International Journal of Agricultural Extension and Rural Development Studies
Vol.3, No.4, pp.45-58, September 2016
Published by European Centre for Research Training and Development UK (www.eajournals.org)

DETERMINANTS INFLUENCING THE DEMAND OF MICROFINANCE IN AGRICULTURE PRODUCTION AND ESTIMATION OF CONSTRAINT FACTORS: A CASE FROM SOUTH REGION OF PUNJAB PROVINCE, PAKISTAN

Rukhsana Rasheed[1], Li Cui Xia[1], Mazhir Nadeem Ishaq[1], Munaza Mukhtar[2], Manzar Waseem[2]
[1]College of Economics and Management, Northeast Agriculture University, Harbin, P.R. China
[2]Comsats Institute of Information Technology, Vehari, Pakistan

ABSTRACT: *This study was conducted in the south region of Punjab province of Pakistan. Four districts were purposely selected to examine the determinants which critically instigate the demand for borrowing micro finances in agriculture farming. The research also attempted to analyze those socio-economic factors which established constraints for acquiring loan from micro finance institutions (MFIs). Research design for this study was primary study along with filed observations. A multistage sampling technique was applied to collect primary data from selected districts through structured questionnaires after pre-testing and seeking the expert opinions of MFIs officials. Tobit regression model and multiple regression models were applied to estimate the impact of socioeconomic variables on the microfinance accessibility and constraint level. The descriptive statistics of respondents along with frequency and percentages distribution was also carried out. The results illustrated that five determinants; gender, age, education, farm size and dependency ratio had significant influence on the demand of microfinance. Farm experience and primary occupation were non-significant. Income level of farmers was negatively correlated with the demand of microfinance. The study proved that three constraints; far-away distance of MFIs, complex lending procedure and high interest rates were top in the constraint list. The results of multiple regression model explained that education level, land ownership and preferences of farmers for informal finances have negative relationship and reduces the constraints to access microfinance. The findings also revealed that for efficient allocation of resources, MFIs preferred to disburse loan towards educated and young age farmers as they are more inclined to use latest farm production technologies. The study concluded that farmer base organizations (FBOs) should be registered with district agriculture extension office to educate the farmers on loan acquisition process, record keeping and to encourage the saving habit. A public- private co-integrated policy is needed to implement in south region of Punjab province to effectively handle the rural financial constraints.*

KEYWORDS: Agriculture Microfinance, Determinants, Tobit Regression, Demand Constraints, Farm Production, Punjab**.**

INTRODUCTION

Microfinance is can be used as an essential economic tool which assists the poor in setting up or to expand their income generating activities relating to on-farm activities in rural areas. Microfinance has turned to be useful business development tool and is assumed as poverty reducing mechanism. It emerged as a revolution by helping the millions of poor in world. Asian Development Bank defined Micro Finance Institutions (MFIs) as "the institutional arrangements whose major business is the provision of financial services at the micro level".

Print ISSN: ISSN 2058-9093, Online ISSN: ISSN 2058-9107

In many developing countries, the MFIs are operating under different legal systems and structures like as cooperative organizations, non-profit NGO-MFIs, registered banking institutions and credit associations. Micro finance evolved as a viable economic alternative intended to benefit very poor self-employed men and women who are incapable to access the formal financial services due to their social and economic limitations. To minimize the imperfections in the rural credit markets, the practice of group lending with joint liability is widely accepted for micro finances. The joint liability of group members provides the incentives of easy selection, monitoring with minimum risks which leads to improve the credit accessibility of the poor. Micro finance clients are found in both urban and urban areas. They typically low income self-employed entrepreneurs such as small farmers, artisans, blacksmiths, street vendors, small traders and seamstresses. For rural development, micro finance can acts as a catalyst by making under-used capacities functional and motivating the latent potential (Kotir, et al., 2009).

According to Sanyal and Paromita (2009), social capital and credit access had a direct relationship. The access to productivity and welfare could be positively derived from cash contribution in the associations by farming households. Chaven et al, (2007) argued that the provision of small loans is one of the key strategies considered fundamental for rural development. In this modern era; to maximize production and modernizing agriculture farming, the farmers must have access of improved crop varieties, fertilizers, knowledge of soil management practices equipped with latest farm machinery and the lack of such capital is regarded as one of the major constraints. Micro finance is considered as a tool for agricultural development in many developing countries as it assists the poor farmers to take initiatives to start new micro enterprises. (Omonona et al., 2010).

Adebayo et al., (2008), found that the agriculture production and rural development can be derived on sustained basis if the agriculture finance is adequately provided to small scale farmers in breaking the vicious cycle of poverty. Such finances determine the farmers' access to most of farm resources with improved inputs and farm technologies. The effectiveness depends on the application of economic and financial policies, if well applied then micro finance would encourage the capital formation, increase the size of farm operations, enhance production level and improve marketing efficiency. Kedir, (2003) presented a report to the International Fund for Agricultural Development (IFAD) about the challenges of ending rural poverty and to overcome the agricultural stagnation in developing countries. To improve rural farmers' productivity, the enhanced accessibility to micro finance is one of the major components of rural financial services. Thus, the agriculture finance is assuming a higher importance in many parts of the world to respond the less privileged farmers with limited capital base.

In agriculture sector, micro finance is not a direct tool to increase the crop production but it can assist the small farmers to reduce their financial constraints for using advanced farm practices. Park, et al., (2003) concluded that access to credit is an antipode to poverty reduction among rural farmers. Rweyemamu et al., (2003) examined that the access to micro credit serves as an additional capital accumulation for small farmers' assets which would raise their expenditures. This rise in living expenditures leads to improvement in consumption (food and non-food) of the rural poor. To expand the scale of farm operation and for introducing supplementary enterprises the micro finance is needed for optimal labor utilization to promote steady flow of income. The farmers' efficiency and production expands due to provision of credit (Feder Luo, 1990).

Print ISSN: ISSN 2058-9093, Online ISSN: ISSN 2058-9107

Okurut (2004) concluded that, the availability of loan and socio-economic characteristics of household are directly associated. The financial institutions prior to loan approval, examine the borrowers' socio-economic resources. The poor resources result either no credit access or limited which is not according to requirement of small farmers. According to Hussein and Ohlmer (2008) the situation were the household can not avail its required amount of credit at the prevailing market conditions is said to be a credit constraint. A wide gap between demand and supply of credit, higher will be constraint level. In credit constraint circumstances, it will be impossible to purchase needed inputs for producing a given level of output. According to development professionals, the lack of access to credit has negative consequences for poor rural households for agricultural productivity, income generation and household welfare. The role of credit for agriculture development cannot be overemphasized (Petrick, 2005).

Agriculture and Microfinance in Pakistan

In Pakistan, the agriculture sector has a significant contribution to the economic development. According to the annual economic survey of Pakistan, (2015-16) the share of agriculture in Pakistan's GDP is approximately 22 percent and it absorbs 45 percent of labor force. Agriculture provides raw materials to the industrial sector and it has a substantial contribution of 60 percent in export volume. It is estimated that about 66 percent population of Pakistan is residing in rural areas which are directly or indirectly engaged in agribusiness related activities. Thus, agriculture growth not only important for Pakistan, economic development but it is also a major source of livelihood for rural population (Abedullah et al., 2009). An overview of agriculture with respect to total land cultivated for agriculture as well as major crops production and yield per hectare has been mentioned in Table 1.

Table 1. Major Cash Crops Production in Pakistan during the year 2015-16

Country Area	Total Land Area	Agricultural Land	Major agricultural crops and yield			
(Million hectares)			Major crops	Area (thousand hec)	Production (thousand tons/bales)	Yield Kg/hec
79.61	57.99	22.10	Wheat	9260	25,482	2752
			Cotton	2917	10,074	587
			Rice	2748	6,811	2479
			Sugarcane	1132	65,475	57,840

Source. Economic survey of Pakistan (GoP), 2015-16.

The Government of Pakistan (GoP) with collaboration of many institutions, non-governmental organizations (NGOs) has initiated many development schemes for the agriculture growth. These developmental projects have generally had a positive impact on the economy and the society at large. The farming community in Pakistan, still remained stuck with the problems of low productivity and inefficiency including the underutilization of their best resource which is "labor". There are many reasons for inefficient agriculture growth such as; lack of reproducible capital, absences of specific research & education, adulterated inputs supply, uncertain price mechanism and financial liquidity constraint is one of them. Insufficient financial resources restrained the small rural farmers to acquire the optimal scale and mix of inputs for profit maximization. Abedullah et al. (2009) examined that in Pakistan agriculture sector, lack of financial services have significant adverse effect. The prevalence of credit constraints and their impact on production hinders the poor farmers from the efficient

Print ISSN: ISSN 2058-9093, Online ISSN: ISSN 2058-9107

allocation of resources in the production pattern. To fulfill the credit need of farming community, the micro finance is a significant part of agriculture modernization as well as commercialization of rural economy. A proficient and cost efficient mechanism for rural areas is the responsibility of every country to support the agricultural and rural development (Satish, 2012). Access to cheap and easy agriculture finance is an appropriate way for fulfilling the credit needs of a larger number of rural populations in developing countries (Bashir et al., 2010).

A general framework for rural financial services in Pakistan is portrayed in Figure-1.

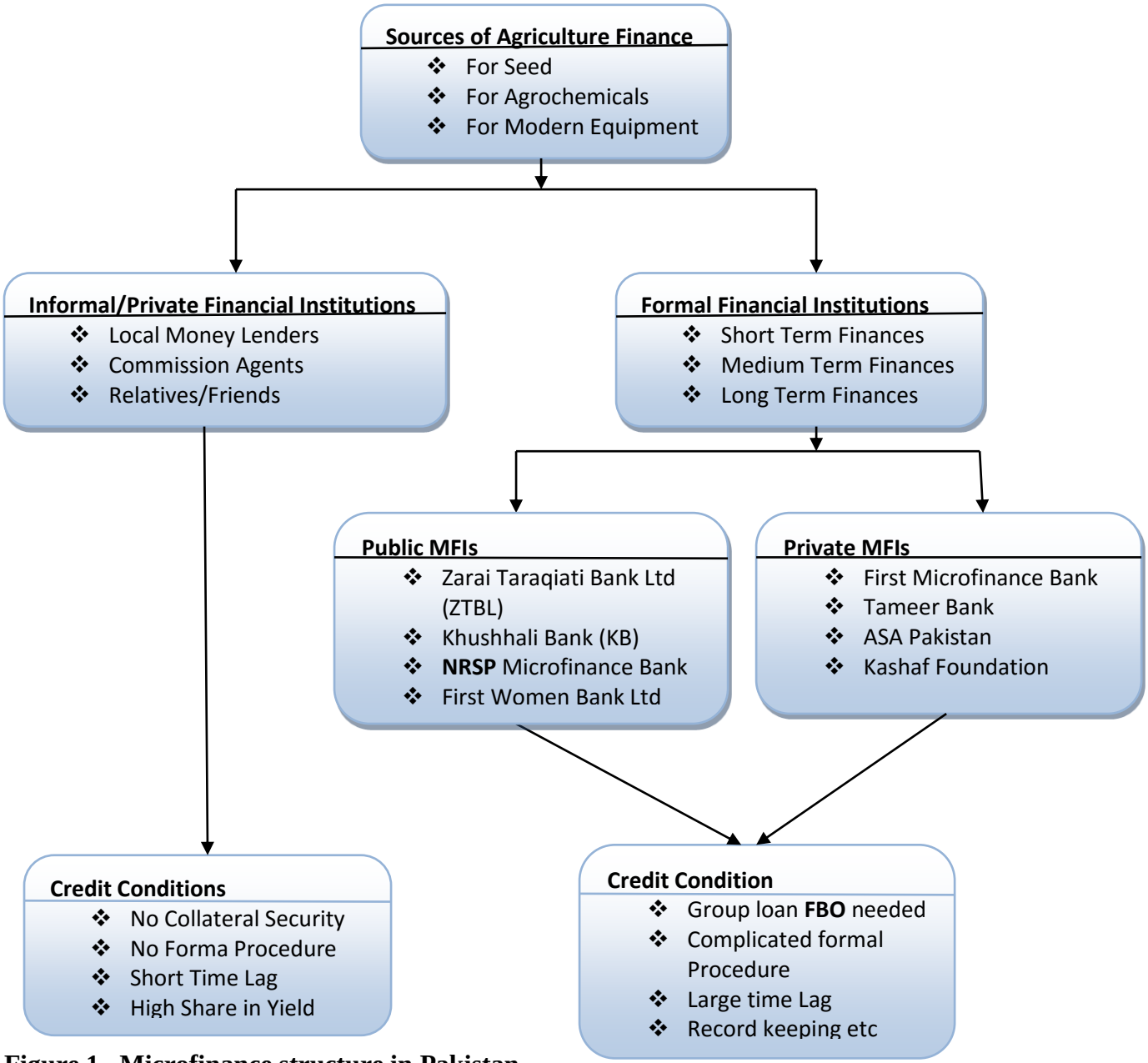

Figure 1. Microfinance structure in Pakistan.
*Micro Finance Institution (MFI)
* National Rural Support Programme (NRSP)
*Farmer Based Organization (FBO)

Print ISSN: ISSN 2058-9093, Online ISSN: ISSN 2058-9107

In Pakistan, the rural finance market to develop the rural infrastructure can be categorized into: (a) formal and (b) informal financial services. The informal financial market comprised of financial assistance from rural money lenders, commission agents, local landlords and family friends. While the formal financial market consist of public and private commercial banks, rural support programs (RSPs), micro-finance institutions (MFIs), non-profit NGOs and farmer based cooperatives (FBOs) specialized in executing agriculture finance. Sial et al., (2011) examined that informal credit markets are active and provide loans to the rural poor who are restrained from formal financial institutions due to their poor socio-economic characteristics. The "Microfinance Ordinance Pakistan" passed in year 2001; laid foundation for the growth of microfinance industry in Pakistan.

The micro financial institutions (MFIs) providing financial services to rural and remote areas usually applied the practice of group lending contracts with joint liability. This practice is widely accepted in MFIs as a solution for imperfections and to minimize the risks in rural credit markets. The practice of joint liability between group members compels to undertake monitoring and enforced them for repayment of credit in a cost effective manner. This systemic flow of credit improved the accessibility of credit to the poor with reduced transaction costs as well as the confidence of MFIs towards rural financing enhanced. Currently more than 30 public and private micro finance institutions (MFIs) are operating in Pakistan. The major MFIs are: Zarai Taraqiati Bank Limited (ZTBL), Khushahli Bank (KB), First Microfinance Bank Ltd (FMBL), NRSP Microfinance Bank, Punjab Rural Support Program (PRSP), Kashf Foundation, ASA Pakistan, Akhuwat etc. These MFIs are offering financial access for agriculture and other micro-enterprise development schemes. The outreach strength of these MFIs program is 18.38 million beneficiaries approximately (State Bank of Pakistan, 2015).

Availability and access to finance from MFIs is directly related to the household socio-economic characteristics such as: age, gender, farm size, education level, land ownership, income level and dealing with extension agent etc. Formal MFIs have ambiguities and time consuming procedure which most of the time do not favor the subsistence scale mixed farmers. These credit limitations or constraints affects the purchasing power of small farmers to procure farm implement and make farm related investments. Thus, a credit constrained small farmer will not take more risk to invest in latest productive farm technologies but rather in less risky and less productive technologies (Dorfman, et al., 2005).

Studies have shown that the problem of credit constraints was the major cause of low agricultural output (Hussein and Ohlmer, 2008; Dorfman and Koop, 2005; Coelli, 1995; Carter and Weibe, 1990: Iqbal, 1986). The agriculture sector of Pakistan also faces the problem of low productivity. There are a couple of reasons for low production efficiencies but the inability of most of small farmers to have access to adequate capital has heightened in the agriculture farming. Mason, (2014) concluded from his study that educational level, farming experience, household income level, loan transactions cost, disbursement lag period and input expenditure all were significant determinants for the demand of credit. There are very few branches of MFIs established in the rural areas of southern region of Punjab province. The existing network of MFIs is not capable to fulfill the gap between credit demand and supply adequate supply for agriculture sector. There has been relatively little research conducted on the area of microfinance and agriculture production within the southern part of Punjab province. This research will unfold answers to the following questions:

Print ISSN: ISSN 2058-9093, Online ISSN: ISSN 2058-9107

- What are the socio-economic determinants instigating a demand for microfinance?
- Which factors restrained the household participation in credit program?

Objectives of the study

The general objective of study was to examine those determinants which create a demand of microfinance in agriculture farming. The specific objectives of study were to:

1. Examine the essential socio-economic characteristics of small farmers which influence their demand of microfinance in agriculture production activities.
2. Analyze the impact of constraint factors on the acquisition of microfinance from MFIs.
3. Find out what are appropriate measures to enhance the outreach of MFIs credit schemes particularly in the south region of Punjab province.

MATERIAL AND METHODS

Description of Study Area

Punjab is a largest province in Pakistan having a major share of 60 percent in agriculture farming. This study was purposely carried out in the south region of Punjab. The climate of this area marked as tropical, dry characterized by high temperature and very erratic rainfall. The summer season prolongs about seven months (April-October) in a year. Four districts: Vehari, Lodhran, Bahawalpur and Rehaimyar Khan were selected from this region which offers a dominating rural society. The major source of livelihood for the population of these districts is related to agribusiness: cultivation of arable crops and rearing of livestock. The agriculture production in this geographical location facing enormous decline in crops yield since last decade and this was a basic reason for selecting it as study area. Among factors like land degradation, poor soil fertility, lack of stable irrigation system and application of old farm practices; the impact of credit constraints contribution towards productivity issue also necessitate the need to conduct a research in this area.

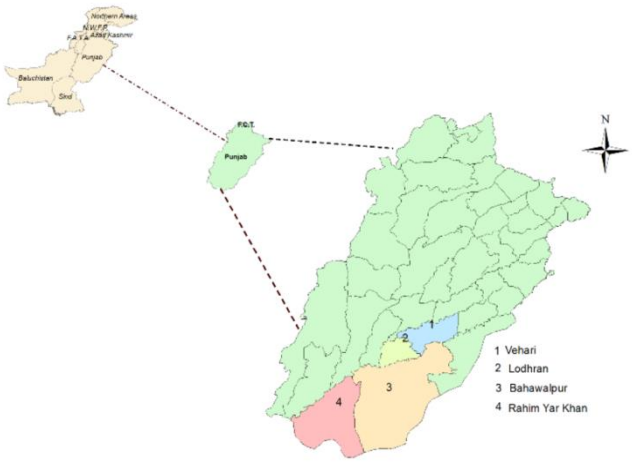

Figure 2. Geographical location of study area

Sources of Data

Qualitative research design was applied for this study. A cross-sectional data collected from all stake holders in agriculture farming and rural financing sector. A quantitative research utilizes certain measurement techniques while the qualitative research employs observation techniques (Bryman, 2015). Primary observations were made by conducting interviews with the help of structured questionnaires. In order to collect the appropriate information, all questions were simple and easy to understand. A pre-test survey was arranged to check the validity of questions and later modified after discussing with agriculture extension experts. The official of MFIs were also engaged in this stud from Zarai Taraqiati Bank Limited (ZTBL), Tameer Bank, NRSP micro finance bank, Khushali bank. Thus, data related to farmers' micro financing and production activities was gathered from both sources.

Print ISSN: ISSN 2058-9093, Online ISSN: ISSN 2058-9107

Sampling Techniques

A multistage random sampling technique was applied to select the respondents. The sampling frame of study was derived from the farmers list compiled by district agriculture extension office. In the first stage of sampling, two sub-divisions (locally known as tehsil) of each district were selected after consulting the agriculture extension experts. In the second stage, three villages were randomly chosen from the list of villages from respective tehsil jurisdiction. In the final stage, a random selection of 60 farmers was approved to create a total sample size of 240 household from the four districts of Punjab province. From MFIs, two individual i.e. branch mange and field credit office were also selected through purposive sampling from five major microfinance institutions operating in the four district of Punjab.

Model Specification and Estimation

In order to carry out an empirical analysis of micro finance determinants influencing the credit demands and hindrance for its accessibility, two regression model with some modifications were applied.

(1) Tobit Model

Tobit model was utilized to analyze the essential determinants influencing the desire to take financial assisting from MFIs. This model has a capability of estimating the probability of an event happening or not can be captured in the dependent variable. The method of Maximum Likelihood (ML) was used in model to carry the estimation (Amemiya, 1984). The model can expressed as:

$$Yi = Xi\beta + \mu i, \mu i \sim N\ (0, \sigma\ 2)$$
$$Yi = Yi^{*}\ if\ Yi^{*} > 0$$
$$Yi = 0\ if\ Yi^{*} \leq 0$$
$$X = 1, 2, 3, \ldots\ldots\ldots\ldots\ldots n$$
$$and\ Yi = f(X1, X2, X3, \ldots\ldots\ldots\ldots\ldots Xn)$$

Where:

Yi= Total demand for micro finance (in Pakistani rupees PKR)
X1= Household sex (male=1, female=0)
X2= Farmer's age (years)
X3= Farmer's education status (schooling years)
X4= Dependency ratio (No. of members in a family)
X5= Farm size (in acres)
X6 = Basic purpose for finance need {agriculture needs (seed, fertilizers, agrochemicals etc.)=1, Personal consumption needs (health expenses, school fee, purchase of transport etc.)=0}
X7= Farming experience (in years)
X8= Primary occupation (agriculture farming=1, otherwise =0)
X9= Household income level (in PKR)

(2) Multiple Regression Model

Multiple regression model was used to test the hypothetically supposed socio-economic constraints for the accessibility of microfinance. The model specification used for empirical investigation for cross sectional data is represented as:

$$\ln Yi = \alpha + \beta 1 lnX1 + \beta 2 lnX2 + \beta 3 lnX3 + \beta 4 lnX4 + \beta 5 lnX5 + \beta 6 lnX6 + \varepsilon i$$

Where: lnYi= credit demanded
α= constant

Print ISSN: ISSN 2058-9093, Online ISSN: ISSN 2058-9107

lnX1= Natural logarithm of MFIs distance from village (Km)
lnX2= Natural logarithm of MFIs complex lending procedure
lnX3= Natural logarithm of preferences for informal sources/commission agents
lnX4= Natural logarithm of time lag (months)
lnX5= Natural logarithm of high interest rate (cost of borrowing)
lnX6= Natural logarithm of land ownership
βs= Regression coefficients
εi= Random error term

RESULTS AND DISCUSSIONS

The available was analyzed for estimating the frequency distribution, percentages, regression analysis and t-tests by using statistical tools. The derived results are disused as:

Socioeconomic Characteristics of Farmers

Table-2 information revealed that in our sampling frame, 90.7% and 9.3 % agriculture farming was carried out by males and females respectively. This implies due to customary norms of study area that usually outdoor hardworking job is the responsibility of males. The age group depict that 43.75 % farmers were in the range of 41-50 years followed by age group 30-40 years. This concluded that majority of respondents were below 5o years which implies that farmers in our study area were still in their productive years of life.

Table 2: Distribution of Farmers by Socioeconomic Characteristics

Variables	Frequency	Percentage
Gender		
Male	217	90.41
Female	23	9.59
Total	240	100
Farmer age		
Below 30	46	19.16
39-40	51	21.25
41-50	105	43.75
51-60	38	15.83
Total	240	100
Family size		
1-4 Person	73	30.41
5-8 Person	136	56.66
9 and above	31	12.91
Total	240	100
Education		
None	122	50.83
Primary (5 years)	63	26.25
Secondary above 5)	42	17.5
Graduate	13	5.41
Total	240	100

Source: Authors field survey results, 2016.

Print ISSN: ISSN 2058-9093, Online ISSN: ISSN 2058-9107

Average family person were 5-8 in a household which states that there is a comparative advantage of family labor and less expenses will be for hired labor. The disadvantage perspective of this feature is that more expenditure will be needed to feed them with little income generating from small scale farming. The education level of respondents showed that about 50% farmers had no formal education at all while 26 % having primary education whereas 22 percent were educated at secondary and graduation level. This distinctive feature of farming community was not likely to be appreciated. As to adopt new technology for achieving the target of production efficiency without having basic education is futile.

Demand is the willingness of buyer backed by having sufficient money to purchase a product at the offered price. As regards of financial services; many socio-economic characteristics of a household affect the need of micro finance services. The data collection from sampled respondents from four districts of south Punjab was processed for Tobit model and estimated results are presented in Table 3.

Table 3: Tobit Model results for the determinants of micro finance demand

Variable	coefficient	Std. Error	t-value	Prob.
Gender (X1)	0.2346	(0.1165)	2.0137*	0.0810
Age (X2)	-0.1819	(0.1009)	-1.8028	0.1356
Education (X3)	0.7416	(0.3240)	2.2889**	0.0540
Dependency ratio (X4)	0.9500	(0.4650)	2.0432*	0.0742
Farm Size (X5)	0.3869	(0.2473)	4.5645***	0.0024
Purpose of Loan (X6)	0.1254	(0.1486)	0.8439	0.1835
Farming experience (X7)	0.3135	(0.2248)	1.3950	0.1165
Primary occupation (X8)	0.20056	(0.1523)	1.3169	0.2658
Income level(X9)	-1.4176	(0.2572)	-5.517***	0.002
Cons	-2.373	(1.060)	-2.238	0.001
R2	0.6258			
Likelihood Ratio	184.2451			

Source: Author field survey results, 2016. Significant at *(p<0.01) **(p<0.05) ***(p<0.10)

The R2 and Likelihood ratio value indicates that the model is 62% fit for the equation. In the model, coefficients of five, out of nine independent explanatory variables were significant. The demand for microfinance was significantly and positively related with male gender implying that male farmers have more motivation for borrowing compared to their female counterparts (Table 3). The age of respondent was found to have negative sign but was not statistically significant. This implies that older age farmers were less inclined for borrowing while young age farmers were agile and more receptive for new technologies that will generate more income. The study results were in accordance with Lehnert (2004) and Nugyen (2007). Education status of farmers was also significant at 5 % level and carries a positive sign implying that one percent increase in education will affect the demand for microfinance by 0.7416. Thus education's coefficient was in accordance to hypothesis i.e. there is a positive relationship between education and need for credit borrowing. It was similar to the results concluded by Omonona, et al., (2010).

Tobit model estimates for dependency ratio explained that this factor positively influenced the demand of microfinance and was significant at 10%. This indicates that if a household has more family members, there will be more demand for microfinance to carry on farming.

Print ISSN: ISSN 2058-9093, Online ISSN: ISSN 2058-9107

This might be due to the reason that farmers may divert available funds to family member consumption expenditures and left reduced amount of money to invest in agricultural production. Dependency ratio coefficient estimates were significantly consistent with previous studies by Imai, (2010); Taj (2008) and Goldberg (2005). The coefficients of primary occupation and basic purpose microfinance were not significant contrary to expectation. Farming experience has the expected positive relationship but was not significant (Table3). The size of farm for agriculture cultivations was found to be positive and significant which implies that farmers owned large farm size need more fund for farming operations. Thus, farm size and income level from farming activities determined the demand for microfinance and were significant at 1% level (Table 3).

The percentage distribution of the determinants which were assumed as constraint factors for the accessibility of microfinance from MFIs was derived from the responses of sampled respondents and is represented in Figure 3.

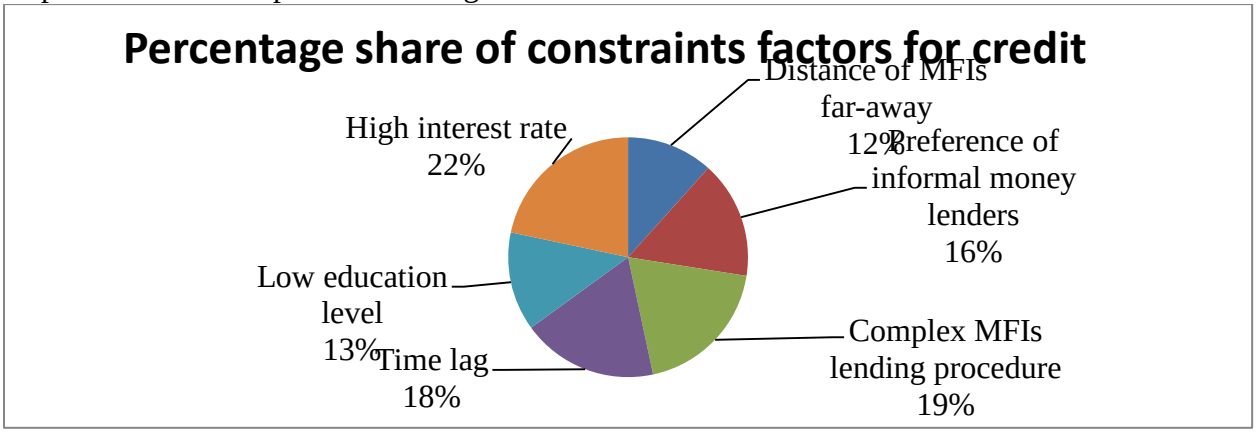

Figure 3. Constraints for the acquisition of loan from MFIs.

The average percentage of each constraint factor was derived from the frequency distribution of respondents interviewed from four districts of south Punjab. The Figure 3 indicates that high interest rate, complicated MFIs lending procedure, and large time lag had higher percentages in the constraint list. This was in consistence with the conclusions of Admasu and Paul (2010) that higher the rate of interest on loan, lesser will be demand for credit amount.

The empirical estimation of credit constraint factors was carried out by applying the multiple regression model and results are illustrated in Table 4. The overall significance of regression model is assessed from "coefficient of determination i.e. Adj. R-squared" value which was 0.6023 (Table 4). The constraint factor 60 percent contribute in the hindrance of microfinance accessibility from MFIs. It is evident from Table 5 that coefficient of MFIs distance from villages, large time lag, high interest rate were significant at % level. MFIs complex lending procedure was significant at 5% level. As shown in Table 4, the distance of MFIs from respondent's village was a significant variable at 1% and its coefficient indicates that one unit change will lead to increase constraint level by 0.1254. The information collected from filed survey that branches of MFIs were far from villages ranging from 5 to 25 Km. The coefficient of MFIs lending procedure was significant and positively correlated implying that one percent increase in MFIs complexity, low education farmers get more constrained by 19 percent (Table 4). It might be due to that primate or informal money borrowing source have no formal procedure as compared to the cumbersome lending process of MFIs.

Print ISSN: ISSN 2058-9093, Online ISSN: ISSN 2058-9107

Table 4. Results of Multiple Regression Model for Microfinance Constraint Factors

Constraints Factors	Coefficient	Std. Error	t-statistics	Prob.
Distance of MFIs far away	0.1254	0.0498	2.5180*	0.0254
Complex MFIs lending procedure	0.1957	0.1123	1.9130**	0.0557
Preference for informal money lenders	-0.1549	0.1513	-1.0236	0.15487
Time lag	0.1746	0.0492	3.547*	0.0026
High interest rate	0.2354	0.0442	5.3654*	0.00235
Education level	-0.2987	0.1029	-2.9028*	0.0049
Land ownership	-0.1360	0.0658	-2.067***	0.0928
Cons	4.358	1.1972	3.64	0.001
No. of observations	240			
F-value	162.487		Prob > F = 0.0000	
R-squared	(0.6281)			
Adj. R-squared	(0.6023)			

Source: Authors field survey results, 2016. *, **, ***, significance at 1%, 5% & 10% respectively.

Our study results were in accordance of previous studies (Carter and Olinto, 2003; Carter and Weibe, 1990; Blancard et al., 2006). Such constraints can be addressed by simplification of lending methods with effective publicity towards farmers. The preference for private or informal financial services had negative sign and insignificant. It might be due to that provisions of informal financial services are entire concerned with mutual good relationship and little money with very high share in agriculture productions (Table 4).

The time interval between the submission of loan request and actual collection of loan (month) is termed as time lag. The results in Table 4, showed that time had positive sign and statistically significant at 1% level. It implies that one percent increase in time lag will lead to enhance credit constraints level by 17%. The findings of our study were also in consistence with the conclusion of Shankar (2007); who examine that time lag can significantly increase borrowing transaction costs and also contribute to higher loan default ratio. Interest rate contributes a vital role in borrowing decision. From multiple regression model, it is evident that high interest rate had significant constraint level on the amount of borrowed loan at 1% level. The prevailing interest rate floating in the study area was in the range of 16-2 percent. Previous study of Malik, (1999) also supports our regression results. The estimates explained that one percent increase in interest rate will affect the decision of loan borrowing by 23 percent (Table 4).

Education level was found to have a negative sign but significant at 15 which implies that one unit increase in farmers' education level will decrease the microfinance constraint level by 0.2987. MFIs prefer to sanctioned microfinance to the educated farmers which might be due to these farmers could efficiently allocate their financial resources for improved agriculture production. Thus, education showed the results according to the hypothesis i.e. as education level rises, the credit constraint falls. Generally the MFIs, favored those farmers holding their owned farms rather than tenants. The land ownership variable included in regression model revealed that it was significant at 10 % with negative sign. Because the land is more

Print ISSN: ISSN 2058-9093, Online ISSN: ISSN 2058-9107

acceptable as risk management and MFIs assumed that their loan had collateral property and secured. Thus, more proportion of land ownership will decrease the probability of farmers being constrained (Table5).

CONCLUSIONS

The first aim of this study was to examine those variables which determined the demand for microfinance assistance in agriculture production. The second objective was to empirically analyze the factors which restrained the farmers' accessibility for availing the required amount of finances from micro financial institutions (MFIs). The findings of study derived Tobit regression showed that gender, age, farm size, income level and dependency ratio of small farmers were essential socio-economic variables which instigate their demand for borrowing from MFIs. The results drawn from multiple regression model concluded that distance of MFIs from farmers' village, cumbersome finance lending procedure of MFIs, large time lag and high interest rate were the major constraint factors which create obstacles for getting loan from MFIs. The study also concluded that small farmers' education level and land ownership have negative relationship towards microfinance constraints level. Hence, these factors reduced the probability of farmers being constrained. It was observed that MFIs usually preferred the educated and young age farmers for financing. It might be due to their capability for efficient utilization of funds in agriculture production with better motivations for improved & latest farm practices.

STRATEGIES FOR POLICY IMPROVEMENTS

1. **Short Time lag.** There is need to reduce the time lag involved in loan sanction. The period between the loan application request and actual approval should be reduced by simplifying the loan sanctioning policy. It is very necessary to achieve the objectives of microfinance as if the loan is approved at delay basis after the lapse of farming then it will be diverted to some other personal consumption purposes.
2. **Simplification in Procedure**. Most of the farmers in study have no formal education, so they do not thoroughly comprehend the terms & conditions as mentioned in the bank's paper works. So very simple and easy to understand communication should be made with illiterate small farmers for their understanding.
3. **Sufficient Disbursement of Loan.** There must be proper flow of microfinance according to farmers' requirements. Because if a less amount is sanctioned than the required demand, the farmers would be unable to perform their farm activities for better farm production.
4. **Organized Active Farmer Based Organizations.** From study it was found that some MFIs have a requirement of collaterals as risk management. Alternatively, MFIs offer microfinance to group of peoples and joint liability for loan repayment is sufficient to avail the loan facility. Therefore active farmer based organization (FBO) should be organized to enhance microfinance accessibility. Such FBOs may be registered with the concerned district agriculture extension offices. The extension experts conduct regular meetings with members to discuss relevant issues.
5. **Encourage Farmers to Save with MFIs.** It was found that certain MFIs exercise the saving as one of the strategies to expand their operation in rural financings. To access microfinance, farmers also required to be account holders. Thus to encourage the famers for saving habit will facilitate and enable them to access more large financial services with ease in future. Specific measures may be utilized to motivate the farmers e.g. award appreciation

Print ISSN: ISSN 2058-9093, Online ISSN: ISSN 2058-9107

certificates, present prizes, payment of fair profit margin on their saving deposits, organize show role-play or cooperative day to elaborate the importance of saving with MFIs rather than doing at home.

6. Educate Farmers on Loan Acquisition Process. The lack of proper understanding for loan acquisition procedure was one of the challenges for delay of loan approval. Farmers realized the loan acquisition process as cumbersome and time wasting due to official flow of documents from one desk to other. It is therefore recommended that MFIs or agriculture extension departments extensively educate the FBOs on the acquisition process which usually includes: submit loan application; interview; appraisal of applicant's economic activity and finally. Loan approval and disbursement. In order to reduce the time lag, the farmers should apply ahead of time for efficient and purposeful utilization of microfinance in farming activities.

7. **Educate Farmers on Effective Record Keeping.** It was noticed from filed study that mostly the farmers did not practice record keeping for their farm production activities. This lack of effective record keeping also become a reason for delaying in loan approval as MFIs officials spend much time on gathering or estimating this record information for appraisal. Hence, it is very necessary to educate the farmers to do record keeping practice for facilitating the MFIs loan process and also improve their access to microfinance.

8. **Fixation of Ceiling Interest Rates.** It is suggested that the public MFIs do not charge maximum profitability rates on their financing for agriculture production rather there will be some ceiling level of interest rate on minimal profit. In this the hindrance of high interest rate may be reduced to some extent, and more farmers will be attracted for microfinance.

9. **Integration of coordinated Policies.** An integrated policy should be implemented through a contractual partnership between government institutions, MFIs, farmer based originations and with input suppliers of seed & fertilizers. The initial results of this integrated policy should be monitored to examine the increase in production level and if the overall outcome is encouraging then the policy should be extended with wide coverage. Subsidy policies and direct government financial aids should be banished in rural finance paradigm as these schemes do not contribute in economic growth. Therefore, there is need to rethink the role of public interventions in meeting the financial of farming community with a vision of self-sufficiency and sustained agriculture growth.

Adopting these counter-measures, an efficient and operational microfinance scheme can be developed which will assist to reduce farmers' constraints level arising from poor socio-economic deficiencies.

Acknowledgement

This study was financially supported by the National Natural Science Foundation, China (7167031183) and a major project "Impact of infant powder milk safety trust index on product competitiveness- Index measurement, construction of related market model and market simulation"(G0300502). Authors are also grateful to Punjab Agriculture extension department and Khushhali bank officials for their support during field visits and providing the needed research materials.

REFERENCES

Abedullah, N., Khalid, M. and Kouser, S. (2009). The role of agricultural credit in the growth of livestock sector: A case study of Faisalabad. Pakistan Vet. J, 29(2): 81-84.

Print ISSN: ISSN 2058-9093, Online ISSN: ISSN 2058-9107

Adebayo, O.O., and Adeola, R.G. (2008). Sources and uses of agricultural credit by small scale farmers in Surulere Local Government Area of Oyo State. Anthropologist, 10(4):313-314.

Admasu, A. and Paul, I. (2010). Assessment on the mechanisms and challenges of small scale agricultural credit from commercial banks in Ethiopia: The case of ADA'A Liben woreda Ethiopia. Journal of sustainable development in Africa, 12(3): 323-304.

Amemiya, T. (1984). Tobit models: A survey. Journal of econometrics, 24(2): 3-61.

Bashir, K.M., Amin, A. and Khalid, N.M. (2010).Micro-credit and Poverty Alleviation in Pakistan. World Applied Sciences journal, 8 (11): 1381-1386.

Blancard, S., Boussemart, J. P., Briec, W. and Kerstens, K. (2006). Short-and long-run credit constraints in French agriculture: A directional distance function framework using expenditure-constrained profit functions. American journal of agricultural economics, 88(2): 351-364.

Bryman, A. (2015). Social research methods. Oxford university press.

Carter, M. R. and Weibe, K. D. (1990). Access to capital and its impact on agrarian structure and productivity in Kenya. American Journal of Agricultural Economics, 72: 1146–1150.

Carter, M. R., and Olinto, P. (2003). Getting institutions "right" for whom? Credit constraints and the impact of property rights on the quantity and composition of investment. American Journal of agricultural Economics, 85(1): 173-186.

Chavan, Pallavi, and Ramakumar, R. (2002). Micro-credit and rural poverty: An analysis of empirical evidence. Economic and Political weekly, 955-965.

Colelli, T. J. (1995). Recent Developments in Frontier Modeling and Efficiency Measurement Modeling. Australian Journal of Agricultural Economics, 39(3): 219-245.

Dorfman, J. H. and Koop, G. (2005). Current developments in productivity and efficiency measurement. Journal of econometrics, 126(2): 233-240.

Feder, G., Lau, L. J., Lin, J. Y. and Luo, X. (1990). The relationship between credit and productivity in Chinese agriculture: A microeconomic model of disequilibrium. American Journal of Agricultural Economics, 72(5):1151-1157.

Goldberg, N. (2005). Measuring the impact of microfinance: taking stock of what we know. Grameen Foundation USA publication series.

Government of Pakistan. (2016). Economic Survey of Pakistan, Economic affairs wing, Finance ministry, Islamabad.

Hussein, H. K. and Ohlmer, B. O. (2008). Influence of Credit Constraint on Production efficiency: The Case of Farm Households in Southern Ethiopia. Swedish University of Agricultural Sciences, Sweden.

Imai, K. S., Arun, T. and Annim, S. K. (2010). Microfinance and household poverty reduction: New evidence from India. World Development, 38(12): 1760-1774.

Iqbal, F. (1986). The demand and supply of funds among agricultural households in India. Agricultural Household Models: Extensions, Applications and Policy. John Hopkins University Press, Baltimore, 183-205.

Kedir, A. M. (2003). Rural poverty report 2001: the challenge of ending rural poverty edited by the INTERNATIONAL FUND FOR AGRICULTURAL DEVELOPMENT (IFAD. Journal of International Development, 15(5):667.

Kotir, Julius H. and Franklin, O.O. (2009). Microfinance and rural household development a Ghanaian perspective. Journal of Developing Societies, 25(1):85-105.

Lehnert, A. (2004). Housing, consumption, and credit constraints. Finance and Economics Discussion Series Divisions of Research & Statistics and Monetary Affairs Federal Reserve Board, Washington, D.C.

Print ISSN: ISSN 2058-9093, Online ISSN: ISSN 2058-9107

Mason, D. R. (2014). Who gets what? Determinants of loan size and credit rationing among microcredit borrowers: evidence from Nicaragua. Journal of International Development, 26(1): 77-90.

Nguyen, C. H. (2007). Determinants of credit participation and its impact on household consumption: Evidence from rural Vietnam. Centre for Economic Reform and Transformation, School of Management and Languages, Heriot-Watt University, Edinburgh.

Okurut, N., Schoombee, A. and Berg, S. (2004). Demand and Credit Rationing in the Informal Financial Sector in Uganda. Makerere University & University of Stellenbosch, African Development and Poverty Reduction; The Macro Micro Linkage. In Forum Paper 2004.

Omonona, Bolarin T., Justina, O. L. and Oyinlana, A.O. (2010). Determinants of credit constraint conditions and production efficiency among farming households in Southwestern Nigeria. The Social Sciences, 5(4): 326-331.

Park, A., Ren, C. and Wang, S. (2004). Microfinance, poverty alleviation, and financial reform in China. Rural Finance and Credit Infrastructure in China. OECD, Paris, 256-270.

Petrick, M. (2005). Empirical measurement of credit rationing in agriculture: A methodological survey. Agricultural Economics, 33(2):191-203.

Rweyemamu, D. C., Kimaro, M. P. and Urassa, O. M. (2003). Assessing micro-finance services in agricultural sector development: A case study of semi-formal financial institutions in Tanzania. Economic and Social Research Foundation, 1-46.

Sanyal, Paromita. (2009). From credit to collective action: The role of microfinance in promoting women's social capital and normative influence. American Sociological Review, 74 (4): 529-550.

Satish, P. (2012). Innovations in Agricultural Credit Market–Rationalisation of Policy Response. Innovations, 67(1): 45-61.

Shankar, S. (2007). Transaction costs in group microcredit in India. Management decision, 45(8): 1331-1342.

Sial, M. H., Awan, M. S. and Waqas, M. (2011). Institutional credit and agricultural production nexus, 279-284.

State Bank of Pakistan. (2016). 10 years Strategy Paper for the Banking Sector Reforms, Government of Pakistan, Islamabad.

Taj, S., Akmal, N., Shah, N. A. Ahmad, S., and Saddozai, K. N. (2008). Gender involvement in small enterprises through micro-credit in rainfed Pothwar. Sarhad Journal of Agriculture, 24(4): 779-784.

Print ISSN: ISSN 2058-9093, Online ISSN: ISSN 2058-9107