

## Determinants of Smallholder Women Farmers Access to Informal Credit in Tanzania – A Case of Singida and Chamwino Districts

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### **ABSTRACT**

*The study analyzed level and determinants of women farmers' access to informal credit in Singida and Chamwino Districts, Tanzania. The study described socio-economic characteristics of the women farmers who accessed microcredit from informal sources; determined level of access to informal micro-finance; and determined socio-economic factors that influenced access to informal micro-finance. Primary data were collected from one hundred (100) women farmer informal credit participants using multi-stage random sampling technique. The data were analysed using three techniques namely; likert scoring and descriptive statistics, and probit regression estimation. The finding reveals that women farmers had farm size of between 2.3 and 2.4 acres. Majority 94.4% of the respondents had no contact with extension agents and 72% of interviewed respondents had formal education with 72% of them married. There were relatively higher levels of access to loans from Village Community Banks (VICOBA) compared to other informal credit sources. Probit regression estimate showed that farming experience and gross monthly income exerted positive significant influences at varied critical levels. It was found that interest rate charged exerted negative significant influences at varied critical levels. Policies should be made to forge strong linkages between informal and formal financial institutions to ensure that agricultural credit are channeled from formal financial institutions to women farmers through recognized informal credit arrangements. The synergy from such linkage will increase women farmers' productivity.*

**Key words:** *Informal credit, access, productivity, women farmers*

### **1. Introduction:**

Women comprise 51.6 per cent of the population of Tanzania (NBS, 2012). Given this significant proportion, it is pertinent to know their position in Tanzanian society, which is best understood by having a look at the ethnic composition of the country's population, kinship systems and the situation at the onset of colonialism. In this regard, the overwhelming majority (about 95 per cent) of the population is Bantu-speaking while a tiny minority (about 5 per cent) found in the north central part of the country is non-Bantu (Sutton, 1969). The non-Bantu-speaking population is comprised of the Khoisan-, Cushitic- and Nilotic-speaking peoples. Women play an essential role in agricultural production (Mmasa, 2013; Leavens and Anderson, 2011). The sector is characterized as female intensive, meaning that women comprise a majority

of the labor force in agriculture (54%). Moreover, there over 15 million smallholder farmers in the country, more than half of who are women (Nyomora *et al.*, 2012). Most cultivate one and three hectares, with limited access to modern machinery, inputs and improved technologies (ibid).

Ironically, women are known to be more involved in agricultural activities than men in Sub-Saharan African (SSA) countries. Agriculture is an important source of employment for 84% of economically active women and 80% of economically active men (Blackden and Rwebangira, 2004). Women constitutes 51% of the economically-active labor force in Tanzania and only 4% of women are in paid jobs, as compared with 10% of men (ibid). Data suggest that women comprise 38% of the informal sector, a share that is lower than their 51% share of the active labor force (Blackden and Rwebangira, 2004).

In this vein, Jeckonia *et al.*(2012); Meena (1992a) and ILO (2003) show that at the household level women carry a heavier workload in production and reproduction than their men folk but lack access to and control of resources as well as rights in decision-making processes. ILO (2002) points out that women who are engaged in business have to combine business work with responsibilities related to reproduction. ILO (2002a) further points out that woman are confined to traditionally female activities that are less attractive and rewarding. At the same time, women are seen as minors and therefore considered under the control of their husbands (ILO, 2010). The existing gender inequalities in society are recognized as one of the critical challenges impacting the attainment of Sustainable Development Goals (SDGs) in the world. Despite several efforts by governments and Non-Government Organizations (NGOs) gender inequalities still exist in almost all the countries in the world (Jeckonia *et al.*, 2012). Gender equality is identified as a development objective in itself, and as a means to promote growth, reduces poverty and promotes better governance (World Bank, 2007).

Women play major roles in farm production, product processing and marketing of food and cash crops as well as in livestock production (Mmasa, 2013). In spite of these, women and households headed by women remain chronically poor members of rural communities (Alarape, 1992; IFAD, 2012; Ekpo and Ekpo, 2010; and Udoh, 1995).

Currently, the situation has started to change for the better due to external influences. Many countries, including Tanzania, have ratified United Nations conventions relating to the enhancement of women's status in society. For example, Tanzania has participated in all world conferences on women since 1975. In this regard, during the Beijing Conference in 1995 Tanzania signed the Platform of Action that recommends full and equal participation of women in sustainable development. Despite these positive developments and Tanzania's commitment to eradicate all forms of discrimination against women, the disadvantaged position of women is still very much a reality in Tanzania.

Cognizant, most female farmers have limited access to micro-credit which has deterred their productivity and income (UNDP, 1998). Improving access of women farmers to farm credit is central to rural development because it enables women to invest in and improve production in agriculture, small businesses and small-scale manufacturing all of which improve their living standard. Micro credit to women farmers empowers them to invest in agriculture and permit

them to sustainably remain in farming. According to Smith and Thurman, (2007) the poor are poor not because they are lazy but because they have no access to credit.

Financial capital is the main requirement for increased agriculture production in farming business to all farmers all over the world (ACT, 2009). In Tanzania, access to finance has been the setback of increasing agriculture production for many years which has resulted into unfruitful effort in reducing poverty since 1961 when Tanzania gained its independent. The Agriculture Council of Tanzania (ACT) (2009) statistics indicate that out of 100% loans disbursed by formal financial Institutions, only 5-6% was agricultural loans. Also a study by VECO indicated that 23.1% of small holder farmers accessed loans through Self-Help Groups (SHGs) like SACCOs, Village Community Banks (VICOBA), Association and Marketing Cooperatives Societies (AMCOS), Village Savings and Loan Association (VSLA), Rotating Savings and Credit Associations (ROSCAs) and other local arrangements known as “Ntwungwira Mukhova” or “Ngekii” in Singida and “*songoleda*” in Dodoma and from informal sources while 76.9% did not have any reliable sources to finance agriculture, hence they might take loans from informal sources like individual money lenders for credit “pawnshops” with high interest rate. Of the VECO supported value chains, 3% received loans from banks, 23% from SACCOs, Village Community Banks (VICOBA) and other informal financial schemes. SACCOs were the only alternative for 70% of the projects beneficiaries even though only 17% accessed credit from them. The medium scale farmers and other chain actors like traders, processors and agro dealers accessed credit through SACCOs (Linked to CRDB) and other formal financial institutions.

Accessibility to formal credit facilities has been difficult for women farmers and people who are poor (Adebajo, 2010). Their only respite has been with informal sources of farm credit. Increasing relevance and loan-giving capacity of informal financial institutions (IFIs) and credit units that provide credit services for women farmers on short notice with little or no restriction Adebajo, (2010) will no doubt sustain them in farm production. Such informal credit has been shown to improve welfare of women farmers, smoothing their consumption and reduce their vulnerability to short term income shocks. Okurut and Thuto (2007) noted that informal credit is demanded by farmers for both productive investment (agricultural production and/or business) and consumption smoothing.

These SHG groups, among others, have had developmental impacts in rural areas where they have extended loan facilities (micro credit) to their members without demanding physical collaterals except guarantors (Onyeagocha *et al.*, 2012). Most women farmers depend on the services of these informal financial units and groups for credit for funding agricultural activities and improve their livelihood (Henri-Ukoha, 2011). This study strives to provide information on level of access women farmers enjoy in acquiring credit from informal sources and factors that influence their access to loans from such financial units in rural communities settings. Specifically, the study provided insight on issues of informal financial market in agriculture by (i) Describing socio-economic characteristics of women farmers who accessed microcredit from informal sources in Singida and Chamwino- Districts, Tanzania; (ii) Ascertain level of women farmers’ access to informal micro-finance in the study area and (iii) determining socio-economic factors that influenced access to informal micro-finance by women farmer borrowers in the study area.

## **2. Research Methodology**

### **2.1 Area of Study**

This study was carried out in Singida and Chamwino Districts in Tanzania. The State was created on 25<sup>th</sup> May - 20<sup>th</sup> to June 2016.

Chamwino District Council is one of the districts in Dodoma Region which originated from the traditional Dodoma Rural District. The District has a total area of 8,056 square kilometers with a dry Savannah climate and sporadically semi-arid. The district is located in the central plateau of Tanzania which extends between Latitude 40° and 80° south and between longitude 35° and 37° east. The district has five divisions, thirty two wards, seventy eight villages. According to the 2012 Tanzania National Census, the population of the Chamwino District was 330 543 (171 661 Female) (51.9%) (NBS, 2012).

The districts reflect extreme poverty in terms of housing. More than half of the houses are built using mud and roofed with mud in Chamwino. During February and March every year; the villages are covered with fields of maize and millet that look dry and unpromising to bear enough produce for food staff and secure cash for other necessary expenses such as school fees, uniforms and books for schooling children.

Singida Rural District is one of the six districts of the Singida Region of Tanzania. It is bordered to the north by Mkalama District, to the east by Manyara Region and Dodoma Region, to the south by Ikungi District and to the west by Singida Urban District. Its administrative seat is the town of Singida. According to the 2012 Tanzania National Census, the population of the Singida District was 225 521 (113,749 Female) (50.4%) (NBS, 2012). The area is: 2,399.97 km<sup>2</sup> – Density: 94 inh./km<sup>2</sup>.

The district was chosen based on the fact that the region ranks second as the most deprived region with 49% of households below poverty line and the district had all sign of poverty. From the NCPA I data, it is estimated that the MVC comprise about 9% of all children in the region, making it among the regions with a high number of MVC (Mmasa, 2016; URT, 2007). Percentage populations of these children per district show that Singida Rural has 10.8%, Manyoni (10.1%) and Singida urban (7.1%) of MVC (Mmasa and Walter, 2016). Moreover, the districts were selected due to the fact that there is high percentage of women and probably engage in agriculture.

### **2.2 Sampling Technique and Data collection**

This study involved a Multistage sampling technique employed to the sample from the study area. The technique was chosen because it takes into consideration the representation from divisions, wards and villages scattered in a wide geographical area. From each division three wards in SD were purposively chosen from the respective sampling frame, and from the list in each selected ward, villages were purposively selected to get a total of six (6) villages namely *Ilongero (Ilongero and Madamigha)*, *Mrama (Mrama and Idd Simba)* and *Mtinko (Mtinko and Minyenye)*. Likewise, in CD three wards in Chamwino District were selected in Dodoma, six villages were purposively selected to get a total of five (5) villages namely; Bugiri (Bugiri and

Chinangali II), Msanga (Msanga) and Chamwino (Chamwino Ikulu ). A total of 100 smallholder farmers were selected randomly.

A list of Informal credit sources in the selected communities was obtained with the help of local Government officials and communities many of who were natives. The informal credit sources were visited and lists of women microcredit beneficiaries generated from their registers. This served as the sampling frame of women farmer informal microfinance beneficiaries exist in the study area. Ten female farmer beneficiaries of informal credit were randomly chosen from each of the ten communities. This gave a sample of 100 women farmer informal credit beneficiaries who were used for the study.

From the 100 respondents. Primary data collected included women farmers' socio-economic variables of marital status, educational level, farming experience, access to credit from informal sources, interest charged, farm size, primary occupation, household asset award, household gross monthly income, membership of farmers associations, and extension services contact.

### 2.3 Method of Data Analysis

In order to realize the objective of this study, a number of statistical tools were employed in analyzing the data. Objectives (i) and (ii) were analyzed using descriptive statistics of mean, frequency distribution tables and percentages while, objective (iii) was analyzed with probit multiple regression model.

### 2.4 Model Specification

To facilitate realization of objective ii, a five point Likert scoring was used in determining respondents' perceived level of access to informal microfinance as follows: (perception scores of accessibility was thus: very high = 5; high = 4; moderate = 3; low = 2 and very low = 1). The Likert scale score(s) is a method of ascribing quantitative values to qualitative perception to make them amenable to statistical analysis. The values of the responses were added and further divided by 5 to obtain a mean score of 3.0, regarded here as mean level of accessibility. Women farmers with accessibility score of 3.0 and above were considered to have had access to informal micro finance, contrary, women farmers with accessibility score of less than 3.0 were regarded as having not had access to informal micro finance sources.

Thus mean accessibility score =  $\bar{X}$

$$\bar{X} = \sum fx/N,$$

Mean of each item was computed by multiplying the frequency of positive response with its appropriate likert nominal value and the sum was divided by the sum of the number of the respondent to the items. This was summarized with the equation below:

$$\bar{X} = \sum fn/N.$$

Where

$\bar{X}$  = mean score;

$\sum$  = summation sign;

f = frequency or number of respondents who responded positively;

n = nominal Likert score;

N = Number of respondents.

In realizing objective (iii) probit multiple regression model was considered appropriate because access as a dependent variable (Y) takes one of only two possible dummy values (access or no access) i.e. 1 or 0 probability condition. The model was adopted as used by Gujarati (2003):

$$P_i [y=1] = [Fz_i] \dots\dots\dots (1)$$

Where

$$Z_i = \beta_0 + \beta_1 X_1 + e$$

$$Y_i = \beta_1 + \beta_2 X_{2i} + \dots\dots\dots + \beta_k X_{ki} + \mu \dots\dots\dots (2)$$

$Y_i^*$  is unobserved but  $Y_i = 0$  if  $y_i^* < 0, 1$  if  $Y_i^* \geq 0$

$$P(Y_i = 1) = P(Y_i^* \geq 0)$$

$$P(\mu_i \geq -\beta_1 + \beta_2 X_{2i} \dots\dots\dots -B_k X_{kl}) \dots\dots\dots (3)$$

Where  $i = 1, 2, \dots, 100$ .

Where;

$Y_i$  = women farmers who had access to informal micro credit (dichotomized with mean likert nominal score; where  $\geq 3.0$  = Access=1,  $< 3.0$  = No access= 0)

$\beta_1$  = Unknown coefficient value of factors;

$X_1$  = Women farming experience (years);

$X_2$  = Interest charged (TZS);

$X_3$  = Parcel/Plot sizes (hectares);

$X_4$  = Educational level (Years);

$X_5$  = Primary occupation (Dummy variable);

$X_6$  = Gross monthly income (TZS);

$X_7$  = Membership to farmers association (Dummy variable);

$e$  = Error term.

### 3.0 Results and Discussion

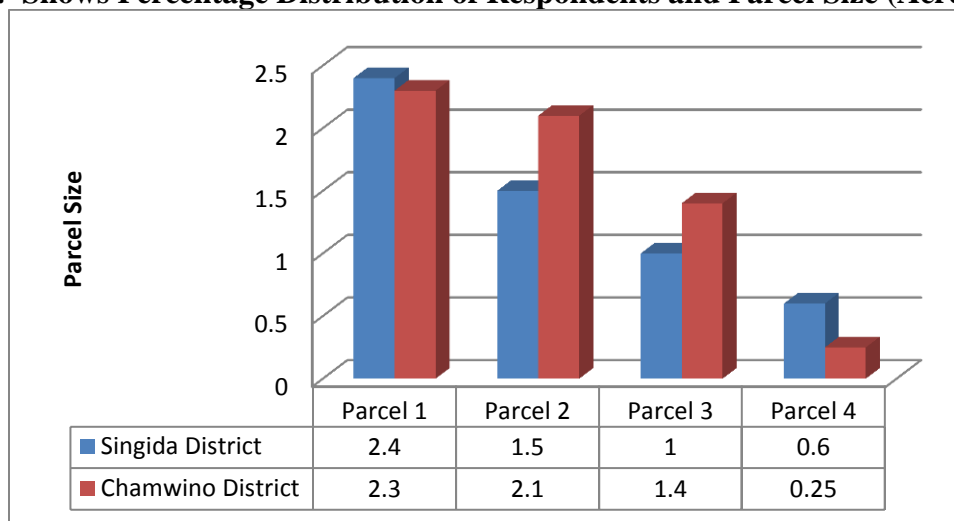
#### 3.1 Social economic characteristics of respondents

The data shows that in Singida District majority of producers own one to four parcels with sizes between 0.5 acre to 2.5 acres and usually the first parcel is large than the subsequent ones. Meanwhile, in Chamwino District, the parcel size varies from 0.25 (quarter a acre) or higher to less than 2.5 acres. However, the second parcel is larger than the preceding one Figure 1. The smallest parcel sizes were found in Chamwino. It was observed that land holding in the study areas is generally small. Land fragmentation is prevalent in both Districts. All these problems hindered them from having a contiguous land that can be cultivated with tractor and tractor drawn implements (mechanized agriculture) and impeded farm productivity (Mmasa, 2013; Ibekwe *et al.*, 2011; Onumadu, 2009). This revealed the limited access of women farmers to land attributable to higher rent paid on land, cultural problem of land tenure system (women exclusion from inheriting land which prevents many of them from taking title of ownership), and land fragmentation prevalent in the study area. All these problems hindered them from having a



contiguous land that can be cultivated with tractor and tractor drawn implements (mechanized agriculture) and impeded farm productivity (Ibekwe *et al.*, 2011; Onumadu, 2009).

**Figure 1: Shows Percentage Distribution of Respondents and Parcel Size (Acre)**

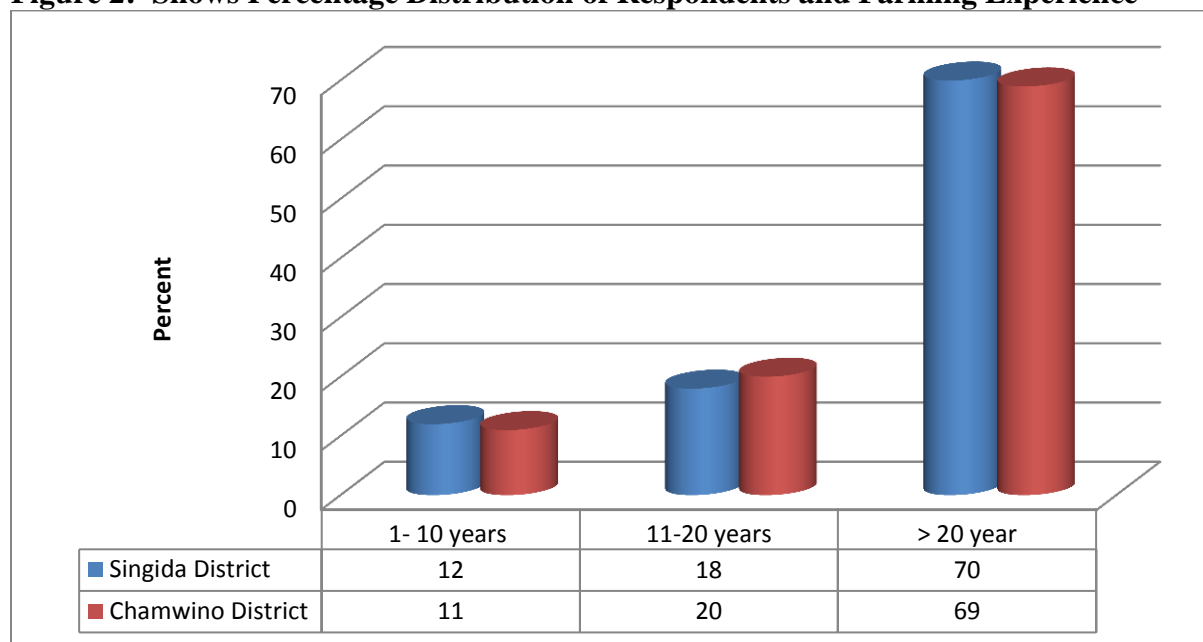


**Source:** Field Survey, 2016

*NB; 1 Hector = 2.5 Acre*

Figure 2 also showed that 70% of the respondents had farming experience of more than 20 years. In descending proportions, 18% - 20% and 11% -12% had farming experiences of between 11 and 20 years, 1 - 10 years respectively. The mean year of experience in farming was 16 years. This showed that most of the women farmers were highly experienced in the farming business. The more experienced a farmer was the better he or she could carefully utilize borrowed funds (Oriaku, 2010).

**Figure 2: Shows Percentage Distribution of Respondents and Farming Experience**

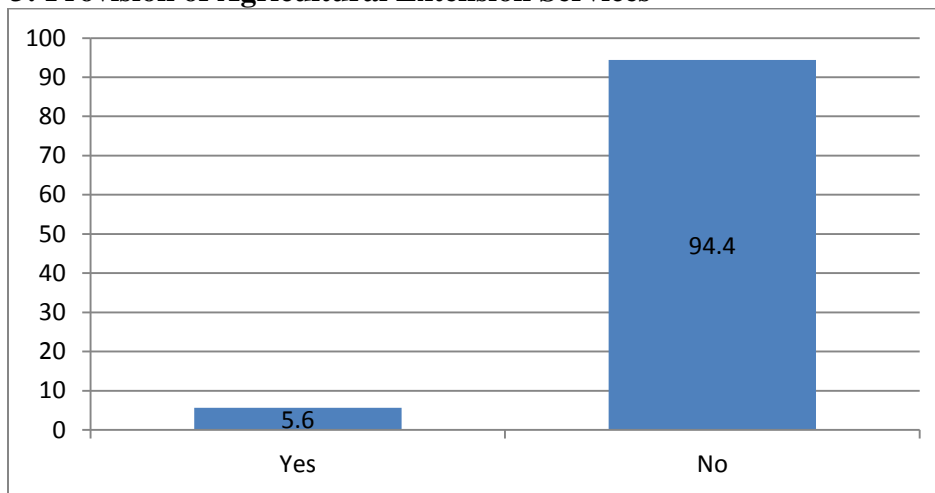


**Source:** Field Survey, 2016

Agricultural extension officers are intermediaries between research and farmers. They operate as facilitators and communicators, helping farmers in their decision-making and ensuring that appropriate knowledge is implemented to obtain the best results. Survey results show that 94% of women have no contact with agents. Meanwhile 6% reported to have contact with extension services. This indicates that majority of the women farmers had no contacts with agents due to lack of awareness on the benefits of extension services. It was noted that a few producers were trained on agronomical practises and supported with seeds, hence more effort is needed from Local Government, NGOs and other civil society organizations to support this connection. This limited provision of extension services could be caused by inadequate motivation of extension agents/workers, inadequate transportation and communication facilities; insufficient extension personnel and inadequate monitoring of extension agents (Iwena, 1991 2008).



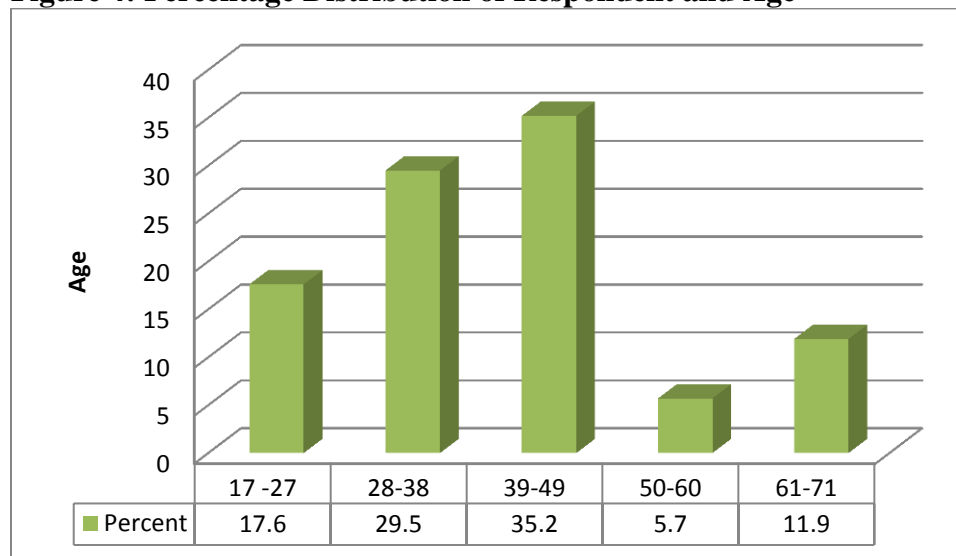
**Figure 3: Provision of Agricultural Extension Services**



**Source: Field Survey, 2016**

With regards to literacy level, 14.16% of the women had no formal education and 15.45% of them had primary school education. Cumulatively, 49.16% and 20.60% of them had attended secondary and tertiary institutions respectively. In summary, 85.84% of the women had formal education. High level of formal education suggests possession of high literacy level, which is an advantage in appreciating procurement of credit (informal microcredit) as literate borrowers have enhanced capacity to repay loans (Eze, 2013).

**Figure 4: Percentage Distribution of Respondent and Age**

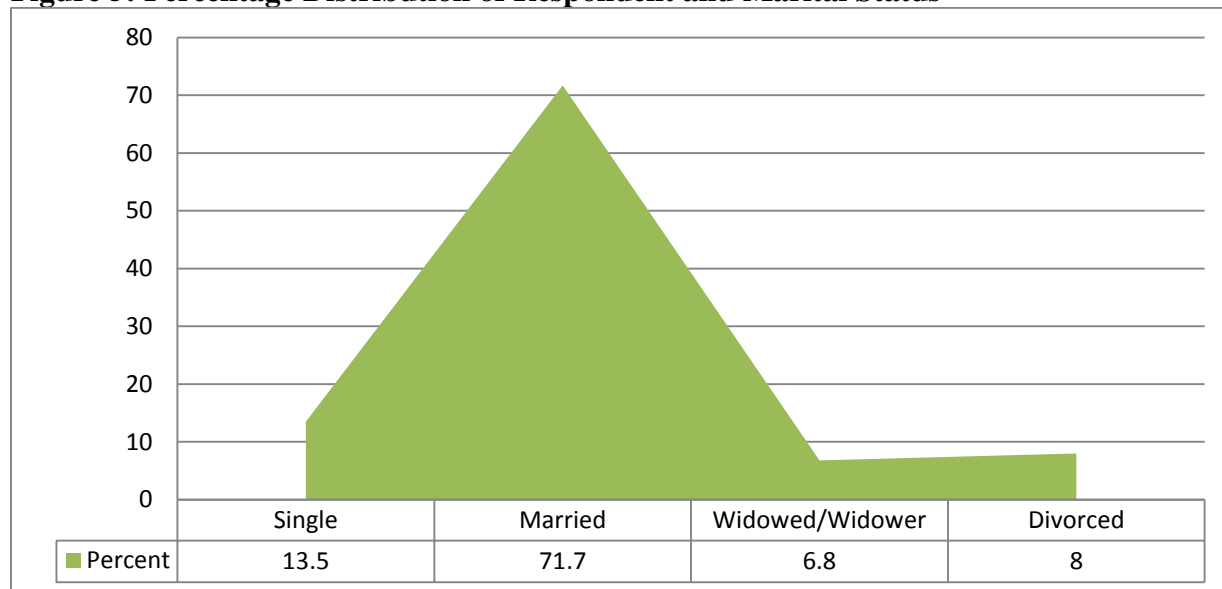


**Source: Field Survey, 2016**

In terms of marital status, Figure 5 showed that majority (72%) of the women farmers who accessed informal loan were married, with 13.5%, 6.8% and 8% of them being single, widowed/widower and divorced respectively. The married individuals were relatively considered as being more stable, easily identifiable and more credit worthy. According to Adegboye *et al.*

(2008) married farmers demanded more microcredit because they had pressing need to supplement their family’s income for better livelihood.

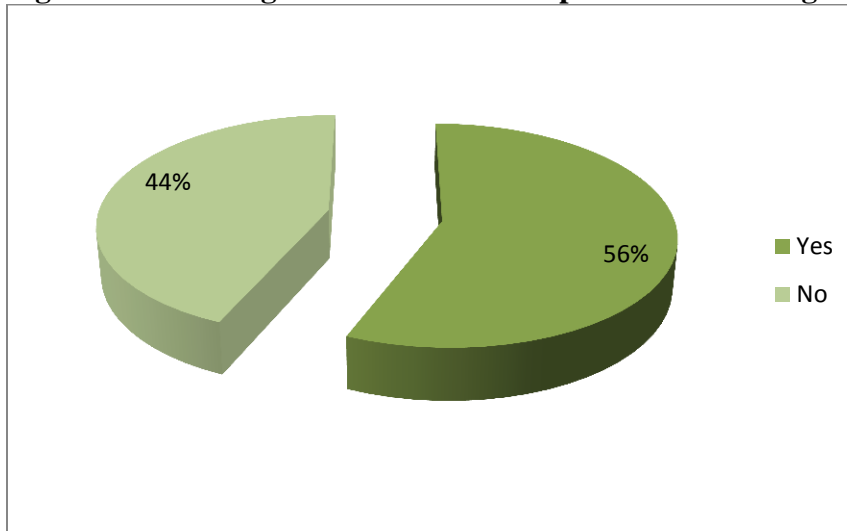
**Figure 5: Percentage Distribution of Respondent and Marital Status**



**Source: Field Survey, 2016**

Figure 5 further showed that 44% of the women farmers did not belong to any agricultural association/producers group. This could be due to low knowledge derivable benefits of belonging to economic groups arising possibly due to poor extension contact in the area. It could also be attributed to misuse of association’s fund and lack of trust on the leaders of farmer’s association (Ezeani *et al.*, 2000). Membership to farmers association improves a farmer’s social capital. In developing countries, women face multiple obstacles that diminish their potential as entrepreneurs and businesswomen. They have limited access to education and training, they find it harder to enter business associations, have less freedom to select business sector and are often met by discriminatory attitudes in property, marital and inheritance laws. Without property ownership, they lack collateral to get access to formal credit (Sharma, 2013).

**Figure 6: Percentage Distribution of Respondent and Being in Agricultural Association**



**Source: Field Survey, 2016**

### **3.2 Level of Women Farmers' Access to each type of Informal Credit Sources**

#### **3.2.1 Village Community Banks (VICOBA)**

Table 1 showed that 62% of the women farmers had access to informal credit, from VICOBA. However, 14%, 14%, 4% and 6% of the women had varying level of access to informal credit from this source described here as high, moderate, low and very low levels of access respectively. Quite a small proportion (6%) of the women had very low access to funds from VICOBA. This source of credit had a total Likert nominal score of 422 and a mean of 4.22 for perceived access to credit from them. This implies that the women farmers in the study area had access to credit from VICOBA.

VICOBA is one of emerged informal system. VICOBA model uses informal system of saving and lending money to its member and most of its members are low income earners who have no ability to go and save their income in formal institutions like banks due to factors hindering them such as starting amount to save and rules of opening account. For member of VICOBA their easiest way to save low amount of income they have gained is through their own organization they formed, however this organization once they have been formed they can introduce their own rules, laws, norms of conduct, choose their own leader, conditions and others as which are the simplest for them to handle and control or direct their own group. Through the savings, member can get easy access to loans with soft conditions including low interest rate in which these loans can be used in various issues such as payment of hospital bills, payment for their children school fees, starting new venture, adding capital to their business and others. Most of the women prefer VICOBA due to the fact that other MFI application process for a loan is long and difficult for SMEs to meet up with the demands (Otoo, 2012). The collateral demanded by MFIs' for a loan is based on fixed assets and which are very high in other to hinder these businesses to acquire loans. They cannot afford these collaterals which include; estates, and other fixed assets valued usually at 200% of the loan. The major setback that prevents SMEs to get funding from external sources is the problem of information asymmetry. That is the magnitude of the deviation of the correct information that is needed by the lending institution (Mkombe, 2005).

### **3.2.2 Friends and relatives**

Table 1 showed that 60% of the women farmers had very high level of access to informal credit sources with only 6% of them having hindered access to loans from friends and relatives. Friends and close relatives as a source of credit had total nominal Likert score of 421 with a mean of 4.21. This was greater than the threshold mean score of 3.0 showing that the women farmers in the area had unhindered access to this source of informal credit. This result is not surprising because in informal credit market, familiarity with a lender is a considerable advantage to secure credit. The most commonly cited problems are cumbersome procedures and high interest rates. These are followed by small loan sizes from MFIs and lack of collateral in the case of bank loans.

These institutions have two limitations. First, one has to start borrowing very small amounts and gradually graduate to higher sums. The amount they start lending (about US \$50) is considered too low to be of much use to most of the women interested in growing their own businesses. Secondly, MFIs require the borrowers to attend weekly meetings which take a lot of their working time (Beverly, S. 1997). The women who participated in the in-depth study gave a number of reasons why it is difficult to access finance. First, the banks require borrowers to have collateral worth at least 125 per cent of the amount borrowed. The women were unable to provide collateral (UN DESA, 2009).

### **3.2.3 Association and Marketing Cooperatives Societies (AMCOS)**

Table 1 reveals that (32%) of the women farmers had very high access to credit from this source. Varying proportions of 23%, 20%, 12% and 13% of the women farmers had low, very low and high level access to small loans from cooperative societies respectively. Only 13% had very low access to funds from cooperative societies like AMCOS. This source of credit had a total Likert nominal perceived access score of 349 and a mean of 3.5. This implies that women farmers in the study area did not have unhindered access to credit from cooperative societies. This could be a result of prospective women borrowers not meeting up with the internal conditions for loans from the cooperative societies.

### **3.2.4 Individual Local Lenders “Ntungwira Mukhova” or “Songolela”.**

Table 1 showed that a fairly good proportion (35%) of the women farmers had no access to this source of informal credit. The total likert nominal access score for this informal credit outlet was 285 with a mean of 2.85. This value below the threshold means score of 3.0. It means that the women farmers in the study areas had no access or had limited access to this source of informal credit. Individual local lenders unlike the other types of informal credit sources demand collateral or guarantor before granting loans to borrowers. Most women farmers in the area are denied access to credit by individual local lenders on grounds of their inability to provide acceptable collaterals or guarantors and fear of being confiscated. Collaterals as demanded by this source of credit must be tangible assets such as, land, houses, plots and estate properties in case of big loans. This type of loan could be cash or in-kind if you borrow one (1) bag of maize during lean periods you will recover two (2) bags during the harvest, this is actually exploitation. Women in the area possessed relatively low property rights and are lowly rated by providers of farm credit (Ibru, 2009; Iheduru, 2002; Lakwo, 2009; May, 2007; Nwankwo, 1999; Okojie *et al.*, 2010). This fact coupled with high interest rate accounted for their having limited access to informal credit from money lenders.

*“The loan is dangerous to us because failure to repay the will confiscate my valuable assets...during borrowing they used to encourage us but when to come to payment they change and become bitter.....”*

[Anastazia Madeje (31 years) in Bugiri Ward - Chamwino - District]

*“When you want to die early take a loan..... I have been told by my grandpa.....”*

[Mwanaidi Itembe (35 Years) – Women Farmer in Ilongero – Ward – Singida –District]

### 3.2.5 Rotating Savings and Credit Associations (ROSCA)

Table 1 showed that a half of the women (53%) of the women farmers had low level access to credit from ROSCAs and the type. Varying proportions: 16%, 3%, 10% and 18% described here as high, moderate, low and very low levels of access respectively. This source of credit had a total Likert nominal access score of 211 with a mean of 2.1. This implies that women farmers in the study area did not have unhindered access to credit from ROSCA. ....The ROSCA system is a savings mobilization arrangement which operates as a revolving scheme that continues until every member has benefited from the scheme (Adebajo, 2010).

**Table 1: Estimation of Level of Women Farmers Access to Sources of Informal Credit**

Level of Access	Very high (5)	High (4)	Moderate (3)	Low (2)	Very low (1)	Total	Mean	Rank
<b>Types of informal credit accessed/sources</b>								
Friends/relatives	300 (60)	80 (20)	21 (7)	14 (7)	6 (6)	421	4.21	2
Association and Marketing Cooperatives Societies (AMCOS)	160 (32)	92 (23)	60 (20)	24 (12)	13 (13)	349	3.5	3
Village Community Banks (VICOBA)	310 (62)	56 (14)	42 (14)	8 (4)	6 (6)	422	4.22	1
Individual Local Lenders <i>Ntwungwira Mukhova” or “Songoleda”.</i>	100 (20)	40 (10)	60 (20)	70 (35)	15 (15)	285	2.85	4
Village Savings and Loan Association (VSLA), Rotating Savings and Credit Associations (ROSCAs)	80 (16)	12 (3)	30 (10)	36 (18)	53 (53)	211	2.11	5

**Source:** Field Survey, 2016

Decision Rule 3.0 and above = Access

Decision Rule < 3.0 = No access

Figures in parentheses are percentages.

#### 4.0 Determinants of Women Farmers' Access to Informal Credit

In order to achieve the purpose of the study, several demographic and socioeconomic variables, which are believed to have an influence access of rural women farmers to informal, are included in the Probit regression. The estimation results are presented in Table 2.

From Table 2, it can be observed that the likelihood ratio statistics as indicated by chi-square statistics are highly significant ( $P < 0.0000$ ), suggesting the model has a strong explanatory power. The Pseudo  $R^2$  is 0.5049, indicating the specification fits the data well the variables included in the model explain 50% of the variation in influencing access of rural women farmers to informal credit.

Table 2 also indicates that the estimated coefficients of the Probit regression revealed that the explanatory variables– farming experience (0.0299838), gross monthly income (0.8727787) exerted positive significant influences at 1.0% alpha levels of probability and Interest rate charged (-0.0100584) exerted negative significant influences at 5% alpha levels of probability.

The Probit estimation result in Table 2 reveals that the variable ‘farm experience’ is statistically significant at 1% level and has positive influence on access to informal credit of households. This means that as the farm experience increases in years, the probability of decision for commercialization increases as well.

The coefficient of gross monthly income level showed a statistically significant at 1.0% level and has positive effect on women farmers’ access to informal credit. The key variable observed by lenders before granting access to informal loan was income. Consistent with *a priori* expectation women farmers’ chance of accessing informal credit increased as their gross income increased in the area. This is because borrowers with higher income levels had relatively better potential for repayment of their loans The negative sign of this coefficient showed that access to informal credit in the study area decreased with increase in Interest rate charged.

Contrary to earlier expectations, the variable- occupation, education level, farm size and membership are found to have no significant impact on influence access of rural women farmers to inform credit. Moreover, the direction of influence of some are found opposite to our expectation. For example, farm size is found to have unexpected negative sign. The possible explanation for this might be the fact that problems hindered them from having a contiguous land that can be cultivated with tractor and tractor drawn implements (mechanized agriculture) and impeded farm productivity (Mmasa, 2013; Ibekwe *et al.*, 2012; Onumadu, 2009).

**Table 2: Binary Probit Regression Estimates of factors affecting Access of Women Farmers to Informal credit**

Variables	Estimated coefficients	Standard errors	Z-Value	P> z	[95% Conf. Interval]
Constant	-26.29896	9.860839	-2.67	0.008	-45.62585
Primary occupation	-0.1441938	0.5202382	-0.28	0.782	-0.0606798
Farming Experience	0.0299838****	0.0156615	-1.91	0.0078	-0.0725456
Education level	0.0485054	0.0617619	0.79	0.432	-0.1174019

Farm size	-0.0100584	0.0547681	-0.18	0.854	-0.17903
Interest rate charged	-0.0100584**	0.2721021	2.91	0.0193	0.237203
Gross monthly income	0.8727787***	0.6494113	1.30	0.007	-0.3464152
Membership of association	0.9264076	0.6494113	1.43	0.154	-45.62585
Log likelihood	-20.930242				
Wald $\chi^2$ (7)	42.68				
Prob > $\chi^2$	0.0000				
Pseudo R <sup>2</sup>	0.5049				

*Source: Field Survey, 2016.*

\*\*\*, \*\*, \* Significant at 1.0%, 5.0% and 10.0% levels respectively.

To facilitate interpretation of the estimation results presented in Table 2, the marginal effects of each variable on the predicted probability of access to sources of informal credit, evaluated at the means of the explanatory variables, are reported in Table 3. The marginal effects report of the Probit regression provides the probability that a farm experience will determine access to sources of informal credit. Table 3 provides the probability estimation for the likelihood of access to sources of informal credit of a farm household given the statistically significant variables: ‘farm experience’, ‘interest rate charges’, and ‘gross income’.

The marginal effect report of the probit regression in Table 3 indicates that there is a probability of 11% that a farmer access to informal credit if his farm experiences increases, at mean value, by one acre. The marginal effect shows that there is a probability of approximately 27% that a smallholder access to informal credit market if he manages to have a mean value of reduction of interest rate. Similarly, the probability that a smallholder farmer access to informal credit as a result of a one income increase, at mean value, in the gross income is given by 0.00589374%. In other words, if the farm income of a farmer increases by TZS. 1000, at mean value, then the likelihood of participation in the market increases by 5.8%.

**Table 3: Marginal Effects of the Explanatory Variables Used to Estimate Probit Regression**

Variables	dy/dx	Standard errors	Z-Value	P> z	[ 95% C.I. ]		X- bar
Primary occupation	-0.0037953	.01301	-0.29	0.771	-.029297	.021707	.61
Farming Experience	0.1157***	.00112	-0.73	0.012	-.003015	.001383	42.25
Education level	0.013196	.00229	0.58	0.565	-.003174	.005813	5.91
Farm size	-0.0100584	.00162	-0.17	0.866	-.003453	.002905	4.77
Interest rate charged	-0.2736**	0.01073	0.90	0.036	-.011384	.030661	3.455
Gross monthly income	0.237441**	.02498	0.95	0.0342	-.02522	.072708	31.73



Membership of association	0.0589374	.10576	0.56	0.577	-.14834	.266215	.88
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(\*  $dy/dx$  is for discrete change of dummy variable from 0

Marginal effects after Profit

$$Y = \text{Pr} (\text{Access to credit}) (\text{predict}) = .9897618$$

### Conclusion

Based on the empirical evidence emanating from this study, it is concluded that women farmers had unequal level of access to different sources of informal micro credit on basis of their differences in farming experience, farm size, educational level, gross monthly income and their membership of agricultural associations. There was relatively higher level of access to loans from friends and relatives compared to other informal credit sources.

### Recommendations

This study therefore made the following recommendations:

- The government should make policies to increase synergistic linkage between informal and formal financial institutions to facilitate channeling of agricultural loans from formal financial institutions to women farmers through recognized informal credit units. The synergy from such linkage will increase women farmers' productivity.
- Women farmers should be encouraged and educated by extension workers to belong to cooperative associations so as to enjoy benefits emanating from being members of agricultural association.
- Women farmers should pool their financial resources and use same to buy or rent consolidated pieces of farm land for enhanced production and income as members of cooperative society.

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