



THE IMPACT OF PSYCHOLOGICAL FACTORS ON PRODUCTIVITY OF AGRICULTURAL FINANCING: AN EVIDENCE FROM PUNJAB, PAKISTAN

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HIGHLIGHTS

- The study concluded that agricultural financing is more productive for large farmers as compared to small farmers.
- There is a positive and significant impact of the income level of the farmer on the productivity of the agricultural loan.
- The farmer's personality characteristic of having trust in others for the very first time has a positive and significant impact on the productivity of agricultural finance.
- Lack of perceived control in a farmer's personality has a negative and significant impact on agricultural productivity while using agricultural finance for the productive purpose at the farm.
- The impact of agreeableness behaviour has negative but significant.
- Extraversion characteristic has a positive and significant impact on the productivity of the farmers.

ABSTRACT

The purpose of this study was to estimate the impact of psychological factors of farmers on the productivity of agricultural finance used for agriculture purposes. The independent variables include the socio-economic and psychological factors of the farmers. The psychological factors used in the study are trust, impulsiveness, perceived control, agreeableness, extraversion, organizational commitment, and risk aversion characteristics of the farmers. For this study, the primary data were collected through the questionnaire from 400 farmers from district Multan, Punjab. A binary logit model was used for the analysis. According to the estimated results, the impact of the age of a farmer is negative and significant on the productivity of agriculture financing. There is a positive and significant impact of agricultural land on the productivity of agricultural finance. There is a positive and significant impact of the income level of the farmer on the productivity of the agricultural loan. The farmer's personality characteristic of having trust in others for the very first time has a positive and significant impact on the productivity of agricultural finance. Lack of perceived control in a farmer's personality has a negative and significant impact on agricultural productivity while using agricultural finance for the productive purpose at the farm. The impact of agreeableness behavior has negative but significant. Extraversion characteristic has a positive and significant impact on the productivity of the farmers.

Keywords: Socio-economic factors, psychological factors, agricultural finance, productivity, Pakistan.

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Introduction

Agriculture is the backbone of Pakistan's economy, where about sixty percent of the population in the country living in rural areas

depends on agriculture for livelihood. The total geographical area of Pakistan is 79.61 million hectares, where about 22.08 million hectares are

cultivated, while about 23.01 million hectares are uncultivated (GOP, 2015). Agriculture is the major sector of the national economy contributing more than 20 percent to GDP and absorbing 43.5 percent of the labor force. The sector provides raw materials to agriculture-based domestic industries and it is the main source of export earnings for the country. This sector comprises four subsectors such as livestock, crops, fisheries, and forestry. During 2014-15, the overall sector recorded a positive growth of 2.9 percent. In short, a positive growth rate of 1.0 percent of crop production, 4.1 percent for livestock, 3.2 for forestry, and 5.8 percent for fisheries (GOP, 2015; Rehman et al., 2016).

In several aspects, the agricultural sector of Pakistan is facing rarer challenges in terms of credit, such as the shortage of water, increased prices of major agricultural inputs, seeds, fertilizers, pesticides, and shortages of electricity (Chandio et al, 2017; Magsi and Atif, 2012). However, due to less availability of agricultural credit facilities, the small-scale farmers are facing more difficulties in adopting new technologies to increase their agricultural productivity (Faridi et al 2015; Rehman et al., 2016), even though there is more growth potential in this sector (Mengal et al. 2014; Magsi, 2012). Credit plays an important role in improving agricultural productivity; therefore, timely availability of credit facilities allows farmers to purchase major agricultural inputs and modern agricultural technology for carrying out farm operations (Saboor et al, 2009). Lack of credit and finance is one of the main causes of poor agricultural productivity in our agricultural sector. The problem of increasing agricultural productivity, consequently, largely depends on the availability of credit facilities to the small and marginalized farmers in their respective areas. In order to overcome these problems, agricultural credit is provided to small farmers as the extreme growth and economic development efforts are intensified.

Modern agriculture is important for the growth and economic development of the country. The use of advanced technology is possible when growers are providing financial facilities to purchase agricultural inputs (Sjah et al., 2003). Ahmad and Gill (2007) provided evidence that institutional credit distribution by commercial banks had a significant impact on the economy of Pakistan. In Pakistan, some researchers have found a positive and significant impact on the supply of institutional credit, seeds, inorganic fertilizers, and water, on agricultural output (Zuberi, 1990; Sohail et al,

1991; Iqbal et al., 2001; Chandio et al., 2017). Bashir et al. (2008) attempted to explore the impact of formal credit on the output of the Faisalabad area for sugarcane crop using measured data from 114 loanee and non-loanee farmers. The results of the study show that institutional credit has a positive effect on the yield of sugarcane. Ahmed et al. (2015) analyzed the impact of agricultural credit on wheat productivity in district Jhang in Pakistan by using a field survey of 160 beneficiaries and non-beneficiaries' farmers. The results showed that agricultural credit has a positive and important effect on wheat productivity.

Chandio et al. (2017) have explored the impact of institutional credit on agricultural output in Pakistan by using secondary data from the period of 1996-2015. The results showed that institutional credit has a positive and significant impact on agricultural output. Trust operates when there is confidence in other agents, despite other uncertainties, risks, and the possibility for them to act opportunistically (Misztal, 1996; Gambetta, 1988). Gambetta (1988) points out that individuals see trust as beneficial when those with whom they co-operate do not hinder them. Trust is generally seen as positive with positive outcomes. Granovetter (1985) suggests however that trust can enhance the opportunity for cheating in such cases as confidence rackets where information on the other party is a key resource. In the current study, it is assumed that the farmers having more trust elements in their personality can perform better in managing farming affairs. However, It could be both negative and positive when farmers especially have the loan amount to use and someone interfere in the decision making process about the use of agricultural finance.

Impulsivity is a personality dimension described as "acting without thinking" and is associated with several psychiatric and personality disorders including mania, substance abuse, and antisocial personality disorder (Moeller et al., 2001). Impulsive individuals make risky decisions, motivated more by immediate reward rather than by the potential long-term negative consequences of their choices, suggesting heightened sensitivity to reward and/or reduced sensitivity to negative outcomes (Ainslie, 1975). Perceived control (PC) can be defined as the belief that one sees he or she has control over their inside state, behaviors, and the place or people or things or feelings or activities surrounding a person (Wallston et al., 1987). Agreeableness is one personality trait that was

based on the concept of the big five personalities of Costa and McCrae (Costa and McCrae, 1992; Costa and McCrae, 1998). Agreeableness trait shows individuals who are friendly, gentle, generous, tolerant, and kind-hearted and tacitly agree to the opinions of other people and trust them as well. Technological and innovative characteristics are important aspects of small-scale business development, growth, and wealth creation (Antoncic, 2009). Extraversion is one important personality trait that was based on the concept of the big five personalities of Costa and McCrae (Costa and McCrae, 1992; Costa and McCrae, 1998). Extraversion positively affects perceived satisfaction (Deng et al., 2013). Extraversion describes individuals who are sociable, talkative, active, assertive, gregarious, and fond of having fun. Different personalities characterize entrepreneurs and employees, and they can classify clear choices and actions and take risks in ambiguous situations (Van der Kuip and Verheul, 2003). The purpose of this study was to estimate the impact of psychological factors related to the personality of farmers on the productivity of agricultural finance used for agriculture purposes. The independent variables include the socio-economic and personality characteristics of the farmers. Personality characteristics used in the study are trust, impulsiveness, perceived control, extraversion, and risk aversion.

Methodology

In this study, the econometric model used some important variables while going through a deep review of the literature. These variables include socioeconomic and psychological variables. The primary data were collected through a pretested questionnaire. Data were collected from 400 farmers which were selected purposively from the district Multan of Punjab Pakistan.

The current study used the Binary Logit Model followed by Hosmer and Lemeshow (2000). The binary logit model is used where a qualitative variable is used as a dependent variable.

$$\begin{aligned}\text{Logit}(E[Y_i|X_i]) &= \text{logit}(P_i) = \ln[P_i / (1-P_i)] \\ &= \beta_i X_i + e\end{aligned}\quad (1)$$

Where;

P = Probability of productive use of agriculture finance (Y)

X_i = A set of core independent variables

β_i = A vector of unknown variables

e = Disturbance term

The dependent variable is the productivity of agricultural finance (1 for productive use, 0 for nonproductive use) while explanatory variables are given below;

Age: No. of years

Land: No. of acres

Household size: Number of family members of the respondents residing in a house

Experience: No. of years of farming experience of the farmer

Education: No. of schooling years of farmer

Income: Earning of the farmer is another important tool. Income is calculated in thousands.

Trust: It is a dummy variable if the farmer trusts on others for the very first time or not. 1 for yes and 0 for no.

Impulsiveness: 1 for having impulsive behavior and 0 for not having this behavior.

Lack of perceived control: 1 for having a lack of perceived control and 0 for having the perceived control.

Agreeableness: 1 for having the personality characteristics of agreeableness and 0 for otherwise.

Extraversion: 1 for having the characteristics of extraversion and 0 for not having this characteristic.

Lack of organizational commitment: 1 for lack of organizational commitment characteristic in farmer and 0 for having this characteristic.

Risk aversion: 1 for risk aversion and 0 for risk-takers.

Results and discussion

In this paper, we have distributed our respondents into age groups which are shown in Table 1. It shows that out of 400 participants 148 are young having age between 20-35 years. While 140 respondents are of 36-50 years of age and 92 participants have 51 to 65 years old and the remaining 20 participants are of more than 65 years. In this study, we have distributed our participants into different groups according to agricultural land they have in acres as shown in Table 2. It shows that 140 respondents out of 400 having the land 1- 25 acres and 104 participants have the 26-50 acres of land. As shown that 100 respondents have 51-75 acres while the remaining 56 have more than 75 acres of agricultural land. The results displayed in Table 3 show that 64 respondents out of a total of 396 have a family size between 1 and 6, while a large portion of participants has a family size of 7-12 members. The remaining 68 having a relatively large family size containing more than 12 members.

Table 1: Distribution of respondent according to age

Age (Years)	Frequency	Percent
20-35	148	37.0
36-50	140	35.0
51-65	92	23.0
More than 65	20	5.0

Table 2: Distribution of respondents according to agricultural land

Land (Acres)	Frequency	Percent
1-25	140	35.0
26-50	104	26.0
51-75	100	25.0
More than 75	56	14.0

Table 3: Distribution of respondents according to household size

Household Size (Members)	Frequency	Percent
1-6	64	16.0
7-12	264	66.0
More than 12	68	17.0

The data received through the questionnaire displayed in Table 4 show that 144 respondents among 400 have 1 to 3 years of experience. While 184 individuals have the experience of 4-6 years and the remaining 72 participants have more than 9 years' experience. According to the survey conducted 100 respondents out of 400 total respondents have just middle standard education while 56 farmers have got education up to intermediate level.

As shown in Table 5 we have got 196 entries who got a graduate level of education. While 48 respondents have an education more than graduation. Distribution of respondents according to income shows that among 400 respondents only 24 have less than 20 thousand income as shown in Table 6. While 168 respondents fall in the brackets of 21 to 30 thousand. It is shown that 132 out of a total of 400 respondents fall in the 31 to 40 thousand income group. The remaining 76 have an income of more than 40 thousand.

Table 4: Distribution of respondents according to experience

Farming experience (Years)	Frequency	Percent
1-3	144	36.0
4-6	184	46.0
More than 9	72	18.0

Table 5: Distribution of respondents according to education

Education (No. of Schooling years)	Frequency	Percent
1-8	100	25.0
9-12	56	14.0
13-14	196	49.0
more 14	48	12.0

Table 6: Distribution of respondents according to income

Income (Thousands)	Frequency	Percent
less than 20	24	6.0
21- 30	168	42.0
31- 40	132	33.0
More than 40	76	19.0

In this study, more emphasis was made on the psychological personality factors of farmers while using agricultural finance. The impact of psychological factors related to the personality of the farmers on agricultural productivity was estimated. As shown in table 7 out of 400 participants 256 have no trust in people while meeting for the very first time. It is shown that among the farmers who took part in the survey, 152 farmers have no impulsive behavior while 248 have impulsive behavior. According to the questionnaire, the next question was about decision making. Answering that question 176 participants admit that they have a shortage of perceived control while 224 do have perceived control characteristics in their

personality. The next question was about the personality characteristics of agreeableness and in replying to that 176 respondents said yes while 224 said they do not have the characteristic of agreeableness. On asking about personality characteristics of extraversion 160 out of 400 do not possess the characteristic of extraversion while the remaining 240 were found extraversion. The next question was about the lack of organizational commitment which shows that 160 respondents do not possess the characteristic of organizational commitment in their personality. When the question was being asked about risk aversion, only 40 participants were reluctant to take risks.

Table 7: Distribution of psychological factors of farmers

Character	Response	Frequency	Percent
Trust	No	256	64.0
	Yes	144	36.0
Impulsiveness	No	152	38.0
	Yes	248	62.0
Lack of perceived control	No	224	56.0
	Yes	176	44.0
Agreeableness	No	224	56.0
	Yes	176	44.0
Extraversion	No	160	40.0
	Yes	240	60.0
Lack of organizational commitment	No	240	60.0
	Yes	160	40.0
Risk aversion	No	360	90.0
	Yes	40	10.0

This study estimated the impact of socioeconomic factors which may impact the productivity of a farm obtained by the efficient use of agricultural financing from the loan. Banks offer

loans with interest rates which only could be possible for a borrower to return the money in time if the farmer gets its positive results in income increase.

Table 8: Impact of socioeconomic factors on productivity

Variables	B	S.E.	Wald	Sig.	Exp(B)
Age	-.033	.016	4.009	.045***	.968
Land	.053	.014	15.111	.000***	1.055
Household size	-.053	.079	.455	.500	.948
Experience	-.020	.119	.028	.867	.980
Education	.085	.061	1.930	.165	1.089
Income	.068	.027	6.277	.012***	1.070
Constant	-2.280	1.586	2.067	.151	.102
Cox & Snell R					
-2 Log likelihood	346.540a	Square	.319	Nagelkerke	.445

The impact of the age of a farmer is negative and significant on the productivity of agriculture financing as shown in Table 8. The estimated value of Exp (B) reveals that if the age of the farmer increases by one year there are 0.96 times fewer chances of this agriculture to be productive. There is a positive and significant impact of agricultural land on the productivity of agricultural finance. It means when the number of acres of agricultural land increases the impact of agricultural finance will also increase.

The results show that by increasing one acre of agricultural land of the farmers there will be 1.055 higher chances of the agricultural loan borrowed by

that farmer to be productive. It is concluded that agricultural financing is more productive for large farmers as compared to the small farmer. Mahmood and Bakhsh (2020) also found that agricultural micro-financing is nonproductive for the farmers. There is a positive and significant impact of the income level of the farmer on the productivity of the agricultural loan. By increasing one thousand income of a farmer there will be 1.07 higher chances of the loan to be productive. The farmer with a large annual income can easily manage the farming practices for improvement in production as compared to the farmers with low annual income.

Table 9: Impact of psychological factors on productivity

Variables	B	S.E.	Wald	Sig.	Exp (B)
Trust	.796	.345	5.316	.021***	2.217
Impulsiveness	.353	.367	.925	.336	1.423
Lack of perceived control	-1.189	.376	9.982	.002***	.304
Agreeableness	-1.442	.282	26.232	.000***	.236
Extraversion	.707	.342	4.283	.038***	2.028
Lack of organizational commitment	.258	.268	.927	.336	1.294
Risk aversion	.434	.477	.829	.363	1.543
Constant	1.103	.478	5.332	.021	3.014
Cox & Snell					
-2 Log likelihood	385.447a	R Square	.252	Nagelkerke R Square	.352

The element of trust in a person's personality plays a very important role in his life. The farmer's personality characteristic of having trust in others for the very first time has a positive and significant impact on the productivity of agricultural finance. As shown in table 9 the farmer with a positive trust behavior for others has 2.217 higher chances of being productive while using the agricultural loan as compared to the farmers without this characteristic. The characteristic of perceived control plays a very important role in managing any activity properly. This characteristic has a very vital role to play in every walk of life. In our estimation lack of the perceived control in farmers, personality has a negative and significant impact on agricultural productivity while using agricultural finance for the productive purpose at the farm. The estimated value of Exp (B) reveals that for farmers with a lack of perceived control there are 0.3 times fewer chances to be productive while using agricultural financing. Agreeableness is as important as other variables. In our estimation, the impact of agreeableness behavior has negative but significant. The estimated value of Exp (B) shows that if the farmer has the characteristic of agreeableness behavior there are 0.23 times fewer chances for the productivity of agricultural finance. It shows that to agree with every person can damage your planning which you have done already. Hence this disturbance in planning can decrease your productivity of the planned work. In our estimation being an extraversion has a positive and significant impact on the productivity of the farmers. The estimated value of Exp (B) reveals that if the farmer has extraversion behavior there are 2.2 higher chances of an increase in the productivity of agricultural finance.

Conclusions

According to the estimated results, the impact of the age of the farmer is negative and significant on the productivity of agriculture financing. There is a positive and significant impact of agricultural land on the productivity of agricultural finance. It means when the number of acres of agricultural land increases the impact of agricultural finance will also increase. It is concluded that agricultural financing is more productive for large farmers as compared to the small farmer. There is a positive and significant impact of the income level of the farmer on the productivity of the agricultural loan. The farmer with a large annual income can easily manage the farming practices for improvement in

production as compared to the farmers with low annual income. The farmer's personality characteristic of having trust in others for the very first time has a positive and significant impact on the productivity of agricultural finance. Lack of perceived control in a farmer's personality has a negative and significant impact on agricultural productivity while using agricultural finance for the productive purpose at the farm. The impact of agreeableness behavior has negative but significant. It shows that to agree with every person can damage the planning of a farmer which he has done already. Hence this disturbance in planning can decrease your productivity of the planned work. Extraversion characteristic has a positive and significant impact on the productivity of the farmers. Training programs could be introduced to build the psychological characteristics of farmers to make efficient decisions during the use of agricultural finance.

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