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Role of Financial Innovation in Enhancing MSMES Access to Credit: An Empirical Investigation on Tanzania

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Abstract

The study assesses the extent to which financial innovations contribute to improving micro small and medium enterprises (MSMEs) access to credit in Tanzania. It seeks to assess the level of access to credit through innovative platforms[1]; identify factors which influence MSMEs to take loans through innovative channels, and constraints; and evaluate the statistical importance of innovative platforms and other constraints in enhancing the probability of MSMEs to borrow. Information was collected through interviews using a structured questionnaire administered on a sample of 318 respondents drawn from selected regions in Tanzania. Probit estimates were used for robust check of the factors that influence MSMEs borrowing behavior.

The findings indicate that factors which influence MSMEs to borrow money through innovative channels comprise the need for meeting business start-up, operational, and expansion costs. Other factors are in respect of ease of access; convenience; short loan process; and a relatively high degree of control of the loan process by the borrower. In contrast to progress made in improving access to financial services by MSMEs, loan access by individuals or businesses through innovative platforms is still low. Out of 318 respondents, only 28.8 percent acknowledged having received loans through innovative platforms. Reflecting the low importance of innovative platforms, this result is also confirmed by the Probit estimates. Respondents suggest a combination of factors in explaining this anomaly, including unfavorable terms of the loan (collaterals); high cost of loans, inadequate knowledge about loans provided through available innovative platforms; small-size of offered loans; and short repayment period. Meanwhile, loan process time, loan size, loan access (distance) have a higher probability of increasing loan access by MSMEs.

The implications of these findings are that there is a need to intensify measures geared in enhancing MSMEs access to credit, taking advantage of available innovative platform channels. There is a need to intensify efforts towards reducing credit risk, which is important for lowering lending rates. Moral suasion measures by financial regulators together with traceable business-record can as well entice loan providers to offer loans of larger size and maturity. Capacity building is also imperative in enabling MSMEs to acquire requisite business management skills and inculcating record-keeping culture. It is essential as well to carry on measures towards maintaining the country's macro-economic stability so as to boost demand for credit and improve MSMEs' loan repayment capabilities.

[1] Innovative platforms referred in this paper are: MFIs, SACCOS, saving groups, leasing, subcontracting, and mobile phone systems.

1.0 Introduction

It is now widely acknowledged that the access to reliable and affordable financial services to the majority of the Tanzanians matters in fostering economic development through realization of the industrialization agenda and Vision 2025. This is through a noble role that financial institutions play in transferring funds from surplus spending units (savers) to deficit spending unit (investors), thus promoting efficiency and economic growth, see for example Shaw (1973) and McKinnon (1973). Financial institutions also facilitate a friendlier business environment for both domestic and international transactions.

In recognizing this significant role of financial services, the Government undertook a number of initiatives aiming at putting in place a vibrant financial sector. These initiatives started with the first-generation financial sector reforms that begun in 1991 aiming at allowing the market forces to allocate funds in a more efficient way, enhancing the effectiveness of monetary policy instruments, and to promote competition among financial institutions in order to improve their efficiency. Following the recommendations of the Financial Sector Assessment Program (FSAP), the country embarked on the second-generation financial sector reforms that were geared towards increasing efficiency and depth of the financial sector to spur economic growth through facilitating provision of long-term development finance and strengthening micro and rural finance under an enabling policy, legal and regulatory framework, BoT (2016a). Following the policy changes and reforms, the financial sector recorded significant improvements including increased number of private financial institutions; enhanced efficiency and competition, Mbowe (2010) and BoT (2016b).

Despite the achievements, small and medium enterprises (SMEs) continue to face challenges in accessing loans from the formal financial institutions. Olomi and Urassa (2008) noted for example that access to finance is the most serious barrier to expansion of SMEs in Tanzania. Partly portraying the severity of the problem, a study by Abdal (2011) suggests that formal financial institutions fund less than one percent of the total demand of approximately eight million MSMEs countrywide. Furthermore, UNIDO (2013) indicates that only 14 percent of SMEs had access to credit from formal financial services.

In the effort to solve this problem, the government took a number of initiatives including introduction of SMEs Development Policy in 2003 to create an enabling business environment; and putting in place of a supportive institutional infrastructure that provides for the establishment of micro-finance institutions. It also introduced SME financial schemes including SME credit and export guarantee schemes, SME competitiveness facility, and encouraged establishment of micro-finance banks.

The improvements were also linked with the emergence of 'challenger banks' through financial innovations. These include among other Savings and Cooperative Associations (SACCOS), Village Community Bank (VIKOBA), Accumulating Savings and Credit Associations (ASCA), contract financing as well as mobile financial services.

With these developments, the financial sector recorded significant achievement in providing more avenues to the unbanked and the poor to have access to financial services, Mbowe (2018). The exclusion rate (from formal financial services) declined from 54 percent of the adult population in 2006 to 28 percent 2017, FINSCOPE survey (2017). Unclear though is the understanding on the level to which these innovations in the financial sector have contributed to the improvement in credit access by the Micro, Small and Medium Enterprises (MSME's). Knowing this is essential because finance is an important element for determining the growth and survival of SMEs, ACCA (2009). Finance allows small businesses to undertake productive investments and contribute to the development of the national economy, Beck and Demirguc-Kunt (2006). Specifically, external finance is key for boosting start-up businesses; and it helps in improving the competitiveness of SMEs in the international markets, to expand the businesses and strike linkages of business with the large firms, Osano and Languitone (2016).

The success of the industrialization process in Japan, Taiwan and Korea, for example, was largely due to the vast number of SMEs operating flexibly and filling production processes of intermediate goods for big companies, United Nations (2005). In this regard, a stronger SME sector can bolster a country's resilience by broadening and diversifying the domestic economic base, thereby reducing vulnerability to sector-specific shocks and fluctuations in international private capital flows. The integration of the SME sector into a formal business can also increase the country's tax base and boost government revenue. Addressing finance challenges faced by MSMEs in Tanzania therefore can help increase MSMEs contribution to the economy; which is currently 27 percent of GDP, and employ more than 5.2 people. According to Diao et al. (2016), about 73 percent of the increase in total private non-agriculture employment estimated at 3,331,032 between 2002 and 2012 was created in the informal economy largely by micro and small firms.

The current study seeks to investigate the extent to which financial innovations have contributed in enhancing MSMEs access to credit in Tanzania. Three specific objectives are tackled: a) assessing the level of MSMEs access to credit through innovative platforms in comparison to traditional banking system; b) establishing factors which influence MSMEs to take loans through innovative channels, and the constraints; b) evaluating the statistical importance of innovative platforms and other constraints in enhancing the probability of MSMEs to borrow.

The rest of the paper is organized as follows: after this introduction section, section two provides an overview of financial innovation and financial access by MSMEs in Tanzania. Section three presents a literature review covering both theoretical as well as an empirical literature. Section four describes the research conceptual framework and methodology. Section five discusses the study findings. Section six presents conclusion and policy implications.

2.0 Financial Innovation and Financial Access by MSMEs in Tanzania

Tanzania implemented major financial reforms starting from 1991, creating a dynamic sector supported by market forces, and characterized by innovation in services provision. The improvements commenced with the first-generation financial sector reforms began in 1991 with the emphasis on putting in place a conducive environment for a free market to operate and to provide quality and reliable financial services. The reforms envisaged bringing about a new financial landscape in Tanzania and a new culture of doing business, BoT (2016a). Following the status review in 2001 and 2003, it was apparent that more had to be done to, among other things, expand access to financial services by most Tanzanians; develop medium and long-term lending instruments; and bring financial services within the reach of the small and medium enterprises (SMEs) sector.

The recommendations from the review of the first-generation financial sector reforms led to the Second-Generation Financial Sector Reforms (SGFSR) implemented in 2006 to 2011, with the aim of facilitating the provision of long-term development finance to support improvement in the availability and access to long-term financing for enterprises, infrastructure, and housing. It also sought to strengthen micro and rural finance focusing on promoting a viable and sustainable microfinance industry with a wide outreach, operating under an enabling legal and regulatory framework, BoT (2016b). This was important because up to the late 1990s, microfinance sector was uncoordinated with no governing policy, which culminated into the development of the National Microfinance Policy (NMP) in 2000 and the legal and regulatory framework including the development of microfinance regulations in 2005. To further take on board changes in technology and mandate in managing the microfinance sector, the Banking and Financial Institutions (Microfinance Activities) Regulations were put in place in 2014 and amended in 2015. The NMP (2000) was reviewed in 2016 with a view to creating an enabling environment that promotes the development of appropriate and innovative microfinance products and services to meet the real needs of the low-income population in order to enhance economic growth and accelerate poverty reduction, BoT (2017). Other players in this area include SACCOS, financial non-governmental organizations, credit only companies and informal microfinance service providers including VICOBA, Accumulating Savings and Credit Associations (ASCA), which are widely spread in the

country[2]. Information on loans granted through some of these innovative channels are however not readily available.

VICOBA is a saving group model that emerged in Tanzania since 2010 focusing on mobilizing financial resources from members engaging in small productive activities through their savings and lending. This product helps to address the adverse selection and moral hazard problems by shifting the responsibility of screening, monitoring and enforcement from lenders to clients. In case of default, group members' savings cater for repayment creating an incentive to make sure right clients are chosen in the group, thus lowering transaction costs; improving service delivery; and increasing accessibility of the service to the SMEs, ADB (2005).

In 2002 and 2005, two Credit Guarantee Schemes (CGS) namely; Export Credit Guarantee Scheme (ECGS) and SME Credit Guarantee Scheme (SME-CGS) were established respectively to promote access to credit facilities by borrowers from domestic financial institutions. These schemes are geared towards developing financing infrastructure in the economy in order to support borrowers with viable businesses but lacking adequate collaterals to secure bank financing. As at the end of December 2018, cumulative loans granted by lending institutions since inception were TZS 1,785.9 billion for ECGS and TZS 10.5 billion for SME-CGS, of which cumulative value of guarantees issued amounted to TZS 1,358.1 billion and TZS 5.1 billion, respectively.

Lease finance and mortgage markets were also allowed in the country since 2008. Leasing is the medium-term financial instrument aimed at covering the investment needs of the companies for machinery. Leasing is an important source of financing for SMEs as it can be used to finance investment without making a large initial cash outlay, enabling the entrepreneur to match expected income and expenditure. Data available at the Bank of Tanzania indicate that, by the end of December 2017, loans amounting to TZS 35 billion had been provided in the form of leasing. Meanwhile, outstanding mortgage debt as at 30 June 2018 stood at TZS 331.49 billion, BoT (2018).

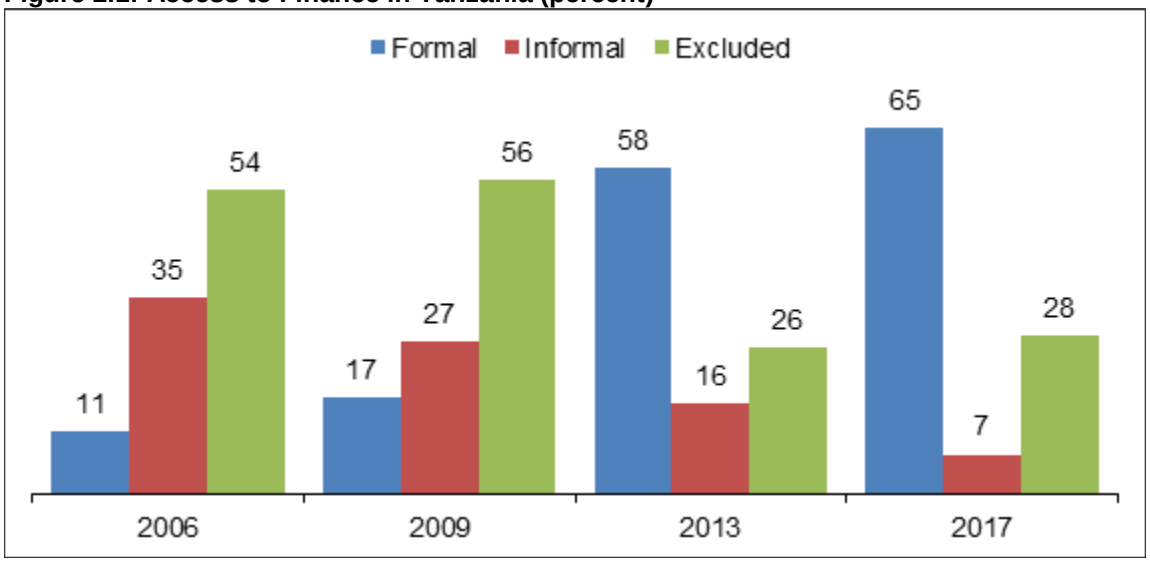
Several other initiatives have been taken to enhance access to formal financial services. Such measures go beyond reforms in the financial sector that addressed structural and regulatory issues to broadening access to financial services to majority of the adult population. Achievements have been recorded facilitated by the adoption of a three-tier approach: the policy and regulatory environment, coordination platform and innovation and technology, BoT (2016a). The regulatory approach is flexible, allowing non-bank institutions to offer basic payment services, while a coordination platform was established by the nation's central bank to facilitate the implementation of action plans, involving multi-stakeholders who are geared towards achieving national targets for financial inclusion. In addition, banks and mobile operators have embraced technology in bringing

[2] BoT (op.cit.).

cost-effective solutions. In this, mobile phones have been instrumental contributed by a fast increase in the utilization of mobile telephone technology. Mobile money registered accounts, for example, reached 76.1 million at the end of September 2017; with 17.6 million active users, more than double the number of users in 2012.

Mobile telephone technology is now used as a platform for other financial service providers to reach customers and the unbanked. Second generation products that go beyond payments have been introduced in the market to deepen financial services to the unbanked through partnerships between mobile network operators and banks, insurance, pension and securities to offer services, such as micro-credit, micro-insurance, micro-pension and micro-equities and bonds. All these initiatives provide more avenues to the unbanked and the poor to have access to financial services (Mbowe, 2018). The efforts contributed to the decline in financial services exclusion rate of 54 percent of the adult population in 2006 to 28 percent in 2017. According to the 2017 Finscope survey, about 79.9 percent of MSMEs had access to banking and non-banking financial services, up from 73 percent in 2013, because of mobile money payment systems. Financial access for smallholder farmers also increased from 14 per cent in 2009 to 59.8 percent in 2017.

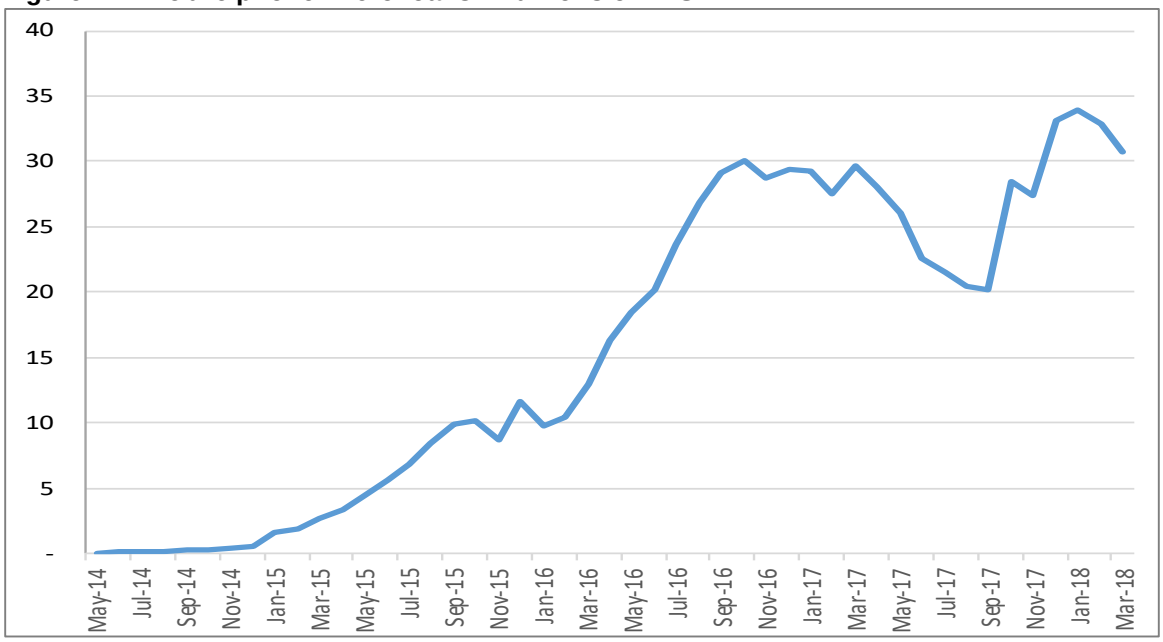
Figure 2.1: Access to Finance in Tanzania (percent)



Source: Tanzania Finscope Survey, 2017

Through the mobile phone, credit only institutions have engaged with mobile network operators to provide micro loans through their customers' base and platforms, FSDT (2017). The micro loans through the platform increased very fast between December 2014 and October 2017, from TZS 0.29 billion to TZS 30.12 billion, before exhibiting noticeable volatility thereafter.

Figure 2.2: Mobile phone micro loans in billions of TZS



Source: Tanzania Finscope Survey, 2017

3.0 Literature Review

3.1 Theoretical Literature

Certain individuals or groups in credit markets may fail to access loans despite demand exceeding supply of loanable funds. Theoretical underpinning of this thinking is best captured by the information asymmetry and credit rationing theories, see Akerlof (1970), Stiglitz and Weiss (1981). Information asymmetry occurs when one party has more or better information than the other creating an imbalance of power in transactions leading to market failure. This can happen through adverse selection and moral hazard[3].

In his seminar work, Akerlof (1970) shows that credit markets could reflect the operation of the "lemons problem"[4] so that borrower's reputation plays an important role for credit to be granted.

[3] Adverse selection occurs when one party in a negotiation has relevant information the other party lacks. The asymmetry of information often leads to making bad decisions, such as doing more business with less-profitable or riskier market segments. In contrast, Moral hazard exists when a party to a contract can take risks without having to suffer consequences. It is common in the lending and insurance industries as well as employee-employer relationships. See, https://www.investopedia.com/terms/m/moralhazard.asp.

[4] This refers to a form of adverse selection where there is a degradation in the quality of products sold in the marketplace due to asymmetry in the amount of information available to buyers and sellers. Here, sellers know more about any defects in the products that they sell to buyers, and so sell low-quality products to unaware buyers.

Credit is granted only where the granter has easy means of enforcing his contract or personal knowledge of the character of the borrower.

According to Stiglitz and Weiss (1981), credit rationing may also occur if interest rate charged on loanable funds affects the riskiness of the loan due to: a) adverse selection (sorting potential borrowers) in which those who are willing to pay a higher price will, on average, be greater risky; and b) moral hazard (incentive) effect where the higher the interest rate, the greater the incentive to take on riskier projects. Both effects are associated with imperfect information which is present in loan markets after banks have evaluated loan applications. The lender, not being able to directly control the actions of the borrowers, attempts to induce the desired behavior through the terms of the contract or embark on screening of borrowers. With these constraints, the unsatisfied borrowers cannot bid up the price until supply and demand are equalized as traditionally would be expected leading to credit rationing in equilibrium, where certain individuals or groups are unable to obtain loans even if they offered to pay a higher interest rate or even though with a higher supply of credit. If loan markets were working well, long-term credit rationing could largely be explained by government constraints such as usury laws.

Khraisha and Arthur (2018) note that financial innovation enables "creation, promotion and adoption of new products, platforms, and processes or an enabler of technologies that introduce new ways or changes to the way a financial activity is carried out" (p.4).[5] Financial innovations serve multiple goals and thus, may cover such aspects as enhancing credit generation and availability; transaction costs reduction; transferring and sharing of risks; risk pricing; liquidity management and enhancement; equity generation; and funding of financial institutions.

Financial innovation allows the development of lending platforms, which mediate the flow of information from the conventional banking system to unbanked borrowers and helps in credit risk analysis as well as risks sharing (Financial Stability Board, 2017). Financial innovation performs intermediation function thus lowering cost of capital, Merton (1995), and by helping manage and transfer the extra burden emanating from new and wider risks, Stieglitz (2010).

The study by ACCA (2014) indicates that financial innovation reveals in many shapes and forms including crowd funding, peer-to-peer (p2p) lending, mobile phone system, credit societies, leasing, and hire purchase. Nature of credit provided through innovative financial services varies depending

[5] The uniqueness of this definition is that it recognizes that financial innovation does not necessarily come from financial institutions. This is in contrast with for example, Schumpeter's "the introduction of new or qualitative change in existing products, processes, markets, sources of supply of inputs, and organizations" (Arthur, 2009) or "creation and the popularization of new financial products, processes, markets, and institutions" as accepted by Mishra (2008), and Lerner and Tufano (2011).

on the business model of the given credit platform. The main intention though is to provide a lending platform that allows lenders/savers to trade directly with the borrowers. Most operate in such a way that, they by-pass the traditional banking system, though some use banking system infrastructure to facilitate transactions.

3.2 Empirical Literature

Despite the progress made in innovating ways of supplying credit, SMEs' growth in developing countries still faces challenges, largely associated with difficulties in accessing financial services, Beck (2007). World Bank (2012) indicates that SMEs are more credit-constrained than large firms mainly due to the opaque organizational features and business strategies that are rarely publicly disclosed. The informational opacity limits SMEs access to standardized public markets for equity and debt thus affecting their growth potential, see for example Beck and Demirguc-Kunt (2006), Ayyagari et al. (2008), and Beck et al. (2008).

Studies by BBA (2002) and Watanabe (2005) suggest that SMEs access to finance is a supply side issue owing to differences among commercial banks and entrepreneurs. Several other studies have identified lack of competition in the financial sector (distortions) as another crucial setback in the access of financial services, see World Bank (2003), Anzoategui and Rocha (2010), and Torre et al. (2008). The World Bank (2003) points to other constraints such as lack of know-how on the banking part, information asymmetry (access to business information), and the high risk in lending to small businesses, whereas others suggest size of business and age of the borrower, Fraser (2004); lack of collateral requirements, high risks, information asymmetries, small credit transactions particularly of rural households, the distance between lenders and borrowers, policy, and type of financial institution, Bigsten (2003) and Yitayal (2004); and firm-level managerial capability, collateral, networking and business information, macro-economy, the legal environment, ethical perception, crime and corruption, see Fatoki and Smit (2011).

In Tanzania, a desk review by Marwa (2014) points to MSMEs' characteristics which impair access to finance. These include small size of operation, weak managerial and business skills, informality of the activities, poor record keeping, information opacity, weak regulation, and lack of property rights. A study by Olomi et al. (2008) acknowledges three major groups of constraints on SMEs access to finance. The first group of factors includes the capacity of the SMEs themselves in terms of the low level of knowledge and skills, the under-developed culture of the business, lack of separation of the business between personal issues and family, the limited credit history of SMEs, and lack of knowledge of available financial services. The second group comprises the number of competent personnel and lack of experience of SMEs, while the third group relates to deficits in the enabling environment in terms of laws that over protect borrowers at the expense of lenders,

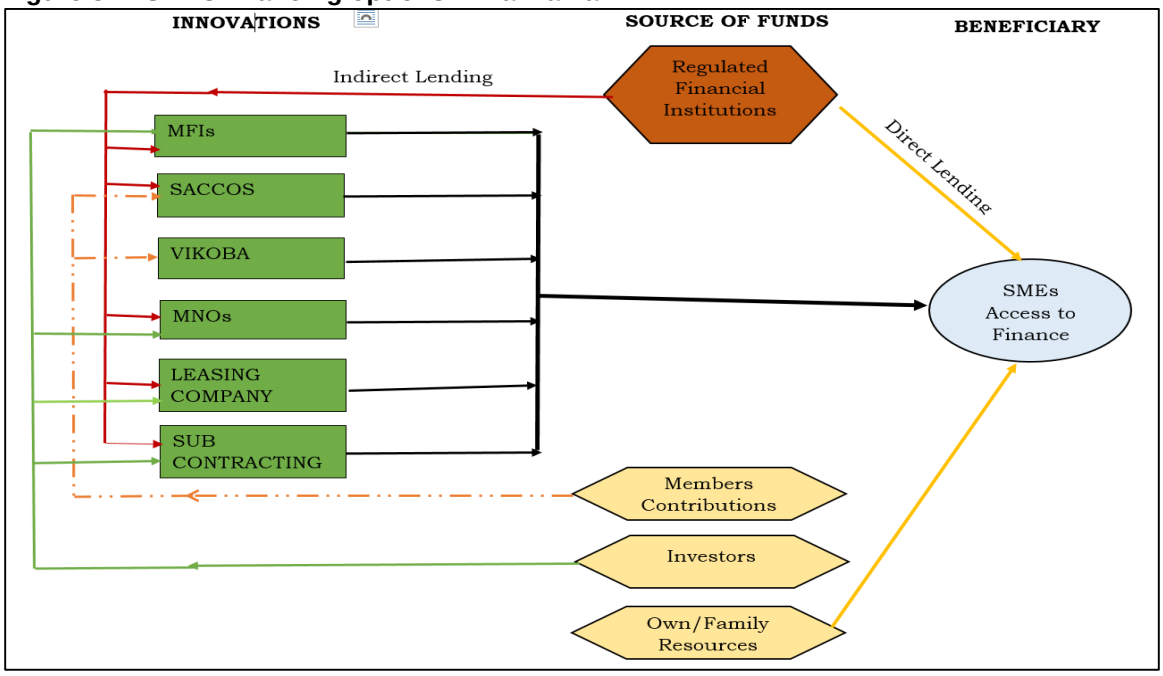
absence of national identification system and credit reference bureaus. As for the options for SME financing in Tanzania, Mori et al. (2009) and Olomi et al. (2008) indicate loans from commercial banks; funds from semi financial institutions such as SACCOs; and informal financial institutions such as money lenders. The two studies suggest that most SMEs opt for semi and informal financing because of easy accessibility.

Two things emerge from the literature review: first, the factors which constrain SMEs access to finance differ across countries including supply-side factors such as type of financial institution and SME internal characteristics which affect the demand for credit. Financial innovation can perform an intermediation function and lower cost of capital by helping manage and transfer credit risk. Second, both descriptive and quantitative analysis have separately been employed to investigate factors influencing SMEs access to credit. No formal study seems to have empirically assessed the role of innovation in enhancing credit access by MSMEs in Tanzania. This study seeks to contribute to literature on financial innovation and MSME using information from a small but developing economy, Tanzania.

3.3 Conceptual Framework

The conceptual framework guiding the investigation is depicted in **Figure 3.1**. MSMEs in Tanzania are conceived to finance its activities through various sources. Traditionally regulated financial institutions specifically banks were to be the main source of finance given their size, but as mentioned before that may not always be feasible due to high risks associated with financing MSMEs. In bridging the gap, there are other sources, which are utilized by MSMEs: own or family resources and innovative platforms. The main innovative sources in consideration are MFIs, SACCOS, VIKOBA, MNOs, and leasing and sub-contracting companies. Innovative platforms can enhance MSMEs' access to credit through three ways. First, it is by providing a platform to pull together group contributions and channel them to needy members as it is for VIKOBA and SACCOS; second, by serving as a channel through which individual members can access loans from formal financial institutions or non-financial corporations (e.g. SACCOS, lease and contract finance companies; and third, by acting as a delivery channel of loans from formal financial and non-financial institutions (e.g. mobile phone system).

Figure 3.1: SMEs financing options in Tanzania



Source: Authors' construction
Note: MFIs is Microfinance institutions; SACCOS, Savings and credit cooperative society; VIKOBA, Village community banks; FIs, Financial institutions; MNOs, Mobile network operators; and SMEs denotes micro, small and medium enterprises.

4.0 Methodology

In order to achieve the desired level of information quality and representativeness, a two-step sampling process was employed. First, regions were ranked along with the number of registered SMEs as provided in the National Bureau of Statistics Industrial Census survey of 2013. The top three regions; two median regions; and one bottom region were selected[6]. In the second stage, basing on weight of SMEs concentration across regions, and taking note of the need to balance between urban and rural settings a sample of 318 businesses were randomly selected and interviewed across the six regions. The outturn, as well as respondents and firms' characteristics, are as summarized in **Appendix I**.

Interviews using a structured questionnaire were conducted to collect information to provide answers to the research objectives.

The level of MSMEs' access to credit through innovative platforms, reasons for access and constraints are approached through descriptive analysis of the field data. Probit estimation is employed as a robust check of the key factors that influence MSMEs borrowing behaviour, and for

[6] This approach is more preferred because high concentration of SMEs in a region could imply higher economic activities and thus demand for loan.

testing statistical importance of innovative platforms in boosting MSMEs' credit access probability, mainly benefiting from the cross section field data. MSME access to credit is defined as an individual/business' ability to borrow over the period. The dependent variable takes the value of 1 (if a respondent accessed credit or is expecting to access credit in the future) and 0 (if otherwise). A set of explanatory factors deemed to influence MSMEs behaviour in accessing credit are defined in **Table 4.1**. In order to capture the role of financial innovation in improving credit access, a dummy variable is introduced in the model; bearing value of 1 if an innovative platform (SACCOS, VIKOBA, mobile loan facility, MFIs, lease, or contract financing) is accessed, and 0 if otherwise.

Let, A_j^*, be the benefits accruing to a given firm j, in a given location i, from accessing finance. The benchmark equation can be specified as:

$$\mathrm{A}_j * = \beta_{\mathrm{O}} + \beta_1 \chi_j + \beta_2 \gamma_i + \Sigma_i \qquad (1)$$

where A_j^* is the variable that index the measure of MSMEs access to credit; χ_j is a vector representing firm level factors or internal attributes influencing access to credit; γ_i is the list of factors outside the firm, including industry level characteristics. The dependent variable A_j^* is not observed since it is a latent variable explaining firm access to loan. Hence the following Probit model is defined:

$$\mathrm{A}_j^* = \begin{Bmatrix} 1\, for Aj > 0 \\ 0\, for A_j < 0 \end{Bmatrix} \qquad (2)$$

where, A^* is a binary variable, taking the values of 1 if a firm accessed a loan, and 0 if otherwise. Letting ϕ depict the cumulative normal distribution function, the Probit general regression equation can be written as:

$$\sum \left(\frac{A_j}{X_j}\right) = \phi(a_0 + a_j X_j + a_i Y_i) \qquad (3)$$

It is assumed that firms' access to finance may be influenced by internal factors comprising firm ownership; owner's gender, age, level of education, perception about loan default risk; while external factors include availability of financial innovation platforms, distance between the lender and borrower, loan size, and loan repayment period. Therefore, the model takes the form indicated in equation (4), where α is the intercept; ε_t, the error term; and $j = 1...10$. Table 4.1 captures explanation of the variables and expected coefficient signs.

$$\mathrm{A}_i^* = \alpha + \beta_j \chi_j + \varepsilon_i \qquad (4)$$

Table 4.1: Description of variables and expected coefficient signs

Variable	Information	Hypothesis/Dummy		Expected coefficient sign
A	Access to credit	1 if accessed credit	0 if otherwise	Dependent variable
χ_1	Need for credit	1 if needs credit for various reasons	0 if otherwise	Positive
χ_2	Age of business owner	1 if less than 30 years	0 if otherwise	Positive, but may be negative for old age
χ_3	Gender of the business owner	1 if male	0 if otherwise	Positive
χ_4	Level of business owner's education	1 if no education	0 if otherwise	Negative
χ_5	Distance between lender and borrower	1 if less than 5 kilometres	0 if otherwise	Positive
χ_6	Borrower's perception about borrowing	1 if perceives it to be a good undertaking	0 if otherwise	Positive
χ_7	Perception about loan default risk	1 if perceives the possibility of losing the collateral	0 if otherwise	Negative
χ_8	Role of innovation (a type of lending institution)	1 if innovative platform (SACCOs, VIKOBA, mobile loan facility, MFIs, lease or contract financing) is accessed	0 if otherwise	Positive
χ_9	Size of loan	1 if less than 500,000 shillings		Negative
χ_{10}	Loan repayment period	1 if less than one month		Negative

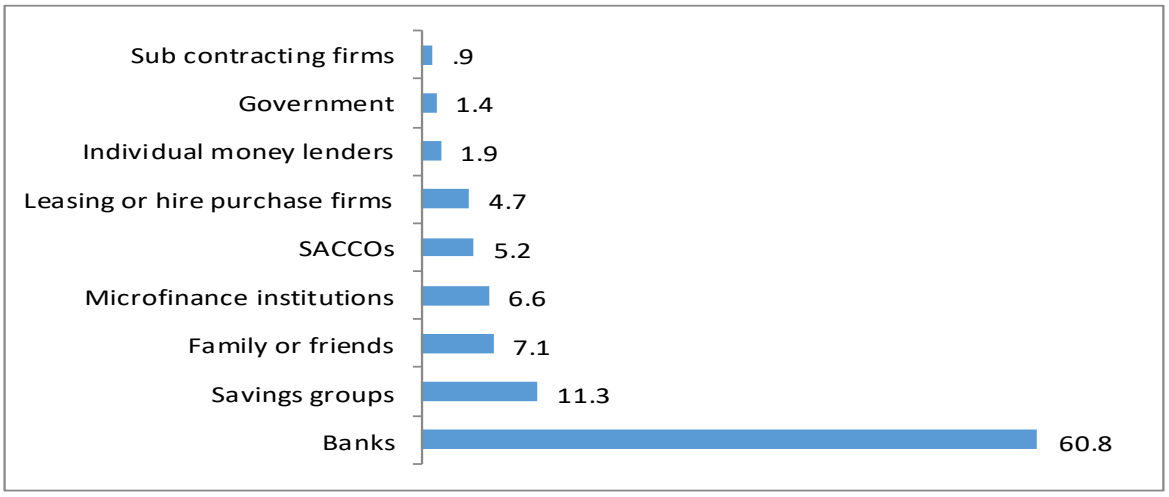
5.0 Discussion of Study Findings

5.1 Level of Credit Access through Innovative Platforms

In assessing the level of credit access through innovative platforms, respondents were asked to: first, indicate the main source of finance for their businesses. Three channels of finance are revealed by respondents: banks; financial innovation platforms such as MFIs, SACCOS, saving groups, leasing, subcontracting, mobile network operators; and non-financial institution sources, mainly family or friends, individual lenders and government. Compared to banks, the findings point to a relatively weak role of innovative platforms in terms of credit access by MSMEs. However, innovative platforms are far important relative to non-financial institution sources. In particular, only 28.8 percent of the respondents indicated to have received loans through innovative platforms (**Figure 5.1**).

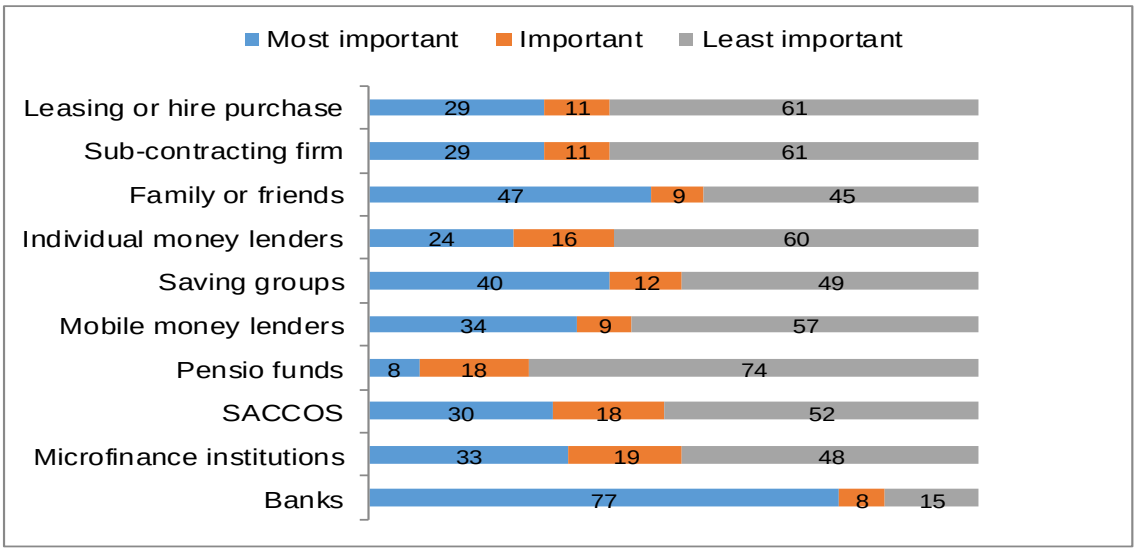
Second, respondents were required to rank different sources of finance based on their perceived relevance, in a scale of 1 (most important), 2 (important), and 3 (least important). Innovative platforms were ranked "important" or "most important" by only 29 percent of the respondents, largely driven by saving groups, MFIs, and SACCOs (**Figure 5.2**). The findings compare unfavorably with the country's achievements in MSMEs access to overall banking and non-banking financial services, which in 2017 was 79.9 percent. The weak role of innovative platforms in credit access bonds well with the low share of credit to MSMEs, which according to IPC (2018) is around 14.8 percent.

Figure 5.1: Main channels of loans for MSMEs (percent)



Source: Field findings, February 2017

Figure 5.2: Ranking of different sources of credit

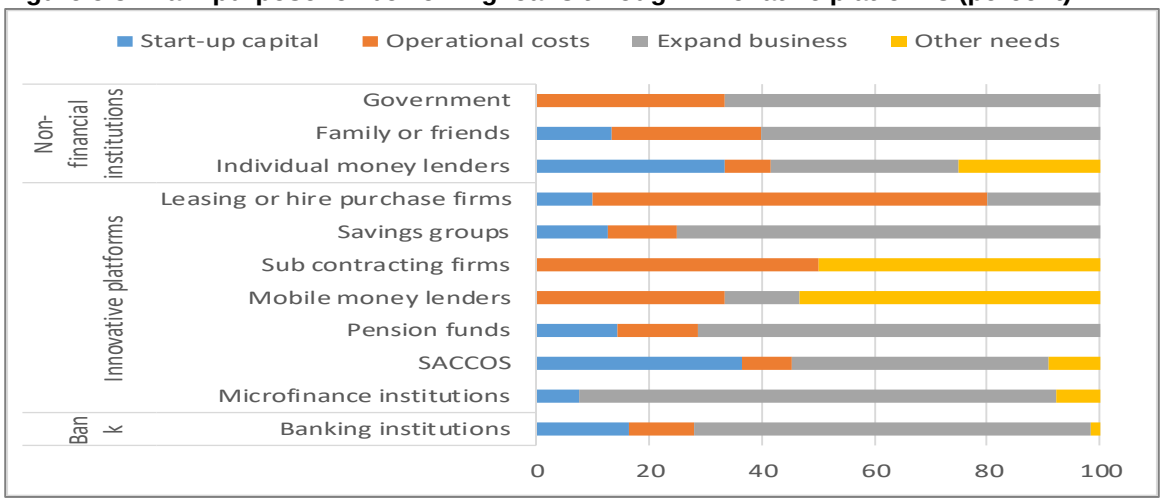


Source: Field findings, February 2017

5.2 Factors Influencing Loan Access through Innovative Channels

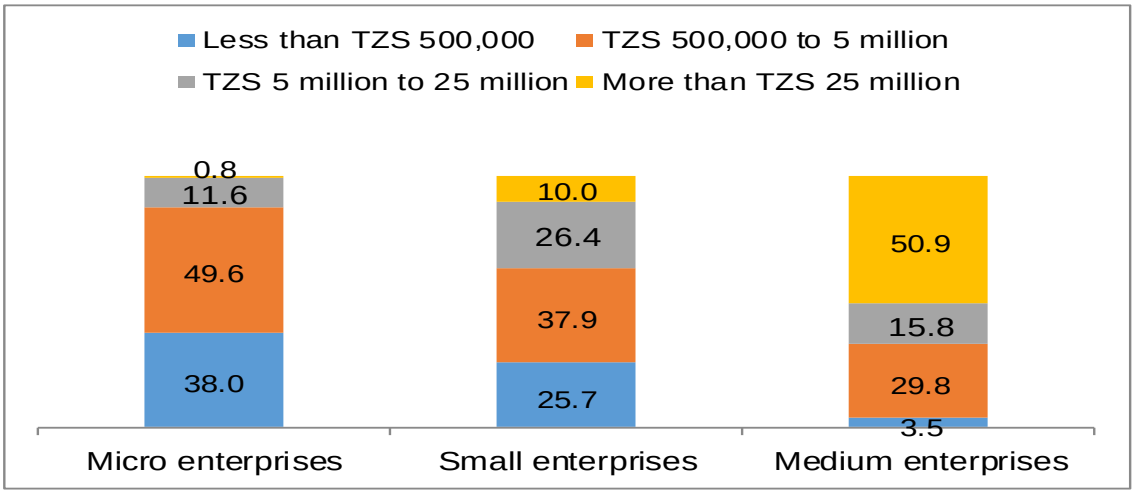
Different factors explain why MSMEs borrow money through innovative channels. Basing on respondents' perception one set of the factors is in respect of the necessity of finance in supporting business, while the other set is related to borrower's characteristics; and supply aspects such as ease of access; convenience; and time taken to acquire a loan. Most of the interviewed MSMEs need loans to support business expansion and operational costs (**Figure 5.3**). Accounting for loans from banks and non-financial institutions, start-up capital also features as another vital reason (**Appendix IIA**). As indicated in **Figure 5.4**, most of the borrowers are in micro to small businesses, probably supporting the thrust for expansion. According to CGAP (2013), micro and small entrepreneurs have a very small capital base; starting capital is usually sourced from their meagre savings, loans from friends and relatives. As the businesses grow, their needs extend beyond own and family lending and savings into other financial products, such as loans which are offered by banks and non-bank institutions.

Figure 5.3: Main purpose for borrowing loans through innovative platforms (percent)



Source: Field findings, February 2017

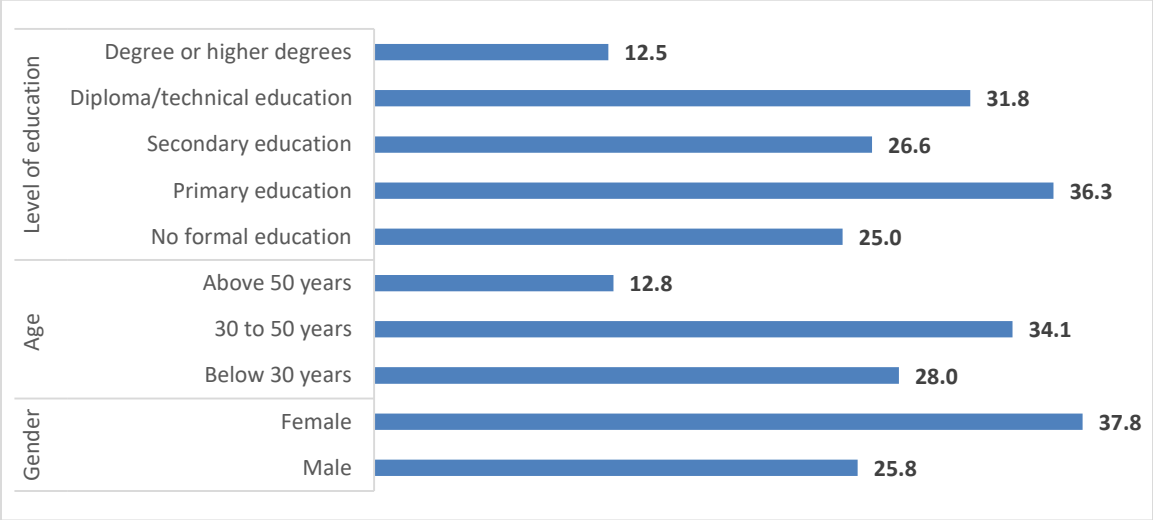
Figure 5.4: Loan amount in relation to business size (percent)



Source: Field findings, February 2017

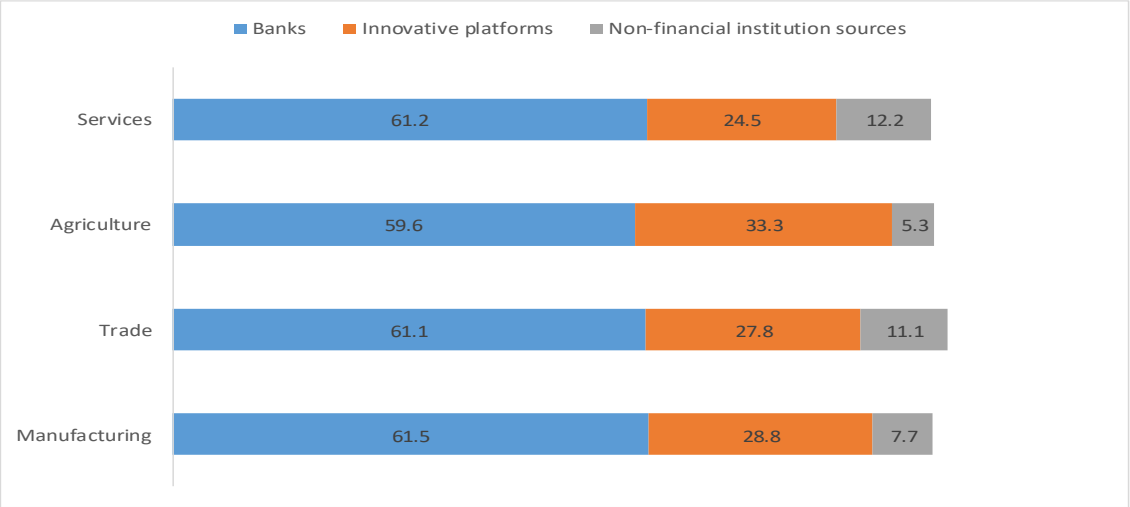
Innovative platforms tend to be favored by female, working age and less educated cadre. This is largely in respect of saving groups, SACCOS and micro-finance, which normally provide small loans mainly in support of micro- and small- businesses particularly in agriculture, trade and manufacturing (**Figure 5.5** and **5.6**). This implies that policies directed at promoting lending through innovative channels could help improve the welfare of the marginalized people in the society such as women and less educated people, partly by helping them to grow their businesses.

Figure 5.5: Borrowing through innovative channels by respondent's characteristics (percent)



Source: Field findings, February 2017

Figure 5.6: Borrowing through innovative platforms by activity (percent)

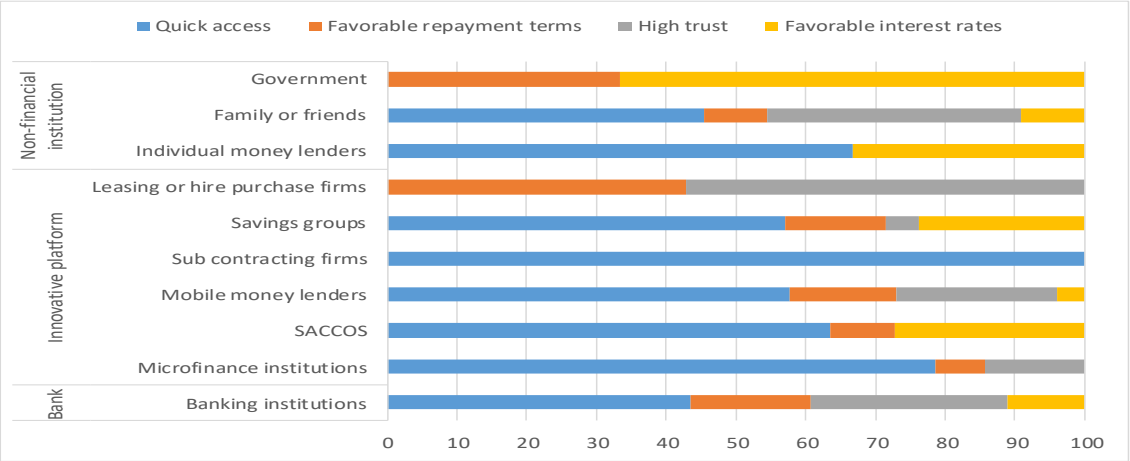


Source: Field findings, February 2017

Other reasons for choosing innovative channels are in relation to quick access and speedy loan process (**Figures 5.7** and **5.8**). Quick access seems to be higher for sub-contracting, microfinance, SACCOS and saving groups. Some degree of control of a channel is also important. Savings group, for example, is perceived to be most convenient to handle trailed by SACCOS; this is because respondents are part of the groups making it possible to influence decisions (**Figure 5.9**). Meanwhile, processing of a loan through innovative platforms such as mobile network is considered to be faster than other modes; it takes less than a week to get a loan. Other innovative platforms fall in the rage of one to four weeks, with microfinance, sub-contracting, SACCOS, leasing and hire

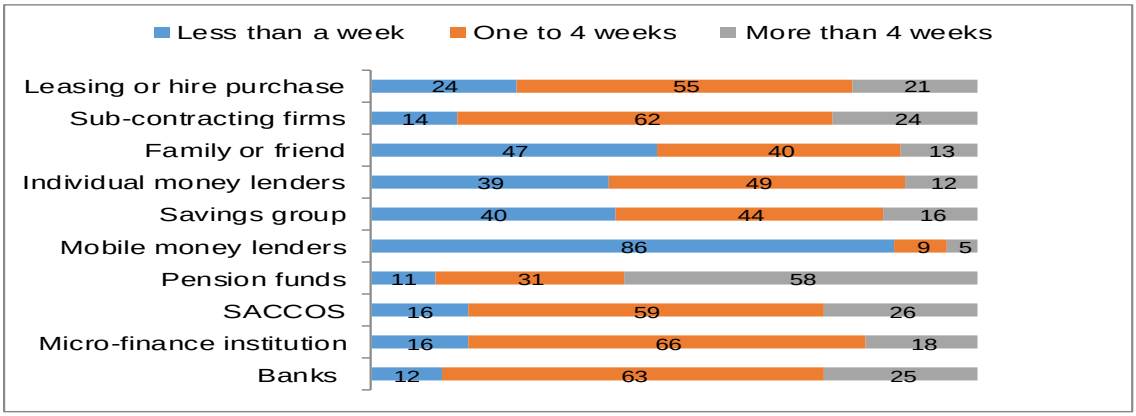
purchase taking longer time, partly due to the want to allow for screening to reduce adverse selection and information asymmetry risks.

Figure 5.7: Other reasons for borrowing money through innovative channels (percent)



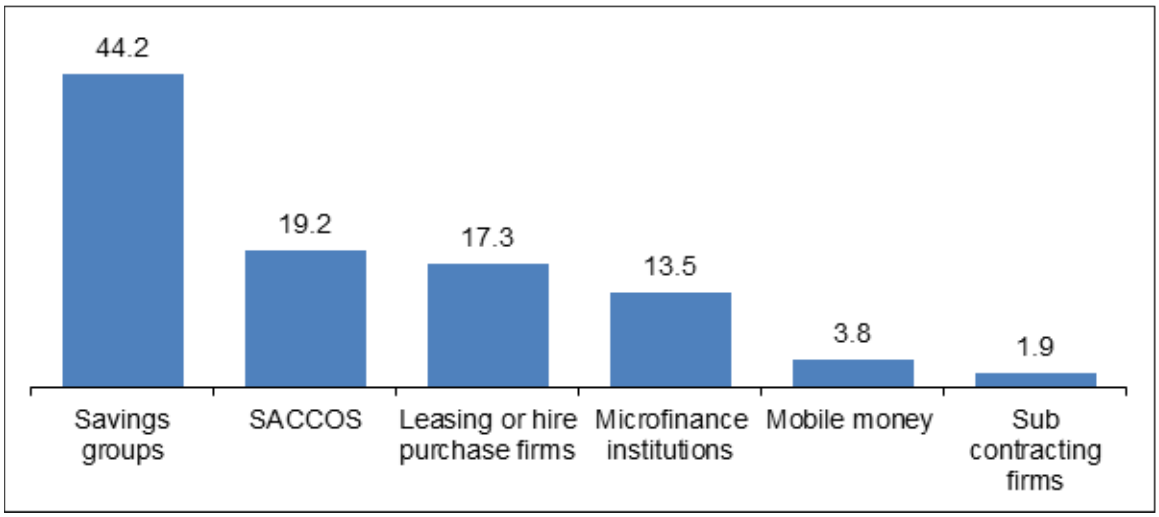
Source: Field findings, February 2017

Figure 5.8: Time taken in loan processing by the source of finance (percent)



Source: Field findings, February 2017

Figure 5.9: Most convenient innovative source of finance to deal with (percent)

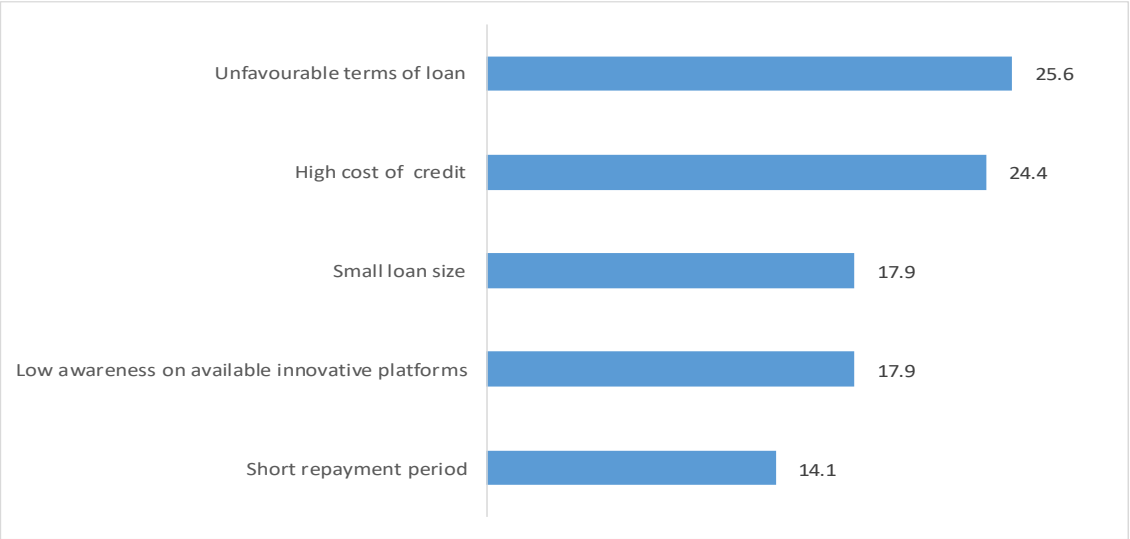


Source: Field findings, February 2017

5.3 Respondents Perception about Factors Constraining Access to Finance

Besides low access to credit through innovative channels, the results indicate that only half (50.6 percent) of 318 respondents borrowed money from different sources, while 39.9 percent had a plan to borrow in the future. In explaining this anomaly, respondents point to varying constraints, some of which are specific to innovative channels. **Figure 5.10** summarizes respondents' views about factors which limit access to credit through innovative channels, while responses on all finance sources are provided in **Appendix IIB**. All responses taken together, the factors can generally be grouped into three groups: firm characteristics, supply-side factors, and business environment factors. On demand side, these are in relation to MSMEs low capacity in business management, small operations, lack of knowledge about available finance opportunities, and misuse of borrowed funds. Supply-side factors include high interest rates, unfriendly collateral terms, length loan processing time, short repayment period, and small-size loan. Unpredictable business environment largely due to price and power volatility also impact MSMEs negatively. Specific to innovative channels are: unfavourable terms of loans, high cost of credit, small loan size, low awareness on available innovative platforms, and the short loan repayment period.

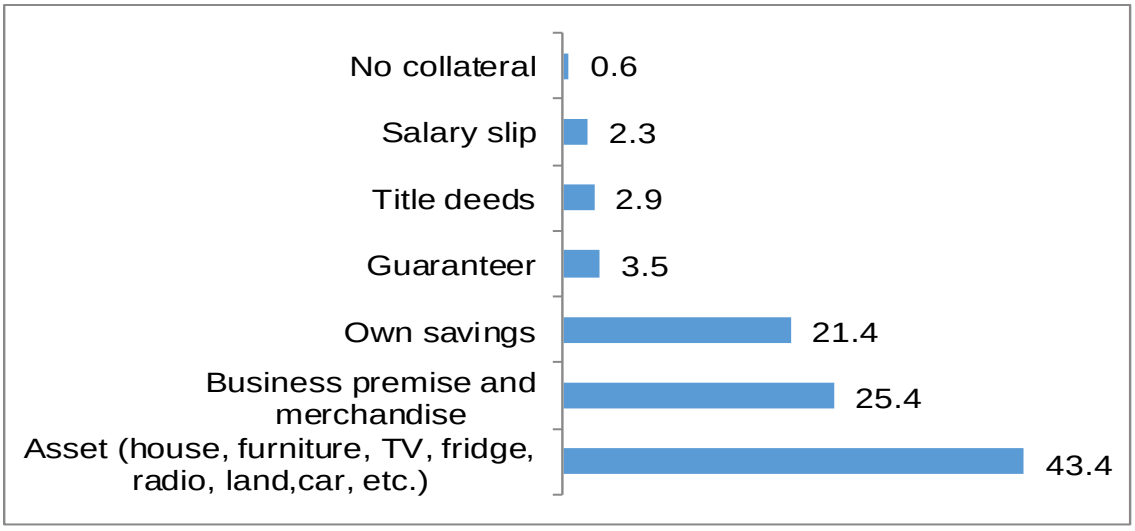
Figure 5.10: Ranking of credit access constraints related to innovative platforms (percent)



Source: Field findings, February 2017

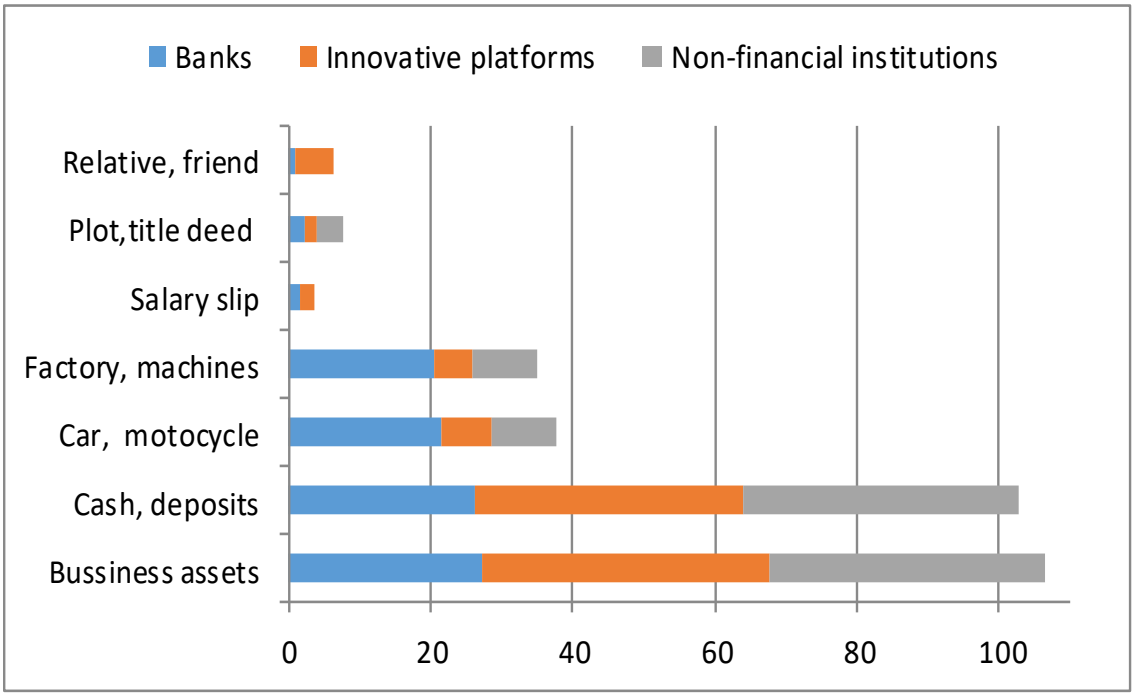
Cost of funds and collateral stand out prominently. The finding augers well with that in FSDT's National Baseline Survey Report for Micro, Small, and Medium Enterprises in Tanzania (2012), where almost one third of MSMEs did not borrow from formal and informal financial sources as they were "scared". Studies such as those of Kimuyu and Omiti (2002), Bernejee and Duflo (2004); and Waari and Mwangi (2015) show that interest rate is a good predictor of the amount of loan accessed by SMEs, as well as the possibility of high lending rates to discriminate against newer and smaller firms. Lack of and fear to lose collateral can also constrain access to finance as some of the collaterals involve assets, which to most respondents are essential for survival; these comprise living or business building, family pierce of land, and household amenities (**Figure 5.11**). HongboDuan et al (2009), ACCA (2009) and Mwarari (2013) note for example that, due to lack of collaterals and guarantees, SMEs may find it hard to access loans even from the state-controlled financial institutions, and so it could be amidst significant financial innovation, Beck, 2007). Another constraining factor is the requirement to have cash or own deposits as collateral for loans (**Figure 5.12**). Such requirement is daunting given small-size operations of most of MSMEs, which are associated with unpredictable cash flows. The two factors may limit savings from the businesses. About 94.5 percent of respondents serviced their loans through funds generated within the business (**Figure 5.13**).

Figure 5.11: Type of collateral pledged for a loan across all finance channels (percent)



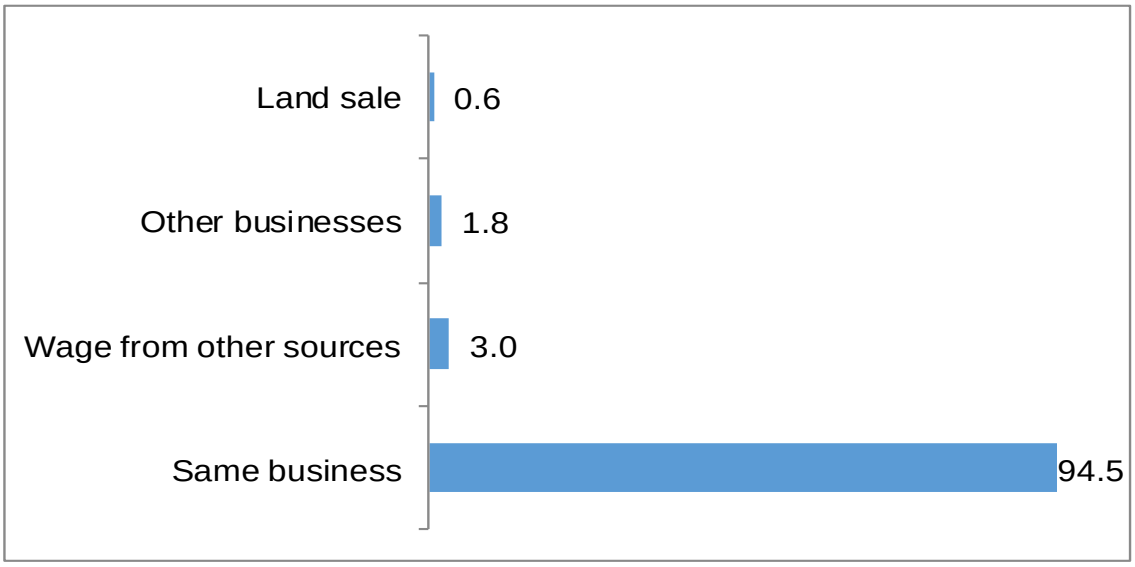
Source: Field findings, February 2017

Figure 5.12: Type of collateral pledged for a loan across credit sources (percent)



Source: Field findings, February 2017

Figure 5.13: Source of funds to service loans (percent)



Source: Field findings, February 2017

5.4 Probit Estimation of Factors Influencing MSMEs Credit Access Behaviour

As a robustness check, constraints barring MSMEs from accessing finance are investigated further through regression analysis with a view to evaluating their statistical significance and relative importance. The estimations also aid in gauging the statistical importance of innovative platforms in increasing the probability of MSMEs to borrow. The variables and expected coefficient signs are as explained in **Table 4.1**. Probit regression results are summarized in **Table 5.1**, while the summary statistics are in **Appendix III**. The findings indicate that:

First, coefficient of innovation variable is positive indicating increasing probability of MSMEs borrowing with innovative platform availability, but it is statistically insignificant partly mirroring the low uptake of loans through innovative platforms.

Second, with respect to other factors, distance from the borrower and lender; borrower's perception about lending process; and risks of losing collateral; loan size; and loan repayment period are found to be statistically significant, suggesting that they play a role in influencing MSME's probability to take loans as well. As loan size and repayment period increase, and borrowers perceive the lending process to be easy, the probability of MSMEs taking loans also increases. The probability to borrow tends to be lower if borrowers perceive the borrowing to be risky (i.e., cost of loans is high).

Third, loan process time, loan size, loan access (distance) have a higher probability of improving loan access by MSMEs.

Table 5.1: Probit regression results

Model: Probit, using observations 1-318 (n = 315)
Missing or incomplete observations dropped: 3
Dependent variable: Credit access by MSMEs
QML standard errors

	Coefficient	**Std. Error**	**z**	**p-value**	
Constant	0.683496	0.680359	1.005	0.3151	
Age between 30 to 50	0.0219642	0.248566	0.08836	0.9296	
Age above 50	−0.297435	0.299172	−0.9942	0.3201	
Gender	−0.446353	0.212415	−2.101	0.0356	**
Primary education	−0.0482004	0.375842	−0.1282	0.8980	
Secondary education	−0.279337	0.388814	−0.7184	0.4725	
Technical education	−0.189617	0.439744	−0.4312	0.6663	
Degree education	−0.493593	0.424213	−1.164	0.2446	
Distance less than 5 km	0.676698	0.216123	3.131	0.0017	***
Loan process easy	0.941429	0.165429	5.691	0.0001	***
Loan risky	−1.02991	0.555023	−1.856	0.0635	*
Loan 500,000-5 million	0.401251	0.197447	2.032	0.0421	**
Loan 5-25 million	0.725675	0.245529	2.956	0.0031	***
Loan above 25 million	0.908478	0.357008	2.545	0.0109	**
Loan repayment period	0.0250812	0.0120110	2.088	0.0368	**
Business size	1.62106e-010	1.19395e-010	1.358	0.1745	
Innovation platform	0.0229654	0.199611	0.1151	0.9084	

Mean dependent variable	0.663492	S.D. dependent var	0.473267
McFadden R-squared	0.236444	Adjusted R-squared	0.151946
Log-likelihood	−153.6182	Akaike criterion	341.2364
Schwarz criterion	405.0302	Hannan-Quinn	366.7244

Note: Number of cases 'correctly predicted' = 243 (77.1%);
f(beta'x) at mean of independent vars = 0.473;
Likelihood ratio test: Chi-square (16) = 95.1395 [0.0000];
Test for normality of residual -
Null hypothesis: error is normally distributed;
Test statistic: Chi-square (2) = 2.19755
with p-value = 0.333279;
*** (**) * statistically significant at 1% (5%) 10% level.
Source: Authors estimation using field data

6.0 Conclusion and Policy Implications

The study attempts to evaluate the extent to which financial innovations contribute to enhancing MSMEs' access to credit in Tanzania. It pursues to assess the level of access to credit through innovative platforms relative to the traditional banking system; b) evaluate factors which influence MSMEs to take loans through innovative channels and the constraints; and c) assess the statistical importance of innovative platforms and other factors in enhancing the probability of MSMEs to borrow. Information was collected through interviews using a structured questionnaire administered on a sample of 318 respondents drawn from Dar es Salaam, Mwanza, Arusha, Mbeya, Kilimanjaro and Singida regions. Probit regression technique was employed as a robustness check of the key factors that influence MSMEs borrowing behaviour, and for testing statistical importance of innovative platforms in increasing MSMEs' credit access.

The findings suggest that different factors explain why MSMEs borrow money through innovative channels. These include the need for meeting business start-up, operational, and expansion costs. Other important factors are ease of access; convenience; short loan process; and degree of control of the loan process by the borrower. Nevertheless, in contrast to progress made in improving access to formal financial services, largely contributed by financial innovation and technological changes, access to credit by MSMEs through innovative channels, is still low. Out of 318 respondents, only 28.8 percent acknowledged to have received loans through innovative platforms, i.e., MFIs, SACCOS, saving groups, leasing, subcontracting, mobile phone system. Reflecting the low importance of innovative platforms, the Probit estimates indicate a positive sign on the coefficient of innovation variable, but it is statistically insignificant. Respondents point to a combination of factors to explain this anomaly. These include unfavorable terms of the loan (collaterals); high cost of loans inadequate knowledge about loans provided through available innovative platforms; small-size of offered loans; and the short repayment period. Other factors, which influence MSMEs' general access to credit are in relation to customers' awareness on business management; loan processing period; and business environment. Partly due to these difficulties, only half (50.6 percent) of respondents had borrowed money, while 39.9 percent had a plan to borrow in the future.

Probit results suggest that, borrower's perception about lending process and risks of losing collateral, loan size, and loan repayment period are statistically significant, suggesting that they play a key role in influencing MSME's probability to borrow. As loan size and repayment period increase and borrowers perceive the lending process to be easy the probability of MSMEs taking loan also increases, while the probability to borrow tends to be lower if borrowers perceive the borrowing to be risky. Meanwhile, loan process time, loan size, loan access (distance) have a higher probability of increasing loan access by MSMEs.

These findings imply that there is a need to intensify measures towards enhancing MSMEs access to credit, partly taking advantage of available innovative platform channels. These include intensifying efforts in reducing credit risk, which is important for lowering lending rates. Such measures include enforcing 'know your customer' and mandatory use of the credit reference system for tracking borrowers' trustworthiness. Strengthening of the regulatory and supervisory role is similarly fundamental largely to reduce unfair terms of loans; ensure collateral protection; reduce transaction costs; improve service delivery; and ensure the sustainability of financing through innovative sources such as SACCOS, microfinance, leasing, subcontracting, and mobile phone systems. Moral suasion measures by financial regulators together with traceable business-record could as well lure loan providers to offer loans of larger size and maturity. Here, capacity building is important to enabling MSMEs to acquire requisite business management skills and inculcating record-keeping culture. Maintaining the country's high economic growth momentum together with stable inflation are also likely to continue to boost demand for credit and improve MSMEs' loan repayment capabilities.

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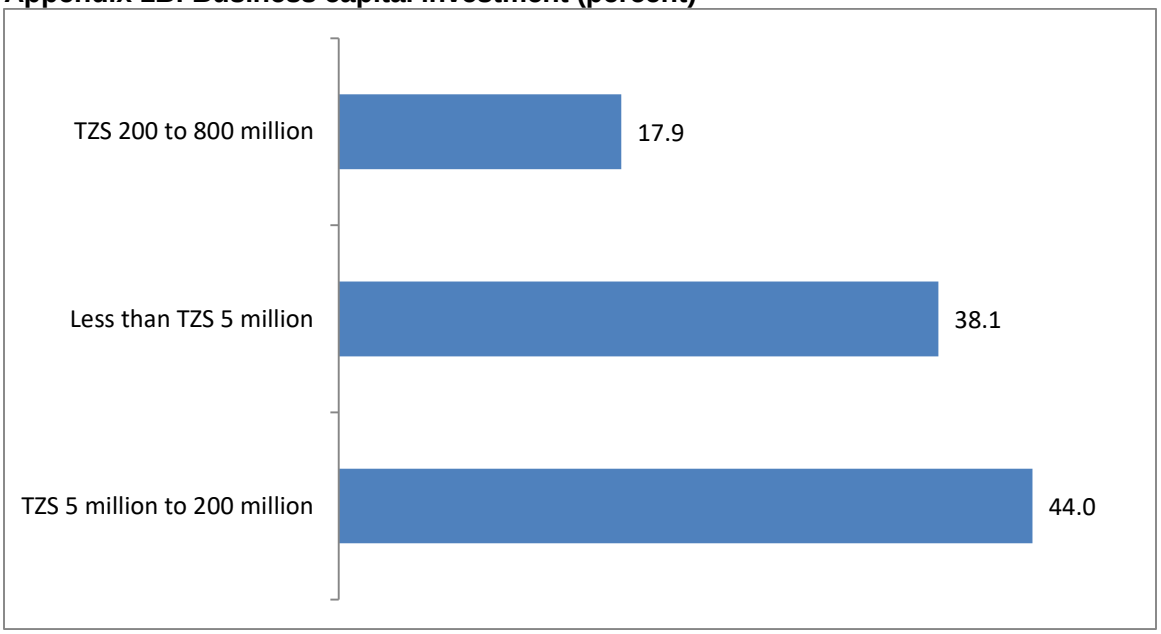
Appendices

Appendix 1A: Respondents characteristics

Group	Description	Percent
Gender	Male	78.3
	Female	21.7
Age	below 30 years	13.8
	between 30 and 50 years	64.2
	Above 50 years	22.0
Level of education	No formal education	4.4
	Primary education	39.9
	Secondary education	32.7
	Diploma or technical education, e.g. VETA	8.2
	Degree or higher degrees	14.8

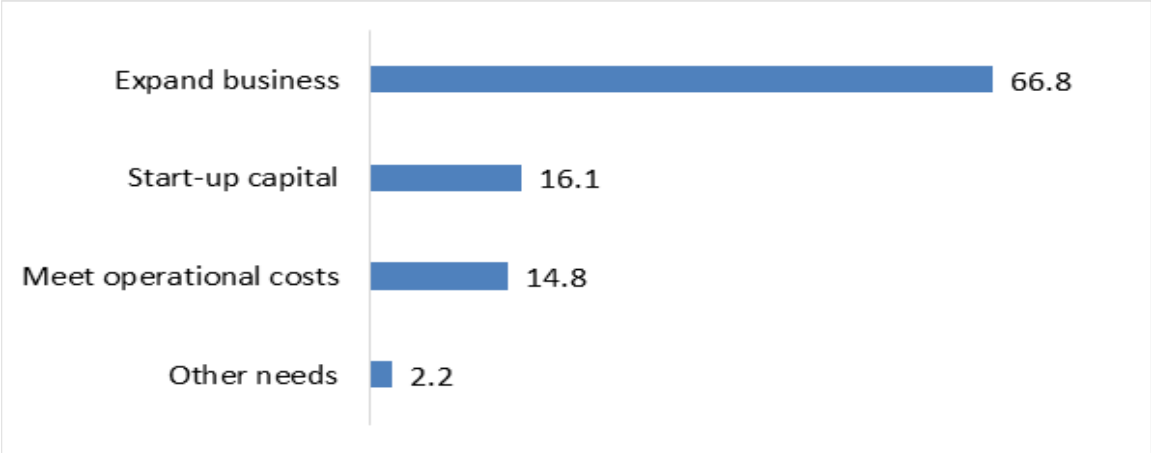
Source: Field findings, February 2017

Appendix 1B: Business capital investment (percent)



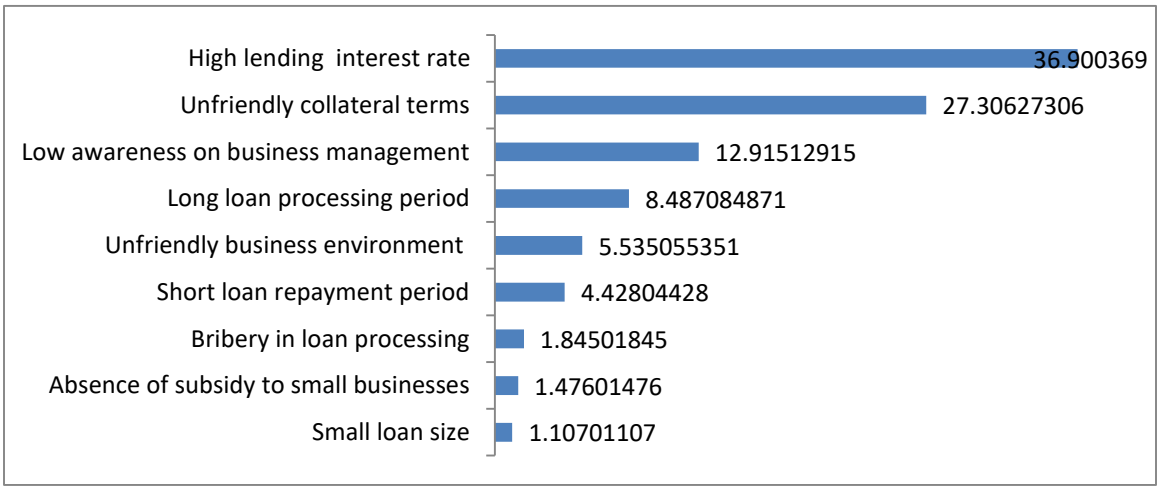
Source: Field findings, February 2017

Appendix IIA: The Main purpose for borrowing loans (All Institutions, percent)



Source: Field findings, February 2017

Appendix IIB: Ranking of areas of improvement to increase overall access to credit (All institutions, %)



Source: Field findings, February 2017

Appendix III: Summary statistics

Summary Statistics, using the observations 1 - 318
(missing values were skipped)

Variable	Mean	Median	S.D.	Min	Max
Credit access	0.660	1.00	0.474	0.00	1.00
Age 30-50	0.642	1.00	0.480	0.00	1.00
Age above 50	0.220	0.00	0.415	0.00	1.00
Gender (male)	0.783	1.00	0.413	0.00	1.00
Primary education	0.399	0.00	0.491	0.00	1.00
Secondary education	0.327	0.00	0.470	0.00	1.00
Technical education	0.0818	0.00	0.274	0.00	1.00
Degree education	0.148	0.00	0.355	0.00	1.00
Distance above 5 km	0.256	0.00	0.437	0.00	1.00
Loan process easy	0.610	1.00	0.489	0.00	1.00
Loan risky	0.962	1.00	0.191	0.00	1.00
Loan 500,000-5 million	0.409	0.00	0.492	0.00	1.00
Loan 5-25 million	0.189	0.00	0.392	0.00	1.00
Loan above 25 million	0.138	0.00	0.346	0.00	1.00
Loan repayment period	11.1	12.0	12.4	1.00	84.0
Business size	4.76e+008	9.00e+006	5.76e+009	2.50e+004	1.02e+011
Innovation	0.214	0.00	0.411	0.00	1.00

Source: Authors' estimation