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### Determinants of Agricultural Credit Utilization among Small Farm Holders: An Evidence from Southern Punjab, Pakistan

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#### ABSTRACT

The agricultural credit has a significant impact on agricultural productivity. Credit constraints should be reasonably minimized so that small farmer can easily get loans. This study investigates the determinants of utilization of agricultural credit among small farm holders in southern Punjab, Pakistan. A total sample of 200 small farmers is selected for data collection. An appropriate pretested questionnaire was used for data collection. The data collection was done by tanking direct interviews by using a convenient sampling technique. District Multan was selected from the southern Punjab of Pakistan. A binary logit model was used to examine the effect of various factors on the adoption of agricultural credit utilization among small farm holders. The binary logit model's results showed that the variables of farmers' qualification, farming experience, family members, agricultural income, and tenant cum owner positively and significantly impact agricultural credit utilization. Agricultural land has a negative and significant influence on agricultural credit utilization. The study's results suggest that government should educate small farmers about the positive impact of credit utilization on their agricultural production.

#### INTRODUCTION

The agriculture sector has significant importance in Pakistan's economy and provides employment, income, and food (Ministry of Finance 2017; Chandio et al. 2018b; Rehman et al. 2019). The agricultural share in the Gross Domestic Product (GDP) is 20%, has an employment potential of about 42.3%, and contributes significantly to other economic sectors (Ministry of Finance, 2017). Pakistan is considered the sixth most populous country in the world; the estimated population is about 195.4 million. In 2018 for the general population, almost 77.93 million lived in cities, and 117.48 million lived in rural areas. Most of the rural population is attached to the agriculture sector for existence (GOP 2016; Zulfiqar et al., 2020). Farm productivity can be increased by Agricultural credit along with modern technology. Small, medium and large farmers will earn agricultural Livelihoods and increase

farmers' income through meagre savings (Das, Senapati, & John, 2009). Rural formal, as well as informal credit sources, contribute significantly to the rural economy of Pakistan (Aleem, 1990). In rural areas of Pakistan, microfinance is the main source of investment in rural production. Still, credit is disbursed to the non-poor farmer while poor farmer faces restrictions on getting loans (Waheed, 2009). Financial support is a critical factor for small farm holders in Pakistan. Financial support can fulfil their basic needs, buy agricultural inputs, and ensure stable development in production. Accepting the worth of agriculture, the Government of Pakistan has executed many agricultural credit strategies to support farmers' production towards enhancing farm productivity and confirming food security. Agricultural credit can improve farmers' efficiency in management and promote efficient and profitable resource allocation (Bashir, Mehmood, &

Hassan, 2010; Saqib et al., 2018). The large mass of small farm holders' farmers of the population belongs to agriculture in developing economies but are at risk of food insecurity and starvation because of poor agricultural production. This is a result of the minimum number of their agricultural lands, in many cases, the low quality and lack of funds needed for investment and the purchase of essentials. An extensive approach to economic assistance like savings and products of credit, economic executions, and remittance activities will increase the chances of smallholder farmers accessing more efficient technology and providing better services; both needed to fight poverty and food security (World Bank, 2008). Recognizing this, according to developing nations, governments have offered subsidies to small farm holders farmers to allow them to invest in agricultural inputs, equipment, and machinery (Ellis 1992). As smallholder farmers make up the majority of the rural poor with their adequate access, credit can play a significant role in overcoming poverty in rural areas and improving food security (Imai et al., 2010; Hussain et al., 2012). The utilization of agricultural credit and easy access to credit for agriculture is an important way to enhance agricultural output and increase rural livelihoods (Gatti and Love, 2008; Shimamura and Lastarria-Cornhiel, 2010; Chandio et al., 2018). The major problem faced is the lack of agricultural credit utilization among smallholders, which is a hindrance in taking on the most effective and advanced technology in the agricultural sector. Instantly after the harvest season for the upcoming growing period, Farmers need money to deal with the lack of money shortage and not to pay for their latest crop. In addition, advanced agriculture depends on profitable output, expensive seeds, manures, and plant protection initiatives. Farmers buy gadgets and agricultural equipment in cash or from sellers on credit, resulting in increased ownership of farm owners on credit markets. Farmer's livelihood is improved by an effective credit service with the possibility to satisfy prerequisites of utilization and appropriate inputs (Feder, Lau, Lin, & Luo, 1990; Saqib et al., 2018). While performing Different agricultural activities, including fertilizer, seeds, and new investments on agricultural farms, usage of new technologies can be expanded by easy and timely access of farmers on agricultural credit. The purpose of the study is to make sure the utilization of agricultural credit among smallholders of the district Multan, southern Punjab, Pakistan.

## REVIEW OF LITERATURE

Many authors in agricultural literature have defined agricultural credit; according to Nwaru (2004) and Danso-Abbeam et al. (2016), credit is defined as a tool whose function is the financial and economic activity associated with it. Debt can be a form of cash. Credit plays a crucial role as an input factor required by borrowers to assist in the production of goods and services. Many previous studies about agricultural credit have targeted farmers' access to credit. Access to and effective usage of credit is very important for enhancing the productivity of agricultural farms, for agricultural income, and decreasing poverty in rural sectors. Even so, access to credit is limited to agricultural societies (Danso-Abbeam et al., 2016). Findings from a few studies have examined that a large part of the agricultural credit manipulates for other than agricultural activities such as the buying of agricultural inputs and festival celebrations (Ellis, 1992; Saddik, 1995; Muhumuza, 1997; ADB, 2005, pp. 72-73; Akram, 2008; Cole, 2009; Siddiqi, 2009; Hussain, A. & Thapa et al., 2016). The main reason farmers are unable to benefit from loan programs in Pakistan is a lack of collateral (Ahmad, 2011; Rahman et al., 2014). The small farm holder farmer finds acquiring formal credit arduous owing to collateral issues; resultantly, they revert to informal sources due to flexibility in loan transactions, on-time payment, and no need for collateral. The lack of collateral security hinders most small farmers from procuring loans from banks or financial institutions (Khandker & Faruquee, 2003; Rahman et al., 2014). In most specimens, insufficient collateral narrows down the small farm holder farmers to only seek the minimum size of credits for purchasing seeds, fertilizers, and pesticides, despite not having credits for buying tractors, tube wells, and other agricultural machinery (Hussain and Thapa, 2012; Saqib et al., 2018).

The literature elaborates consequences of social and economic elements such as age, family members, and income on the approach to agricultural credit (Abedullah, Khalid, & Kouser, 2009; Amjad & Hasnu, 2007; Hananu, Abdul Hanan, & Zakaria, 2015; Nguyen & Le, 2015; Saleem, Jan, Khattak, & Quraishi, 2014; Saqib, Ahmad, & Panezai, 2016; Sebatta et al., 2014; Saqib et al., 2018). The studies develop the effects of schooling on the approach to loans (Abedullah et al., 2009; Amjad & Hasnu, 2007; Chaudhary & Ishfaq, 2003; Hananu et al., 2015; Javed et al., 2006; Kosgey, 2013; Nguyen & Le,

2015; Saleem et al., 2014; Sebatta et al., 2014). Similarly, the literature highlights the connection between the experience of farmers and credit markets (Nguyen & Le, 2015; Yehuala, 2008; Saqib et al., 2018). However, Pakistan holds land holding size as the most crucial factor concerning agrarian credit access (Ahmad, 2011; Hananu et al., 2015; Kosgey, 2013; Saleem et al., 2014; Saqib et al., 2018). The association of farmers' land ownership (FLOA) with their access to credit has been fully established (Kosgey, 2013; Nguyen & Le, 2015; Saqib et al., 2018). Farm labour is also linked to farmers' approach to credit sources (Ahmad, 2011; Nguyen & Le, 2015; Saqib et al., 2018). Intermediaries, just to mention a few, confront Pakistan farmers with unexpected dangers such as dry weather, heavy rains, flooding, windstorms, plague and diseases, the minimum cost of products, a maximum price of inputs, and exclusive control of commodities in markets. The agricultural sector of Pakistan was demolished by tremendous floods three times in recent years. Monsoon floods in 2010, 2011, and 2014 devastated basic infrastructure like water channels, tube wells, houses, personal items, seed stocks, animal sheds, stored fertilizer, agricultural equipment/ machinery, crops, fisheries, forestry, and livestock (National Disaster Management Authority, 2014). There is not any credit policy in Pakistan aiming to help the most exposed farmers in urgent need of agricultural credit to revive crop production, prepare fields and buy seeds, fertilizers, and other agrarian inputs (Saqib, Ahmad, Panezai, & Ali, 2016; Saqib et al., 2018). Briefly, it is essential to study agricultural credit utilization in Pakistan. Therefore, this study examines the social and economic elements that affect agricultural credit utilization in Pakistan.

**METHODOLOGY**

Primary data were collected by using a well-structured and pretested questionnaire. A sample size of 200 small farmers was selected for data collection. An appropriate pretested questionnaire was used for this purpose. The

data collection was done by direct interview techniques. District Multan was selected from the southern Punjab of Pakistan. A convenient sampling technique was used for this purpose. Well-structured questionnaires have been organized to collect the primary data on the socioeconomic characteristics of the respondents, such as the age of the farmer, qualification of the farmer, farming experience, family members, Agricultural income, Farm labour, off-farm income, family system, family expenses, marital status, family members involved in farming, agricultural land, owner, tenant cum owner, credit utilization. This research has been designed to focus on determinants of agriculture credit utilization in district Multan.

A binary logit model was used to examine the effects of the various variables on the adoption of agricultural credit utilization among small farm holders. The collected data was examined through Binary Logit Model (Hosmer and Lemeshow, 2000). A binary logit model was applied to the qualitative form of the dependent variable. The model was applied in different studies (Kinyua et al., 2011; Lubungu, 2016; Ghafoor et al., 2017; Akhtar et al., 2021). The equation of the Binary Logit model is:

$$\text{logit}(E [Y_i/X_i])=\text{logit}(P_i)=\ln [P_i/1-P_i]=\beta_i X_i + e \dots\dots(1)$$

Where;

P =Probability of agricultural credit utilization of small farm holders (Y)

X<sub>i</sub>= A set of core explanatory variables

β<sub>i</sub>= A vector of unknown variables

e = Disturbance term

The adoption of agricultural credit utilization is a dependent variable. The dependent variable states if a farmer is getting agriculture credit. The relation of the dependent variable with other independent variables of the study is given in the equation, while the description of independent variables is given in Table 1.

$$CU= \beta_0 + \beta_1 AG + \beta_2 EXP + \beta_3 FM + \beta_4 FM + \beta_5 AGINCM + \beta_6 FLBR + \beta_7 OFFINCM + \beta_8 FS + \beta_9 FE + \beta_{10} MS + \beta_{11} FMF + \beta_{12} LND + \beta_{13} OW + \beta_{14} TN + e_i \dots\dots\dots(2)$$

Table 1. Description of the Study Variables.

Variable name	Abbreviation	Unit
Age of farmer	AG	Years
Qualification of farmer	EDU	No. of schooling years
Farming experience	EXP	Years
Family members	FM	No. of family members

Agricultural income	AGINCM	Annual (per acre) ('000'PKR)
Farm labour	FLBR	Number of labours
Off-farm income	OFFINCM	per month ('000' PKR)
Family system	FS	1=joint, 0=single
Family expenses	FE	per month ('000' PKR)
Marital status	MS	1= married, 0=single
Family members involved in farming	FMF	Family members involved in agriculture
Agricultural land	LND	Total land owned (acres)
Owner	OW	1 for owner 0 for otherwise
Tenant cum owner	TN	1 for tenant cum owner 0 for otherwise
Credit utilization (dependent Varibale)	CU	1 for yes 0 for no

## RESULTS AND DISCUSSION

### Socioeconomic Characteristics of Small Farm Holders

Table 2 shows the distribution of sampled respondents according to the adoption of agricultural credit utilization and socioeconomic characteristics. Results show that 67 percent of farmers did not adopt the agricultural credit among smallholders, and only 33 percent of farmers used the agricultural credit. Farmers with less than 5 acres of land are 46 percent, and the farmers who have 5 to 12 are 31 percent. Only 22 percent are the farmers have more than 12 acres of land.

According to the family system, 31 percent of farmers belong to a single-family, while 38.5 percent of farmers belong to a joint family system. As far as marital status is concerned, only 25.5 percent of farmers are single, while 74.5 percent of farmers are married. According to the tenurial status of the farmers, 61 percent of farmers are owners, 7.5 percent of farmers are tenants, while 31.5 percent are owners cum tenants. According to age distributions, 36 percent of farmers are less than 30 years, 55 percent of farmers are between 30 to 50 years, and 9 percent of farmers are those who are more than 50 years old.

Table 2. Distribution of farmers according to the adoption of agricultural credit utilization.

Farming characteristics		Frequency	Percent
Credit utilization	No	134	67.0
	Yes	66	33.0
Land holding	Less than 5 acres	93	46.5
	5 to 12 acres	63	31.5
	more than 12 acres	44	22.0
Family system	Single family	63	31.5
	Joint family	137	68.5
Marital status	Single	51	25.5
	Married	149	74.5
Tenurial status	Owner	122	61.0
	Tenants	15	7.5
	Owner cum tenants	63	31.5
Age	Less than 30 Years	72	36.0
	30 to 50 years	110	55.0
	More than 50 years	18	9.0

Education	Under Matric	69	34.5
	Matric	30	15.0
	FA	51	25.5
	BA	30	15.0
	MA	20	10.0
Experience	Less than 10 years	57	28.5
	11 to 15 years	27	13.5
	More than 15 years	116	58.0
Agricultural Income	Less than Rs. 40,000	42	21.0
	Rs. 40,000 to Rs. 70,000	99	49.5
	More than Rs. 70,000	59	29.5

Around 34.5% of farmers are under matric, 15% of farmer's education is matric, 25.5% of farmers have FA education, 15% of farmers have a BA, and 10% of farmers have MA education. The distribution of farmers based on experience shows that 28.5% of farmers have <10 years of experience, 13.5% of farmers have 11 to 15

years of experience and 58% of farmers have more than 15 years of experience. Distribution according to agricultural income, 21% of farmer's agricultural income is less than Rs. 40,000 while 49.5% of farmers have Rs. 40,000 to Rs. 70,000 agricultural incomes. Only 29.5% of farmers have more than Rs. 70,000 agricultural incomes.

Table 3. Summary statistics of variables used in the binary logit model.

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Age of farmer	200	20.00	70.00	37.33	10.88
Qualification of farmer	200	4.00	16.00	10.51	3.426
Farming experience	200	2.00	50.00	16.80	10.44
Family members	200	1.00	25.00	7.015	3.556
Agricultural income	200	20.00	95.00	53.50	21.46
Farm labour	200	.00	35.00	2.635	4.258
Off-farm income	200	.00	63.00	22.39	18.95
Family system	200	.00	1.00	0.685	0.465
Family expenses	200	10.00	200	42.43	25.31
Marital status	200	.00	1.00	0.745	0.436
Family members involved in farming	200	1.00	8.00	2.35	1.516
Agricultural land	200	1.00	250.00	14.4525	35.38
Owner	200	.00	3.00	.6250	0.515
Tenant cum owner	200	.00	1.00	.2900	0.454
Credit utilization (Dependent Var.)	200	.00	1.00	.3300	0.471

Table 3 shows the summary statistics of variables used in the binary logit model. The mean value of the age of farmers is 37, and the standard deviation is 10. Qualification of farmers has a mean value of 10, with a standard deviation of 3. Farming experience has a mean value of 16, with a standard deviation of 10. Family

members have a mean value of 7, and the standard deviation is 3. Agricultural income has a mean value of 54, and the standard deviation is 21. The variable of farm labour has a mean value of 2, and the standard deviation is 4. Off-farm income has a mean value of 22, and the standard deviation is 18. The family system has

a mean value of .6 and a standard deviation of 0.4. Family expenses have a mean value of 42, and the standard deviation is 25. Marital status has a mean value of 7, and the standard deviation is 0.4. The variable of family members involved in farming has a mean value of 2, and the standard deviation is 1. Agricultural land has a

mean value of 14, and the standard deviation is 35. The owner variable has a mean value of .6, and the standard deviation is 0.5. Tenant cum owner has the mean value of 0.2, and the standard deviation is 0.4. Credit utilization (Dependent Variable) has a mean value of 0.3, and the standard deviation is 0.4.

Table 4. Determinants of Agricultural Credit Utilization Among Small Farm Holders

Variables	B	S.E.	Wald	Sig.	Exp(B)
Age of farmer	-.005	.034	.019	.889	.995
Qualification of farmer	.403	.083	23.703	.000	1.496
Farming experience	.134	.035	14.371	.000	1.143
Family members	.284	.094	9.078	.003	1.328
Agricultural income	.036	.012	8.845	.003	1.037
Farm labour	-.449	.183	6.043	.014	.638
Off-farm income	-.012	.012	1.033	.309	.988
Family system	.416	.467	.790	.374	1.515
Family expenses	-.021	.019	1.227	.268	.979
Marital status	-.930	.622	2.237	.135	.395
Family members involved in farming	.097	.194	.251	.616	1.102
Agricultural land	-.085	.030	7.774	.005	.919
Owner	.039	.763	.003	.959	1.040
Tenant cum owner	1.595	.784	4.142	.042	4.929
Constant	-8.584	1.743	24.269	.000	.000

Table 4 shows the results of the logit model. Qualification of farmers, farming experience, family members, agricultural income, and tenant cum owner have a positive and significant impact on the adoption of credit utilization among small farmers. While the agricultural land has a negative and significant impact on the adoption of credit utilization among small farmers. The independent variable of qualification of the farmer has a positive and highly significant impact on the credit utilization of farmers. If the qualification of farmers increases by one year, there will be 1.496 higher chances of adoption of credit utilization among small farmers. The positive impact of education on credit utilization is consistent with the study of Danso-Abbeam et al. (2016). It is concluded from the results that there will be more credit utilization in agriculture if the farmer is more educated. It is recommended that government or agricultural intuitions should provide proper training to

educate the farmers. The Independent variable of the farming experience of farmers has a highly significant and positive impact on the adoption of credit utilization. If the farming experience is increased by one year, then there will be 1.143 higher chances of adaptation of agriculture credit utilization among small farmers. Therefore, it is concluded from the results that there will be more adoption of agriculture credit among the small farmers if the farmer has a wide experience in farming. Variable of a family member has a positive and significant impact on the adoption of agriculture credit utilization among small farmers. If the number of family members is increased by one, there will be 1.328 higher chances of the adoption of credit utilization by small farmers. It is concluded from the results that agriculture credit utilization will be higher when there are more members in the family. Variable of agricultural income has a positive and significant impact on the agricultural

credit utilization among small farmers. If the Agricultural income is increased by one thousand per acre (annually), there will be 1.03 higher chances of agricultural credit utilization. The Independent variable of agricultural land has a negative and significant impact on agricultural credit utilization among small farmers. If the agricultural land is decreased by one acre, there will be 0.91 higher chances of adoption of agricultural credit utilization among smallholders. Variable of tenant cum owner has a positive and significant impact on the credit utilization among small farmers. If the farmer is a tenant cum owner, there will be 4.929 higher chances of adopting agricultural credit utilization. It is concluded from the results that there will be higher chances of agricultural credit utilization when the farmer is a tenant cum owner. Independent variables of the farmer's age, farm labour, off-farm income, Family system, family expenses, marital status, family members involved in farming, and owner are all insignificant.

Shah et al. (2008) studied that there is a direct relation between agricultural credit and farm productivity.

#### CONCLUSION AND RECOMMENDATIONS

Results conclude that different socio-economic factors such as education of farmers, farming experience, agricultural land, agricultural income, tenant cum owner, and family members have a positive and significant impact on the adoption of the utilization of agricultural credit. This study reveals that there will be more credit utilization in agriculture if the farmer is more educated and has a wide experience in farming. It is concluded from the results that there will be higher chances of agricultural credit utilization among small farmers when there is an increase in income from agriculture, but this impact could be different in the case of large farmers because this study is limited to only small farm holders. The negative impact of an increase in land holding on the adoption of credit utilization suggests that there should be a special effort to turn the direction of agricultural credit facilities to the small holders so that they can use their managerial abilities to get the potential agricultural output from their fields which ultimately will enhance the production of agriculture in Pakistan. It is recommended that government or agricultural intuitions should educate farmers by providing proper training about the positive impact of credit utilization on their agricultural production.

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