FINANCIAL LITERACY IN ENHANCING FINANCIAL INCLUSION IN TANZANIA

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Abstract

Financial inclusion is a tool for creating an inclusive financial system that attracts sustainable economic growth and improved livelihood. Despite its effectiveness, its benefits have not been fully realized by Tanzanians because 78 percent of adults remain unbanked. Empirical evidence suggests that financial illiteracy can limit financial inclusion. However, in Tanzania, there is scanty evidence on the ability of financial literacy to predict the use of banking services. Also, it is not clear whether the differences in socio-demographic characteristics relate to people's level of financial literacy and their acceptance to use banking services. Applying the TPB, this study relates attitude and perceived behavioural control constructs with financial literacy to predict people's banking behaviour. The study employs a quantitative research approach and applies the PLS-SEM to analyze survey data of 440 respondents sampled from four regions in Tanzania by using a purposive random sampling method. The study reveals that financial literacy has a positive and significant influence on financial inclusion. In addition, this relationship is strong for people with high income, high levels of education and the elderly. On the other hand, differences in gender and residential location do not have a significant impact on the ability of financial literacy to predict financial inclusion. Based on these insights this study provides evidence on extension of TBP by examining the role of Financial Literacy (FL) in predicting usage of banking services as well as policy and practical recommendations which aims to improve the financial capability of consumers and financial inclusion.

Keywords: Financial literacy, Banking, Financial inclusion, PLS-SEM, Moderating effect, Socio-demographic factors

INTRODUCTION

Financial inclusion¹ is a globally accepted tool for creating an inclusive financial system that attracts economic and social benefits to the disadvantaged and the poor. Such benefits are accrued by reducing exclusion in society (Kempson & Whyley, 1999) including facilitating access to education, healthcare, security and financial services (Sinclair, 2001). To facilitate access to financial services banks strive to ensure that access and use of banking services are inclusive across societies. Despite this good intention, only 71 per cent of the adult population in developing economies have a transaction account whereas in Sub-Saharan Africa the majority have mobile money accounts and not banking accounts, (Demirgüç-Kunt et al., 2022)

According to Tanzania FinScope Survey 2023, 76 per cent of adults use formal financial services. This level of financial inclusion to a large extent covers users of mobile money and microcredit services most of which are not suited for long-term investment. Similarly, the number of unbanked adult population in the country remains high at 78 per cent. The low level of the banked population has persistently remained low over time despite several financial reforms in the country which started way back in the early 1990s to date which among others have liberalized the financial sector to ensure an inclusive and vibrant banking system, (Lwiza & Nwankwo, 2002).

Financial inclusion studies indicate that exclusion in the banking sector can be explained by various supply and demand-side factors. These include unaffordable financial costs, poor physical and communication infrastructure, low literacy level, policy and regulatory constraints, weak financial consumer protection mechanisms and limited supply of demand-driven products and services (Demirguc-Kunt et al., 2018; Zins & Weill, 2016).

Similarly, empirical evidence from developed countries underscores the importance of financial literacy in reducing financial exclusion. Specifically, financial literacy has been associated with supporting individuals to process economic information, compare costs and returns when making choices among varieties of financial services, and manage personal finances (Lusardi, 2008; Widdowson & Hailwood, 2007; Xu & Zia, 2012). However, the nature and extent to which financial literacy influences inclusion in banking services in developing countries is not well known. This study, therefore, attempts to bridge this gap based on the Tanzanian experience.

Until now the importance of financial literacy in the Tanzania banking sector financial inclusion is not well researched. Existing financial capability studies in Tanzania indicate that the

¹ Financial inclusion is defined as adult access to and effective use of a range of appropriate financial services from a regulated and sustainable financial institution and are delivered responsibly and safely to the consumers, Atkinson, A., & Messy, F.-A. (2013).

majority of the adult population has low levels of financial literacy (Lotto, 2020b), however, it is not clear whether financial literacy has a positive influence on the uptake of banking services in the country. In addition, since there are known differences in demographic characteristics between people from advanced economies and developing economies like Tanzania, this study also examines whether the differences in social-demographic characteristics have an impact on the relationship between FL and FI.

This study, therefore, proposes a model which indicates how possession of financial literacy predicts financial inclusion in the banking sector.

REVIEW OF LITERATURE

Theoretical Background

Various theories have guided financial inclusion and financial literacy studies. For instance, the Financial Intermediation Theory (Allen & Santomero, 1997) considers Financial Service Providers (FSPs) as intermediaries which reduce information asymmetry and cost among surplus and deficit units; The Life -cycle Hypothesis and the Permanent Income Theories,(Friedman, 1957; Modigliani & Brumberg, 1954) which stress on the need for financial consumers to be rational, forward-looking and possess the capability to process economic information, compare cost and make informed financial choices; and the Theory of Planned Behaviour,(Ajzen, 1985, 1991) which assumes that individual desired behaviour is influenced by behavioural intention attributed by subjective norms, attitude and perceived behavioural control.

This study adopted the Theory of Planned Behaviour which assumes that individual behaviour is predicted by behavioural intention as a function of attitude, subjective norms and perceived behavioural control introduced (Ajzen, 1991). The theory is anchored on the assumption that individuals do not have complete control over their desired behaviour unless they have a positive attitude and possess the necessary resources, skills and opportunities to perform that behaviour (Tucker et al., 2019). This study is therefore guided by the TPB constructs with the assumption that financial literacy develops a positive financial attitude and skills as a behaviour control to influence individuals' intention and actual use of banking services.

Empirical Literature Review

Relationship between Financial Literacy and Financial Inclusion

Globally most financial consumers lack the financial knowledge and skills necessary for making informed financial decisions and therefore fail to manage their daily consumption or long-term investment decisions. Klapper et al. (2015) conducted a world study on financial

literacy and noted that developing countries and BRICS have low financial literacy levels compared to developed economies.

Given its importance, financial literacy is recognized for facilitating people in making credit, investment and saving decisions in several ways; First, concerning credit decisions, financial literacy enhances individuals' capability to understand credit products and their terms before making a credit decision and teaches people on the need to keep financial records necessary for evaluation of their creditworthiness (Nkundabanyanga et al., 2014). This proposition is supported by Kidwell & Turrisi, 2004; Stango & Zinman, (2009) who noted that people with a low level of financial literacy struggle with debt management, including borrowing more than saving even at high-interest rates.

Secondly, financial knowledge and skills as suggested by (Hogarth, 2002) improve consumers' capabilities to make better household decisions and increase economic security and involvement in community development activities. On the other hand, financial education is considered to be an effective tool for stimulating the demand for financial services and strengthening consumer protection by fostering informed and confident consumers (Claessens et al., 2009). Thirdly, financial literacy helps individuals to develop saving habits and engage in investments and plan for their retirement. As noted by Behrman et al., 2012; Hsiao et al., (2016); Jappelli & Padula, (2013), there is a correlation between the individual level of financial literacy and the accumulation of wealth. Lastly, financial literacy is found to be an effective tool for financial consumer protection. In examining the ability of people to handle financial disputes (Shen et al., 2016) noted that people with financial literacy rarely face financial disputes as compared to those with low levels of financial literacy. Their ability to handle financial disputes is explained by their level of financial knowledge, awareness of consumer rights and aggressiveness in following up with FSPs in resolving disputes.

Further, the literature suggests that the level of financial literacy among people varies due to differences in demographic characteristics. Mostly, low-income, uneducated, women, youth and the unemployed, are noted to have a low level of financial literacy and therefore exposed to adverse financial behaviour and attitude toward savings, borrowing, investments, and retirement planning (Al-Tamimi, 2009; Atkinson & Messy, 2013; Garg & Singh, 2018; Klapper et al., 2015; Lusardi, 2008; Lusardi & Mitchell, 2007; Malombe, 2018; Worthington, 2006; Xu & Zia, 2012). On the other end, (Al-Tamimi, 2009), when examining the relationship between financial literacy and financial investments, opposed this proposition by indicating that age, occupation, and level of income do not influence financial literacy.

Despite the presence of empirical literature supporting the positive relationship between financial literacy and financial inclusion, other studies have established no relations between the

two or identified an insignificant association by proposing that having financial literacy is not necessarily a reflection of the use of financial services. Gupta and Singh (2013) studied the relationship between financial literacy and the use of financial services in India and found considerable variations of correlation between the variables among states and suggested that financial exclusion is not necessarily influenced by lower literacy levels because even states with high literacy levels had low usage of financial services. Similar results were reported by (Robert et al., 2013) in the study of the relationship between financial literacy and microfinance outreach in Uganda which found that there is no relationship between customer's literacy level and increased usage of microfinance services.

Measuring financial literacy

There has been no standard measure for financial literacy, (Hsiao et al., 2016; Huston, 2010). Scholars have used various perspectives and dimensions to explain financial literacy. For instance, financial knowledge (Lusardi & Mitchell, 2014); financial knowledge and application of knowledge (Huston, 2010); financial knowledge and skills (Hung et al., 2009); and financial Knowledge, behaviour, and Attitude (Atkinson & Messy, 2012; Norvilitis & MacLean, 2010; OECD, 2013).

Financial Literacy in Tanzania

Previous financial literacy studies in the country have given light on the importance of financial literacy to Youth entrepreneurship programmes, SME managers, making choices of an investment portfolio and how it differs across people due to their differences in demographic characteristics. For instance, (Krause et al., 2016) suggests that FL is a good tool to positively influence youth personal finance management and improve their ability to have savings. In addition, another study (Mabula & Dongping, 2019) recognised the role of financial literacy on SME managers by showing that the financial planning and controlling ability of SME Managers improves as they improve their financial literacy level.

On the other hand, the Tanzania FinScope survey (FINSCOPE, 2017) provides a descriptive analysis of financial literacy among Tanzanians by considering their level of numeracy skills, ability to manage and track daily personal expenses, and possession of a retirement plan as an attempt to study the relationship between individual financial behaviour and the use of financial services. The study noted that the majority of Tanzanians have limited numeracy skills, have no retirement plans and struggle to keep up with both regular and incidental expenses. However, this descriptive study was not backed by a statistical analysis to confirm the causal effect of financial literacy on financial

inclusion. And in addition, the measurement of financial literacy ignored some important aspects of financial literacy such as understanding financial concepts and people's attitudes toward spending and savings.

As a policy response to the high level of financial illiteracy, Tanzania developed a National Financial Education Framework (NFEF, 2016) as a national strategy to guide government interventions toward reducing the level of financial illiteracy. Despite having this framework its operationalization has been slow and no significant progress has been recorded on the ground. The NFEF has defined financial literacy by considering the financial knowledge and skills dimensions and ignored financial behaviour and financial attitude as independent dimensions of financial literacy. This approach is likely to mislead scholars by thinking that the ignored FL dimensions are not relevant in explaining the financial illiteracy problem in the country.

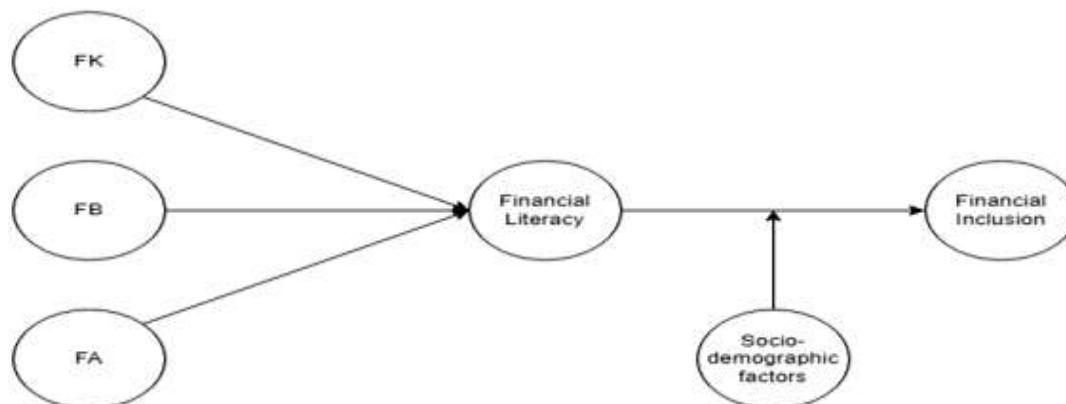
Lastly, a study on the relationship between FL and demographic characteristics noted that the level of financial literacy among Tanzanians varies due to differences in their demographic profiles (Lotto, 2020b). Similarly, another study that used individual borrowing behaviour as the only indicator for financial literacy established that households' choices of an investment portfolio are influenced by individuals' level of financial literacy (Lotto, 2020a).

Considering the scope of existing financial literacy studies in the country, it is evident that little is known about the ability of financial literacy to predict banking financial inclusion. This, therefore, poses a motivation to establish whether financial literacy has an influence on financial inclusion and whether that influence varies depending on differences in demographic characteristics.

Conceptual Framework

A person's attitude and perceived behavioural control which are constructs of the theory of planned behaviour are considered to have a significant role in predicting human behaviour. For this reason, the dimensions of financial literacy which are financial knowledge, financial behaviour and financial attitudes can be used to predict the use of banking products and services herein referred to as financial inclusion. Similar constructs have previously been used to predict the relationship between financial literacy with either financial inclusion or investment decisions (Alleyne, 2011; Garg & Singh, 2018; Hsu & Chiu, 2004; Hung et al., 2009; Kennedy, 2013).

Figure 1: Conceptual framework



Note: FK-Financial knowledge, FB-Financial behaviour and FA- Financial attitude

Figure 1 is a conceptual framework that illustrates the hypothesized relationship between financial literacy and financial inclusion. In addition, the framework proposes that social-demographic factors moderate the relationship between financial literacy and financial inclusion.

Hypotheses Development

This study considers financial literacy as a multidimensional concept represented by financial knowledge, financial behaviour and financial attitude, (Rai et al., 2019). Literature suggests that financial literacy helps people to understand financial matters, manage personal finances and stimulate the demand for financial services, (OECD, 2013). However, the extent to which financial literacy influences financial inclusion in the Tanzania banking sector is not well known. This study, therefore, hypothesizes that;

H1: There is a positive relationship between financial literacy and financial inclusion.

In addition, studies have also indicated that the level of financial inclusion and financial literacy among people may vary based on their differences in demographic characteristics,(Lotto, 2020b; Rai et al., 2019). In the context of Tanzania, there is limited evidence of the impact of demographic characteristics on the relationship between FL and FI. In efforts to reduce this gap, this study hypothesizes the following;

H2a: Gender moderates the positive relationship between financial literacy and financial inclusion, such that there is a significant difference between males and females.

H2b: Geographical location moderates the positive relationship between financial literacy and financial inclusion, such that the effect is stronger for respondents from urban.

H2c: Level of education moderates the positive relationship between financial literacy and financial inclusion, such that the effect is higher for individuals with a high level of education.

H2d: Employment status moderates the positive relationship between financial literacy and financial inclusion. Such a relationship is stronger for the employed.

RESEARCH METHODOLOGY

This study adopted the quantitative research approach and thus employed exploratory data analysis. Data was collected through a survey and analysed by using the Partial Least Square structural equation modelling (PLS-SEM) technique. The choice of Smart PLS-SEM software is supported by the predictive nature of the research question, small sample size, expected non-normality of data and the need to confirm the theoretical assumptions of the TPB against empirical data. PLS-SEM facilitated the confirmation of the financial literacy and financial inclusion measurement models and their hypothetical relationship through the evaluation of the developed structural model.

Sampling Procedure and Data Collection

To ensure that adult Tanzanians from rural and urban areas are well represented, two regions (Dar-es-Salaam and Arusha) with high financial inclusion and the other two regions (Simiyu and Mara) with low financial inclusion in Tanzania were purposively selected. From the selected regions, one rural district and another urban district from each of the four regions were randomly selected for identifying streets and villages to draw the sample. It was from a list of twenty randomly selected streets/villages where the sample size was allocated proportionate to the number of households in the selected streets, thus making a sample size of 440 respondents in line with Yamane (1967) approach.

In this study, data was collected through a survey for six weeks, including one week for pilot testing from June to August 2021. The survey was guided by a structured questionnaire that adopted questions from related studies (Katoroogo, 2016; Lusardi & Mitchell, 2005; Morgan et al., 2019; OECD, 2013) that were customized in the Tanzanian context.

Measuring Financial Literacy

Financial literacy (FL) was measured as a multidimensional latent variable. Respondents' financial literacy was explained by the scores of their perceptions of financial knowledge, financial behaviour, and financial attitudes (Atkinson & Messy, 2012; OECD, 2013). The definition for each FL dimension is provided in Table 1. In addition, the survey instrument adopted a five-point Likert scale (strongly disagree to strongly agree) to test

respondents' perceptions of all three dimensions. As such twenty-one questions were asked to present seven indicators for each dimension. This measurement approach is in line with other financial literacy studies such as Al-Tamimi, (2009); Gerek & Kurt, (2008) and Oanea & Dornean, (2012).

Table 1: Definitions of Financial Literacy Dimensions

SNO	LABEL	NAME	DEFINITION	Source
1	FK	Financial knowledge and skills	The level of individual knowledge about financial concepts, financial service providers and financial skills	(Atkinson & Messy, 2012; Lusardi, 2008; OECD, 2013)
2	FB	Financial Behavior	The degree to which an individual use financial knowledge and skills to manage personal finances	(Atkinson & Messy, 2012; Lusardi, 2008; Lusardi & Mitchell, 2011; OECD, 2013)
3	FA	Financial Attitude	Personal ideas and perceptions that predict individual financial behaviour	(Kempson, 2009; Nicolini, 2006; OECD, 2013)

Measuring Financial Inclusion

Financial inclusion (FI) was measured at a micro-level representing individuals' perceptions of access to, usage, and quality of banking services. FI as a latent variable had six indicators with items representing the respondent's status on ownership of a bank account, proximity to a banking access point, saving or borrowing from a bank and the use of digital banking services. These indicators have also been used to measure financial inclusion in studies such as Cull & Scott, (2010); Demirgüç-Kunt & Klapper, (2013) and Triki & Faye, (2013).

Measuring Socio-economic and Demographic Factors

The categorical data for gender, residential location, level of education attained, age and level of income were selected to represent individual financial behaviour and were measured as binary. This approach for measuring categorical variables is consistent with financial literacy and financial inclusion studies such as Atkinson & Messy, (2013); Delafrooz & Paim, (2011); Lea et al., (1995); Lusardi & Mitchell, (2011) and Tuesta et al., (2015).

Data Analysis Method

The inter-relationships between FL and FI were estimated by using the Partial Least Square-Structural Equations Modelling (PLS-SEM). SEM is known to be effective in establishing causal contribution or influence between variables (Hair, 2010). In addition, it is credible and strong in defining a set of multiple and interrelated dependent relationships (McQuitty, 2004).

Reliability and Validity

In this study, content validity was established by sharing the survey questionnaire with professionals and practitioners in the fields of financial literacy and financial inclusion for assessing its coverage and suitability in the theoretical domain for improvements. In addition, face validity was established through a pilot survey which preceded actual data collection to identify and fix areas for improvements in the research instrument. Furthermore, Composite Factor Analysis (CFA) was performed to confirm the inter-relationships of items between study constructs while the validity of the structural model was established after assessment of discriminant and convergent validity and model fitness tests in line with PLS-SEM acceptance criteria as suggested by Fornell & Larcker, (1981) and Henseler et al., (2009).

Ethical Considerations

During data collection, the respondents' right to anonymity and privacy was preserved. In addition, respondents if not interested to share information were given the right to withdraw at any stage from continuing to respond to the questionnaire. On the other hand, researchers' contacts were provided in the questionnaire to facilitate communication when a respondent has ethical concerns. Lastly, given that data were collected during the COVID-19 pandemic, necessary health protocols in Tanzania were observed to ensure the safety of respondents.

ANALYSIS AND RESULTS

Demographic characteristics of respondents were analysed by using SPSS while the hypothesized relationships among study variables were analysed by using Smart PLS.

Demographic Characteristics of the Respondents

Respondents' profiles and characteristics were described by using frequency and percentage as recommended by (Leech et al., 2005). The study sample had 49.5% females and 50.5% per cent males. Respondents' age profiles indicated a significant proportion of two age groups, i.e. 26-35 years (31.1%) and 36- 54 years (30.7%). These age groups are considered to be the most active and energetic workforce in the country,(NBS, 2020). With regard to the

education background, respondents had various educational backgrounds ranging from those who have not attended any formal education to graduates from higher learning institutions. Concerning participation in economic activities, (24.5%) were employees, (50.9%) were entrepreneurs/self-employed in micro and small businesses, (16.4%) were farmers and (8.2%) were unemployed. Similarly, respondents' levels of income were varying across groups ranging from those whose income was below the minimum wage rate (TZS 65,000) for the private sector to those who had income above TZS 1,000,000. Details of the respondents' demographic profiles are provided in Appendix 1.

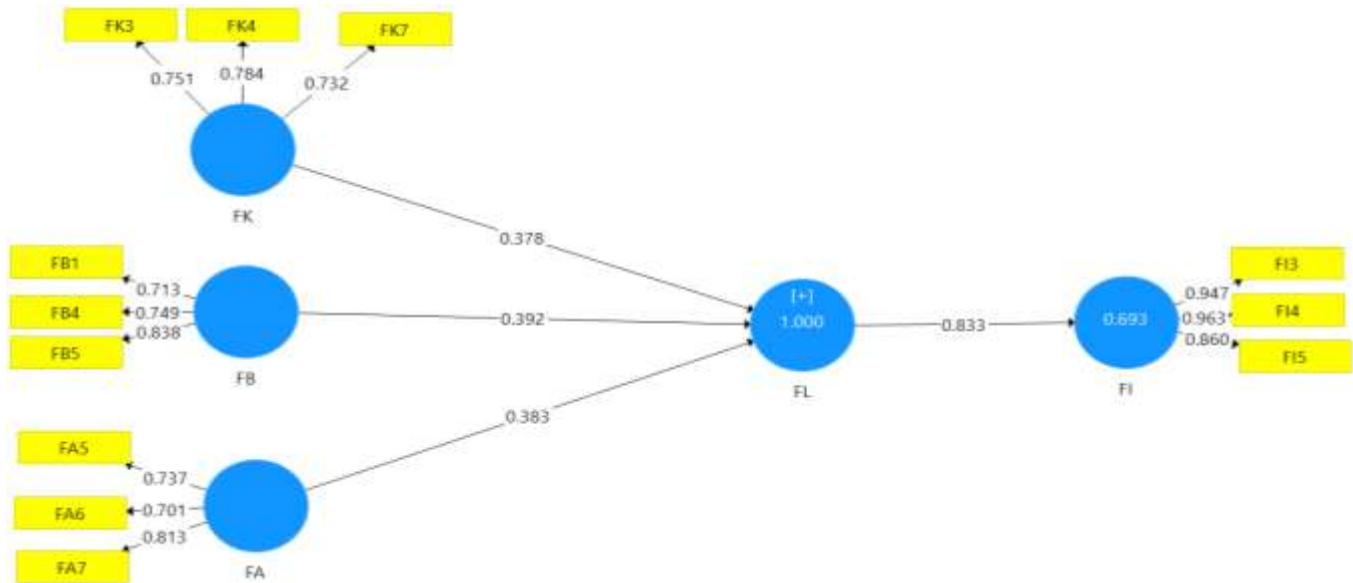
Financial Services Characteristics of Respondents

Data analysis indicated that from the study sample, 38 per cent had bank accounts and six per cent had borrowings from banks. In addition, the majority of the un-banked were users of alternative financial services such as Mobile Money payments (96 per cent), savings in SACCOS (18.8 per cent) and credit from a SACCOS (17.5 per cent). These results indicate that there has been a remarkable growth in the use of banking services since the last financial services demand-side surveys that positioned Tanzania to have a banking inclusion of 17 per cent for individuals and 12.3 per cent for households (FINSCOPE, 2017; NBS, 2020). In addition, results indicate that the majority of the unbanked are actively using mobile payment services, micro-loans and savings through microfinance institutions as an alternative to banking services. The high usage of some of the alternative phenomena is attributed to high levels of mobile phone ownership by Tanzanians and their perceptions of the easy and attractive terms in accessing basic savings and credit services from non-bank institutions. Details of the respondents' financial services profiles are presented in Appendix 2.

Assessment of the quality of the measurement model

Before analysing the structural model, the measurement model was assessed to identify and confirm the alignment of constructs with their respective indicator variables to validate the theoretical relationships between observed indicators and latent constructs. FL construct is measured in three dimensions which are financial knowledge (FK), financial behaviour (FB) and financial attitude (FA), while Financial inclusion is a latent endogenous variable represented by six indicators which are Proximity to a banking access point (FI1), owning a bank account (FI2), saving in a bank (FI3), borrowing from a bank (FI4), use of agent banking services (FI5) and the use of mobile banking services (FI6). Figure 2 provides the measurement model which has retained factor items that are strong in explaining the study variables.

Figure 2: First-order Measurement Model



Indicators Reliability

Factor loading was used to measure how much the dimensions of a factor are accounted for by the variable (Yong & Pearce, 2013). In addition, the development of a measurement model for the study variables ensured that each construct has at least three items and for a factor to be retained, it must have loadings (standard regression weights) of not less than 0.5 (Wolfenbarger & Gilly, 2003). Therefore, in this study, the retained indicators had loadings of 0.7 and above hence ensuring adequate reliability. Factor loadings for the retained indicators are provided in Table 2 while Figure 2 represents the modified model which retained items for measuring FL and FI.

Table 2: Factor loading matrix for the first-order measurement model

Item	Questions	FA	FB	FI	FK
FA5	I often pay my bills when I have money, not because of due dates	0.737			
FA6	I find borrowing from banking institutions safe than using informal providers	0.701			
FA7	I can easily choose an appropriate financial service for me	0.813			
FB1	I have long-term financial goals and I work towards achieving them		0.713		
FB4	I usually save for incidental and huge expenses		0.749		

	I compare the price and quality of service across financial providers before applying for a loan or a savings product.	0.838	
FB5			
FI3	I have an active bank account		0.947
FI4	I have used mobile banking in the last year		0.963
FI5	I have used agency banking in the last year		0.860
	I know how to calculate the cost of a loan from a bank		0.751
FK3			
	I have adequate numeracy skills to handle money transactions		0.784
FK4			
	I know how to resolve complaints when aggrieved by a financial service provider.		0.732
FK7			

Table 2...

Internal Consistency Reliability and Convergent Validity

Internal consistency of the exogenous latent variables was determined by Cronbach's alpha (CA) and Composite Reliability (CR). The general rule of thumb is to accept CA values that indicate higher levels of reliability (Hair et al., 2019). CA results for all the factors ranged from 0.61 to 0.65 while the CR ranged from 0.79 to 0.81. These results were above the minimum thresholds of 0.6 for CA and 0.7 for CR respectively indicating that the measurement model is reliable.

In addition, Average Variance Extracted (AVE) was used to determine the extent to which a construct converges to explain the variance of its items. The minimum acceptable threshold for AVE is 0.5 thus means that the construct explains at least 50 per cent of the variance of its items. AVE results for all the constructs ranged from 0.56 to 0.59 above the minimum threshold indicating that the convergent validity is established, (Hair, 2009). Details of the results of internal consistency reliability and convergent validity are provided in the Table 3.

Table 3: Reliability test results for the first-order measurement model

Construct	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
FA	0.613	0.795	0.565
FB	0.655	0.811	0.590
FK	0.625	0.800	0.572
FI	0.914	0.931	0.855

Assessment of Construct Discriminant Validity

Discriminant validity is the extent of the distinction of one construct from the rest in a measurement model. In this study, the Fornell & Larcker, (1981) criteria were used to measure discriminant validity. The acceptable general rule is when the shared variance for all the constructs is less than their AVEs. The results of inter-construct correlations and square roots of AVEs indicate that discriminant validity in the measurement model was established. Secondly, the discriminant validity of the measurement model was assessed at the construct items level. Item discriminant refers to the extent to which two items measuring the same construct are distinct from each other, (Chin, 1998). The items' discriminant validity for each construct was examined by using the cross-loading (Chin, 1998), criterion. This metric requires that the loading of each item within a construct should be higher than all of its cross-loading in a column and row. After the analysis, the cross-loadings matrix indicated that discriminant validity in the measurement model was established in line with the set criteria. Details of the discriminant validity results are provided in Table 4-5.

Table 4: Fornell –Larcker Criterion Results

	FA	FB	FI	FK
FA	0.752			
FB	0.652	0.768		
FI	0.752	0.697	0.924	
FK	0.593	0.632	0.71	0.756

Table 5: Cross loadings for construct items in the measurement model

Construct Item	FA	FB	FI	FK
FA5	0.737	0.523	0.498	0.419
FA6	0.701	0.402	0.567	0.429
FA7	0.813	0.538	0.629	0.487
FB1	0.380	0.713	0.392	0.411
FB4	0.465	0.749	0.448	0.415
FB5	0.627	0.838	0.719	0.604
FI3	0.770	0.718	0.947	0.684
FI4	0.722	0.67	0.963	0.678
FI5	0.574	0.528	0.860	0.601
FK3	0.471	0.461	0.614	0.751
FK4	0.454	0.512	0.572	0.784
FK7	0.418	0.460	0.417	0.732

Measurement Model for Higher-Order Constructs

In this study, financial literacy is considered a higher-order construct. The higher-order model hypothesizes FL as a predictor construct and FI as the dependent variable. The variable indicator items and their loadings are provided in Figure 4.

Figure 3: Higher Order Measurement Model



Assessment of the Structural Model

After assessment of the measurement model, the developed model was evaluated for reliability, validity and the hypothesized causal relationships as provided in the below sections.

Measurement of Collinearity

As a precondition for structural model analysis, the collinearity between predictor constructs was assessed by using the Variance Inflation Factor (VIF) test. A conservative general rule of thumb requires the construct's VIF not to exceed five, (Hair et al., 2019). VIFs of all the constructs were below the minimum threshold of 5.0 indicating that there is no linear relationship between the model predictors. Table 6 provides the VIF of all the predictor constructs.

Table 6: VIF Results

Construct	VIF
FA	1.92
FB	2.08
FK	1.84

Reliability and Validity Test of the Higher Model

The higher-order measurement model was also evaluated for construct reliability and validity by using Cronbach's alpha, Composite Reliability and Average Variance Extracted (AVE) criterion and met the minimum thresholds. In addition, the structural model was also

tested for discriminant validity by using Fornell –Larcker Criterion and Cross loadings. The assessment results indicated that discriminant validity between independent and dependent constructs was established in all two criteria. Details of the reliability and validity test results are provided in Table 7-9.

Table 7: Second-order constructs Reliability test results

Construct	Cronbach's Alpha	Composite Reliability	AVE
FI	0.914	0.946	0.885
FL	0.834	0.900	0.750

Table 8: Fornell –Larcker Validity Test Results

Construct	FI	FL
FI	0.924	
FL	0.832	0.866

Table 9: Cross loadings for construct items in the second-order model

Constructs	FI	FL
FA	0.752	0.870
FB	0.697	0.875
FK	0.710	0.853
FI3	0.947	0.837
FI4	0.963	0.798
FI5	0.860	0.656

Assessment of the Significance and Relevance of the Path Model

In PLS-SEM the bootstrapping procedure was employed to estimate path coefficients to determine the relevance and significance of the structural path model. The determination of the significance of the path coefficient was guided by empirical t-value and p-value results. Given that the analysis assumed a one-tailed test at a significance level of 5 per cent, the general rule for establishing statistical significance is when the t-value is greater than a critical value of 1.645 and the P-value is less than 0.005 (Sarstedt et al., 2017). Results indicated that financial literacy exerts a positive and significant influence on financial inclusion (path coefficient = 0.83), thus supporting hypothesis 1. Details of the path analysis results are provided in Table 10.

Table 10: Bootstrapping results for FL and FI path model

Path relations	Path Coefficients	Standard Deviation	T- Values	P Values	95% Confidence Intervals	Significance (p < 0.05)
FL -> FI	0.83	0.014	60.004	0.000	(0.80; 0.85)	Yes

Coefficient of Determination (R²) and Prediction Relevance (Q²)

The coefficient of determination is a measure of the combined effect of an exogenous latent variable on the endogenous latent variable. Bootstrapping analysis results indicated that the sample predictive power (R²) in the model was 69.0 per cent indicating a moderate explanatory power (Hair et al., 2019). Thus, implying that financial literacy influences a substantial positive change in financial inclusion. On the other hand, the model prediction relevance also referred to as the out-of-sample predictive power (Q²) was assessed (Geisser, 1974). In this study, the predictive validity (Q²) was determined by conducting the blindfolding procedure while maintaining an omission distance of seven (7). Results indicate that the path model had a medium prediction relevance (i.e. Q²=0.56) for financial inclusion.

Model Goodness of Fit

In the PLS-SEM model fitness is measured by Standard Root Mean Square Residual (SRMR). Although, a tested threshold for SRMR has not been provided (Hu & Bentler, 1998; Schermelleh-Engel et al., 2003) suggest that SRMR below 0.08 is considered to be a conservative threshold to indicate the acceptable fitness of a structural model. In this study, SRMR for the estimated model was found to be 0.07 below the conservative threshold indicating that the estimated structural model is fit. In addition, Normed Fit Index (NFI) was at 0.89 below the threshold of 0.9.

Estimating the Moderating Effect of Social demographic characteristics

Smart PLS Henseler's bootstrap-based MGA was selected to examine the moderating effect of demographic factors on the relationship between FL and FI. The method was considered suitable because it is appropriate for categorical moderator variables, it is conservative and is based on a non-parametric assumption consistent with PLS-SEM and is suitable for assessing group differences when the sample size is not necessarily equal (Cheah et al., 2020). In addition, for determining whether there is a moderating effect of a hypothesized moderator in a given path relationship it is when the moderation effect is statistically

significance. This happens when the P-value of the differences between specific path coefficients across groups is below 0.05 or higher than 0.95 (Henseler et al., 2009).

PLS- MGA for Gender

The moderating indicator Gender is a categorical variable with two groups (218 males and 222 females). Through the bootstrapping procedure, parameter estimates (path coefficients and standard error) between the two groups were assessed to identify if there are significant differences between the two groups. PLS-MGA results indicate that males have a strong relationship ($\beta=0.842$) than their counterparties females ($\beta=0.819$), however, this difference is not statistically significant as indicated in Table 11.

Table 11: PLS-MGA results for Gender groups

Path Coefficients-difference			
Path relation	(Male v/s - Female)	P-Value (Male vs Female)	Significance
FL -> FI	0.022	0.783	No

PLS-MGA for Geographical Location

Geographical location was also hypothesized to have a moderating effect on the relationship between FL and FI. In the data set, this categorical variable had two groups, rural (n=143) and urban (n=297). The PLS-MGA analysis indicates an interesting result, suggesting that this relationship is strong for rural residents than it is for those from urban. However, the observed difference between rural and urban residents is statistically insignificant to influence the relationship between FL and FI. The differences between the two path models are presented in Table 12.

Table 12: PLS-MGA results for a residential location

Path Coefficients-diff			
Path Model	(Rural v/s Urban)	P-Value(Rural vs Urban)	Significance
FL -> FI	0.013	0.353	No

PLS –MGA for Level of education

The respondents with no formal education and primary school education were categorized as the first group (low education) while those with secondary school level, diploma and graduates as the second group (educated) as a precondition for running the MGA analysis. The MGA results indicate that education level has a significant and positive moderating effect

on the relationship between FL and FI. Further, it indicates that the educated had a strong relationship ($\beta=0.822$) as compared to those with low education ($\beta=0.470$) as evidenced by each group's path coefficients and significance results ($P=0.000$). The differences between the two path models are presented in Table 13.

Table 13: PLS-MGA results for education status

Path relations	Path Coefficients-diff (Educated - Low education)	T-Value (Educated vs Low education)	P-Value (Educated vs Low education)
FL -> FI	0.352	4.826	0.000

PLS –MGA for Employment status

To test the moderating effect of this variable, two groups were created. First, respondents who were either employed in the public and private sector or self-employed were categorised as one group (i.e. employed) and secondly, the farmers who mostly were small farmers engaging in food crops for family consumption and those who were not engaged in any economic activities were categorized as the second group (i.e. unemployed). The MGA results indicated that employment status has a significant and positive moderating effect on the relationship between financial literacy and financial inclusion. Further, it indicates that the employed had a strong relationship ($\beta=0.833$) as compared to the unemployed ($\beta=0.710$) as evidenced by each group's path coefficients and significance results ($P=0.000$). The differences in the two path models are presented in Table 14.

Table 14: PLS –MGA for Employment status

Path relations	Path Coefficients-diff (Un-employed v/s Employed)	P-Value (Un-employed vs Employed)
FL -> FI	0.123	0.015

DISCUSSION OF THE RESULTS

The study findings confirm that there is a significant positive relationship between financial literacy and financial inclusion. The confirmed relationship implies that the higher the level of financial literacy, the higher the likelihood of people to demand and use banking products and services. Therefore this result is consistent with the Theory of Planned Behaviour (Ajzen, 1991) because financial literacy can instil positive financial attitudes and shape financial behaviour as well as impart necessary knowledge which gives people the capability to

understand banking product features, and their benefits and thus creates the demand and influences the actual use of banking services by the unbanked.

Similar findings were noted from studies outside the context of Tanzania, these include Atkinson & Messy, (2013); Jappelli & Padula, (2013) and Lusardi, (2008) that provide evidence on how financial literacy can influence people to develop a saving behaviour and demand or accept complex financial services such as banking services. Further, the ability of financial literacy to predict financial inclusion is also evidenced by Lusardi & Mitchell, (2011) who has associated people's possession of financial literacy with their ability to make informed financial choices and decisions.

To address the low level of usage of banking services in the country, it will require both the schooling and non-schooling adult population to have access to financial literacy. Similarly, the design of the financial literacy programs will have to take into account all three dimensions of financial literacy to allow potential users of banking services to understand its importance and take the initiatives to open accounts with banking institutions. The appropriate design and implementation of financial literacy for the on-schooling population can be incorporated in the national education system while for the off-schooling population can be implemented by certified financial educators within their financial literacy programs.

In addition, the study results indicate that demographic characteristics have a moderating effect on the relationship between FL and FI. Specifically, the level of education and employment status are found to have a positive and significant impact on the ability of FL to predict FI. This result suggests that people who are educated and with a regular income when they are given access to financial education are likely to demand and actively use banking services. In addition, this study identifies that differences in gender and geographical location across people do not matter when it comes to the ability of financial literacy to influence financial inclusion in the banking sector. This result builds on the work of Lotto (2020b) who found that Tanzanian men, young people, and people with higher levels of education and income are equipped with high levels of financial literacy, however, the statistical impact of these indicators on the relationship between FL and FI was yet to be established.

CONCLUSION

Although financial inclusion and financial literacy have been extensively studied, limited empirical research exists on their relationships and how that relationship can be enhanced by the moderating effect of demographic characteristics. This study, therefore, has evidenced the presence of a positive and significant relationship between financial literacy and financial inclusion in the context of the banking sector in Tanzania.

The study proposes a model to predict financial inclusion through financial literacy as a higher-order construct comprising financial knowledge, financial behaviour and financial attitude dimensions. In addition, the study has jointly assessed the moderating effect of demographic characteristics on the main path model (between FL and FI). Results indicate that FL has a positive and significant influence on FI. Furthermore, it has been established that gender and residence location differences do not matter in this relationship, however, level of education and employment status have a positive moderating effect on the ability of FL to influence FI. Based on the study objectives and the findings thereon, the ability of financial literacy to positively and significantly influence financial inclusion implies that when people possess FL, their level of knowledge and understanding will attract their demand for banking services, call for improved quality of banking services and thus fostering financial inclusion.

Empirical Contributions

The findings of this study advance existing knowledge in the field of financial literacy and financial inclusion by enriching the evidence on how financial literacy influences the demand and use of banking services. This is because some previous scholarly work suggests that this relationship is insignificant and does not matter (Gupta & Singh, 2013). Further, in this study, FL is measured as a multidimensional higher-order construct explained by financial knowledge, behaviour and attitude, this measurement approach extends the application of the theory of planned behaviour to predict financial inclusion and continues to contribute to empirical FL studies that have applied more than one dimension to measure FL contrary to the dominance of studies that have applied one or two use these dimensions (Huston, 2010; Lusardi, 2008; Lusardi & Tufano, 2009). Furthermore, the identified moderating effect of the level of education and employment status in this relationship offers a valuable extension in financial inclusion studies because previous research in Tanzania had focused on the direct relationship of demographic characteristics on either FL or FI while ignoring the impact of the moderators on the relationship between the two variables (Krause et al., 2016; Lotto, 2020b).

In addition, the use of PLS-SEM in this study provides a valuable contribution to FI research methodologies given that the majority of financial inclusion studies have applied covariance-based SEM models and other regression methodologies which are inferior to PLS-SEM, (Chin, 1998).

Policy Implications

In the context of Tanzania, the findings of this study inform the next review of the national financial education strategy since it provides the basis for extending the definition, dimension and focus of financial literacy by incorporating financial behaviour and financial attitude as necessary learning outcomes in the implementation of the national financial education initiatives. In addition, the study provides an evidence-based rationale for the government to continue to engage stakeholders and support the implementation of education strategy given its potential to improve access and use of financial services in the country. On the other hand, given the witnessed slow pace in the operationalization of the financial education strategy, Tanzania should consider incorporating financial literacy into the school curriculum as a strategy for inculcating positive financial attitudes and behaviour in the youth when they are still at young age. Similarly, when developing financial literacy programs, the Government can target community groups and deliver financial education through financial literacy learning clubs to easily scale up the implementation at a cost-effective delivery mechanism.

Managerial Implications

This study provided a measurement model for financial literacy for financial service providers including banks to refer in assessing financial literacy gaps among their existing and potential customers for purposes of developing evidence-based and tailor-made financial education intervention programs. On the other hand, the study identifies and emphasizes the need for banks to take into account the differences in demographic characteristics among people and their impact on the relationship between FL and FI such that their interventions to reduce financial illiteracy should prioritize the educated, high-income people to record a greater impact on financial inclusion. Further, given that the impact of financial literacy on the unbanked from rural and urban, and among males and females is the same then banks, financial educators and government should deliver financial education interventions across these groups without discrimination.

Limitations and future studies

This study examines the role of FL in predicting financial inclusion in the banking sector. However, financial services other than banking are not explained by this relationship. Therefore, future research can make inferences to this study and examine the role of FL in the range of financial services other than banking to determine the extent and magnitude of its contribution across the financial sectors. In addition, this study applied a quantitative research approach to

analysing the ability of FL to influence FI. However, the use of the quantitative method may limit qualitative information that captures other behavioural factors to explain the state and contribution of financial literacy to financial inclusion. In this regard, similar future studies can consider the use of mixed-method to extend the findings of this study by analysing qualitative information that further explains the relationship between FL and FI.

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APPENDICES:

Appendix 1: Demographic Characteristics of Respondents (N=440)

SN	Details	Category	Frequency	Per cent
1	Gender	Male	218	49.5
		Female	222	50.5
2	Residential Location	Urban	297	67.5
		Rural	143	32.5
3	Age (years)	18-25	81	18.4
		26-35	137	31.1
		36-54	135	30.7
		55 and Above	87	19.8
4	Income (TZS)	Below 65,000	61	13.9
		65,000-400,000	255	58.0
		Above 400,000 -1,000,000	104	23.6
		Above 1,000,000	20	4.5
5	Employment status	Employee	108	24.5
		Self-employed	224	50.9
		Farmer	72	16.4
		Unemployed	36	8.2
6	Education level	No formal education	26	5.9
		Primary	152	34.5
		Secondary	124	28.2
		Diploma	80	18.2
		Graduates and above	58	13.2

Source: Field Data (2021)

Appendix 2: Respondents' Financial Services Profile

SN	Details	Frequency	Per cent
1	Own a Bank account	169	38.41%
2	Save in the Bank	162	36.82%
3	Borrow from a Bank	27	6.14%
4	Bank Transfer	54	12.27%
5	Use Mobile Money Payments	426	96.82%
6	Save in a SACCOS	83	18.86%
7	Borrowing from a SACCOS	77	17.5%
8	Mobile banking	100	22.7%
9	Agency	149	33.9%

Source: Field Data (2021)