Factors Influencing Farmers’ Access to Formal Credit Market in Naogaon District of Bangladesh: An Empirical Analysis

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ABSTRACT

Modern agriculture is expensive as performing agricultural activities nowadays requires huge investment. But some farmers do not have sufficient money to purchase and use such modern inputs like power tiller, harvester, deep-tube wells, fertilizers and pesticides in many cases. In Bangladesh, farmers are always found to face difficulties in access to credit services from both formal and informal service providers. As a result, their productivity and growth are impeded by a lack of access to agricultural loans. To investigate this phenomenon, this study aims to analyze the scenario of formal credit sources and to identify the factors that influence the access for farmers to formal credit market in Naogaon district. Primary data used for the study were collected with the aid of well-structured questionnaire from farmers and bank officials. Multi-stage sampling techniques were used to select the 200 respondents. The data were analyzed using descriptive statistics and a binary logistic regression model. The Likert scale was used to identify constraints regarding to credit acquisition from formal credit market. The results of the descriptive analysis showed that 6% farmers failed to repay their loan while 94% timely repay their loan. In terms of purpose of using agricultural credit, it is evident that 68% farmers use agricultural credit for managing their agricultural expenses while 17% respondents use loan for the purpose of paid their previous loan. In addition, 10% respondents use loans for the purpose of maintain their family expenses. Results found from the binary logit model indicate that farm size, education, farming experience, access to extension service, access to guarantor, own savings account are positively related with the log of odd ratio in favor of access to formal credit market while the same is influenced negatively by age, off-farm income and default on loan repayment. The farmers in the study area have recognized collateral security as the major constraint relating access to formal credit market followed by the lack of guarantor and bureaucratic complexity. It was recommended that the socio-economic characteristics of farmers should be considered when formulating and implementing policies to improve farmers’ access to agricultural loans.

Keywords: Bangladesh, Binary Logit Model, Farmer, Formal Credit Market.

I. INTRODUCTION

Farmers’ access to credit is considered to have a crucial role to enhance their standard of living through increasing agricultural output and productivity because agricultural credit helps them to expand their farming operations by adopting productivity-enhancing modern inputs such as seed, fertilizer and farming equipment. Adoption of agricultural credit by farmers accelerates productivity and promotes standard of living by breaking vicious cycle of poverty (Adebayo & Adeola, 2008). Acquisition and utilization of credit for agricultural purposes promote productivity and consequently improved food security status of a community (Alfred, 2005). Credit is not only needed for farming purpose, but also for family and consumption expenses especially during the off-season period. All of these probable outcomes are only possible if the credit is used in productive way and farmers have adequately accessed (Oliver, 2013).

In order to feed the huge population in Bangladesh, green revolution has emerged in 1960s and priority was given to produce more foods in terms of grain through intensification of land usage.

| Country   | No. of tractor used (per thousand hectare) | Chemical input used (kg/ha) |
|-----------|-------------------------------------------|-----------------------------|
| Bangladesh| 1                                         | 59                          |
| China     | 9                                         | 169                         |
| Egypt     | 17                                        | 347                         |
| South Korea | 390                                       | 427                         |
| Japan     | 6                                         | 375                         |

Source: Munshi, 2002
The Green Revolution, in the real sense, brings about a huge technological change and increase the productivity of crops especially rice and the country is at the door of self-sufficiency in rice production. However, many farmers are left untouched in the field of the adoption of modern technologies as these are capital intensive and special knowledge and training are required to utilize these technologies. It is evident from Table I that Bangladesh used only one tractor per thousand hectares of land cultivation whereas Japan, China, Egypt and South Korea used 6, 9, 17 and 390 tractors per thousand hectares, respectively during the survey period from 1986 to 2000. The chemical fertilizers applications in these countries were also about three to seven times more in comparison to Bangladesh. The implication obtained from Table I is the extent of input use in Bangladesh was very low as compared to other countries.

The cultivated area per farm and per capita in Bangladesh is 1.20 acre and 0.13 acre, respectively (BBS, 2010). In the period of 1983-84, a total number of small farms was 4649 which has increased to 6066 in 1996. Again, it was increased to 7523 in the period of agriculture sample survey 2005. For marginal farms, the corresponding numbers were changed to 2417 in 1983-84, 3356 in 1996 and 5829 in 2005. On the contrary, total number of large farms was 496 in 1983-84 which decreased to 298 in 1996 and 177 in 2005. The size medium farm also decreased in the inter-census period (Rahman & Hossain, 2010).

Since the majority of farm holdings in Bangladesh belongs to small and marginal categories, less modern productivity-enhancing inputs are often found to be in use in farming activities as majority of modern inputs are capital intensive. Many policy makers and development economists have emphasized the significance of agricultural credit in farming activities. Besides, the importance of agricultural credit is focused in various public papers adopted by Bangladesh government such as agriculture policy, various five year plan, annual development plan, perspective plan, annual budget etc. To this end, farmers’ access to formal credit market at local, regional and national levels becomes an issue of paramount significance. This paper observes the determinants of farmers’ access to formal credit market in Naogaon district by focusing on several specific objectives such as: to explain the scenario of formal credit market in the study area as well as Bangladesh, to examine the factors affecting access to formal credit by farmers and to investigate the constraints faced by rural farmers in credit acquisition.

This paper is divided into six sections. After introducing the issues in the first section, scenario of formal credit market is presented in section two. Section three and four describe the previous literature and methodology of the study, respectively. Section five describes the results of the study. Finally, section six noted with some concluding remarks.

II. Scenario of Formal Credit Market in Bangladesh

The credit market of Bangladesh is classified into two parts viz. formal credit market and informal credit market. The formal credit market of Bangladesh comprises of state-owned commercial banks, state-owned specialized Banks, local private commercial banks, foreign commercial banks and non-bank financial organization. Sixty one scheduled banks are operating their activities through a network of 10938 branches in Bangladesh. Among total bank branches, there are 3810 branches of state-owned commercial banks, 5551 branches of local private banks, 65 branches of foreign banks and 1512 branches of specialized banks (BER, 2022). Besides, some non-scheduled banks like Ansar VDP Unnayan Bank, Shamobaya Bank, Karmasangsthan Bank, Gramco Bank, Jubilee Bank Ltd. and Probashi Kalayan Bank are also operating in the banking sector in Bangladesh. In addition, there are 35 non-banking financial institutions are also conducting their activities in Bangladesh.

Informal credit market in Bangladesh includes money lenders, shop-keeper, friends, relatives, cooperative societies. Table II indicates the comparative position of bank branches in urban and rural areas. It is obvious from Table II that, there is no branch of foreign banks in the rural areas and only 36.96 percent of total local private banks’ branches are located in rural areas. On the other hand, 53.67 percent and 80.82 percent of total branches of state-owned commercial banks and specialized banks are located in the rural areas. Of these total bank branches, the number of urban and rural branches are 5,624 (51.42%) and 5,314 (48.58%), respectively.

| Types of bank | No of bank | Urban | Number of Branches | Rural | Total | % of total assets | % total deposit |
|---------------|-----------|-------|-------------------|-------|-------|-----------------|----------------|
| State-owned | 6 | 1765 (46.33) | 2045 (53.67) | 3810 (100.00) | 24.87 | 26.29 |
| Commercial Banks | | | | | | |
| State-owned | 3 | 293 (19.38) | 1219 (80.62) | 1512 (100.00) | 2.18 | 2.71 |
| Specialized Bank | | | | | | |
| Local Private | 43 | 3501 (63.07) | 2050 (36.93) | 5551 (100.00) | 67.40 | 66.77 |
| Commercial Banks | | | | | | |
| Foreign Commercial | 9 | 65 (100.00) | 0 (0.00) | 65 (100.00) | 5.55 | 4.23 |
| Banks | | | | | | |
| Total | 61 | 5624 (51.42) | 5314 (48.58) | 10938 (100) | 100.00 | 100.00 |

Source: Bangladesh Economic Review, 2022
As seen in Fig. 1, it is obvious that maximum branches of local private bank and foreign banks are located in the urban areas while maximum branches of state-owned commercial bank and specialized banks are located in the rural areas.

There are four state-owned commercial banks, 2 specialized banks, 13 local private commercial banks and 9 non-banks financial institutions in Naogaon district. Among all of these credit institutions, primarily Rajshahi Krishi Unnayan Bank (RAKUB) and Sonali bank are found to provide agricultural credit to the farmers in the study area. The study also found that 457 farmers have taken loan from Rajshahi Krishi Unnayan Bank while 450 farmers are found to take loan from Sonali Bank in Hanshaigari and Dubollhati union. Some non-government financial institutions are also found to operate their financial activities with farmers in the study area and they provide credit for fishing, gardening, dairy farming, crop production, etc.

Table III indicates the distribution of agricultural credit among farmers by the formal credit sources in the study area. It is evident from the table that only 174 farmers were able to collect loan from formal credit market among 200 respondents while 26 fail to get the loan.

It is found from the Table III that 74 farmers have taken loan at a range of Tk.5000 to Tk.20000 while 64 farmers have taken loan from these banks within the amount of Tk.20,000 to Tk.40,000. It is also found from the survey that 10 farmers were able to collect loan above Tk.80000.

Table III: Distribution of Agricultural Credit Received by Farmers

| Ranges of Agricultural Credit (Tk.) | Number of farmers |
|-------------------------------------|------------------|
| 5000-20000                          | 74               |
| 20000-40000                         | 64               |
| 40000-60000                         | 20               |
| 60000-80000                         | 6                |
| 80000 and above                     | 10               |
| Total                               | 174              |

Source: Field survey, 2021

III. LITERATURE REVIEW

Several studies were done to focus on the determinants of farmers access to formal credit market both in Bangladesh and abroad (Papias & Ganesan, 2010; Kiiza & Pederson 2001; Rahman et al., 2013; Abu et al., 2014). The findings of these studies widely differed from each other in terms of the procedure of analysis and the existing relation between agricultural credit and its determinants.

Ameh and Lee (2022) conducted a study on farmers’ loan acquisition and utilization, as well as their choice of loan sources using a two-part model and multinomial logit model. They collected primary data from 281 farmers. Results obtained from the study indicate that marital status, farm size, and interest rate were all positive and significant influences on farmers’ loan sources of choice. In addition, annual farm revenue and the interest rate have a significant positive impact on loan access, whereas education, farming experience, farm size, off-farm income, and farm income have a major impact on loan use. Taremwa et al. (2022) operated a study in Rwanda to identify and assess the determinants of access to agricultural credit among rice and maize smallholder farmers in Rwanda. The study used stratified random sampling techniques in collecting the data from the farmers. Data were collected using structured interviews and questionnaires and were analyzed using a binary logistic regression model. Results indicate that both individual and institutional factors determine access to agricultural credit among smallholder maize and rice farmers in eastern and western provinces of Rwanda. It is also found from the survey that institutional factors were more important than individual farmer characteristics in determining access to credit. Mwonge and Naho (2022) conducted a study on the smallholder farmers’ perceptions towards agricultural credit in Tanzania. Rational choice theory was used in this study. Multi-stage sampling technique was used for collecting data from 300 smallholder farmers. Findings show that smallholder farmers’ attitudes towards risk associated with agricultural credit were highly perceived by the majority of them. Also, results showed that inaccessibility of credit information, lack of education, bureaucratic procedures (i.e., lending procedures) and high repayment rate i.e., price of loans were perceived to be the main challenges that affected smallholder farmers’ decisions to demand and access agricultural credit from microfinance institutions. Research study conducted by Papias and Ganesan (2010) concluded that the majority of rural households face three forms of credit constraints viz. self-imposed constraints, quantity rationing and risk rationing by formal financial institutions. Smallholder farmers are often found self-select out from the formal financial systems. The congruence of factors that are intrinsic to their farms and households are responsible for this self-select out (Kiiza & Pederson 2001; Oboh & Kushwaha, 2009).

Adeyounu (2015) investigated the factors that are crucial in improving small holder cooperative farmers’ loan repayment in Remo Division of Ogun state, Nigeria. Primary data used for the study were collected with the aid of well-structured questionnaire. Multi-stage sampling techniques were used to select the 120 respondents. The data were analyzed using descriptive statistics and probit regression model. The results of the descriptive analysis showed that about 56% of the respondents were able to repay their loans promptly while the rest were not. The results of the probit regression analysis revealed that age, level of education, farming experience, net farm income and loan size obtained were the major factors that increase the likelihood of loan repayment, while the number of family dependants reduces the probability of

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repayment. The study operated by Binswanger and Rosenzweig (1989) reported that agricultural land is the most important collateral for formal credit in rural areas. They also argue that farmers with more land are more likely to seek credit. Rahman et al. (2013) indicate that education, distance of the location from source of credit and types of credit source were significant factors affecting farmers’ accessibility to agricultural credit in the study area. Nurah et al. (2012) concluded that extension contract, education level, savings habit had significant positive influence on farmers’ access to formal credit market. Ololade and Olagunju (2013) conducted research on the determinants of farmers’ access to credit by rural farmers in Oyo State, Nigeria. Result found from the study indicates that gender, marital status, guarantor and high-interest rate are the main factors that determine farmers’ access to credit. They also concluded that lack of collateral security, lack of guarantor and high-interest rate are the major problems in credit acquisition faced by the farmers in the study area. The World Bank (1996) concluded that credit is essential for small-scale farmers to increase their agricultural productivity and farm income. John et al. (2009) conducted research on the impact of agricultural credit on agricultural production in India. The analysis suggests that the direct agriculture credit has a positive and statistically significant impact on agriculture output and its effect is immediate. Ijere (1986) found that credit is a catalyst that drives the machinery of production to optimum performance. The research conducted by Abu et al. (2014) showed that age, farm investment, access to extension services, household size, awareness, education, farm size, membership of cooperative society had significant influence on access to agricultural credit among rural farmers. Okojie et al. (2010) concluded that lack of bank account, collateral, and information regarding the procedure for accessing credits from banks limits peasant farmers and rural women’s access to credit from formal institutions. Sabina et al. (2013) operated research on the determinants of farmers’ participation in rural credit market in rural Rwanda. Results found from the study indicate that farmers’ participation in formal credit markets increases with education, off-farm incomes, and agricultural extension, and decreases with the presence of informal financial systems in the neighborhood.

Although a number of studies on the determinants of farmers’ access to formal credit have been carried out in the context of other countries, studies regarding this issue in the case of Bangladesh are not available, especially in the context of the study area. Moreover, in many cases it is quietly ignored. Therefore, country and region-specific studies are needed to throw more light on the determinants of farmers’ access to formal credit. This type of studies would be of highly useful for policy purpose. As this sort of study is not available in the case of Bangladesh, especially in the case of northern Bangladesh, this paper tries to fill this gap and aims to investigate the factors that determine farmers’ access to formal credit in Naogaon district using a logistic regression model.

IV. METHODOLOGY OF THE STUDY

A. Selection of the Study Area and Sampling Technique

The study adopted a multi-stage sampling technique where district is considered as the first stage and respondent being the last stage. The study was conducted in Naogaon district located in the north-west zone of Bangladesh. Naogaon district was selected purposively. Then, the researchers selected Naogaon sadar upazila randomly from Naogaon district. After that, the researchers selected two unions randomly from Naogaon sadar upazila which are Hanshaigari union and Dubolhati union. Four villages are selected randomly from each union and thus a total 8 villages are chosen for the survey. Finally, 25 respondents are selected from each village using Fisher’s random table considering time and fund constraints and a total of 200 farmers are chosen for the study. The rationale behind this selection is that Naogaon district is predominantly agro-based and varieties of agricultural crops like paddy, potato, wheat, oilseeds, maize, vegetables, fruits and spices are the major crops produced round the year. Farming is the principal occupation for 63,414 families and their livelihood almost completely depends on agricultural activities (Naogaon Upazila, 2022). They have also very little scope for complementary occupation during the crop seasons.

All these features confirm the typical characteristics of Bangladesh agriculture and thus, the area has been suitably considered for conducting the intended research. The present study mainly depends on primary data collected from the farmers from the selected eight villages of Naogaon district through direct interviews in 2021. The targeted population is classified from two points of view. Firstly, all formal credit institutions in the study area were considered as credit providing institutions and secondly, farmers who had expressed interest in the formal credit sector by actually submitting a formal application to any one of the formal lending institutions. A total of 200 farmers were interviewed from eight villages. However, some secondary data have also been collected for this research.

| TABLE IV: SELECTED UPAZILA, UNION AND RESPONDENT |
|-------------------------------------------------|
| District | Upazila | Unions | Villages | Sample |
|----------|---------|--------|----------|--------|
| Naogaon  | Naogaon Sadar | Hanshaigari | 25 |
|          |         | Katkhair | 25 |
|          |         | Gopai    | 25 |
|          |         | Dubolhati| 25 |
|          |         | Bonga    | 25 |
|          |         | Vobaninagar | 25 |
|          |         | Fotepur  | 25 |

Source: Field Survey, 2021

B. The Empirical Model

In order to investigate farmers’ access to formal credit market, the present study employed a binomial Logit model where the dependent variable is dichotomous variable and the predictor variables are a set of socioeconomic and demographic status of the farmers. The dichotomous dependent variable can be written as Equation (1).

\[
y_i = \begin{cases} 1 & \text{if } y_{i}^{*} > 0 \\ 0 & \text{otherwise} \end{cases} \tag{1}
\]
Where $Y_i^*$ is a latent variable expressing the quantity of loan collected by farmer $i$ from formal credit market. This quantity is a function of his household and farm characteristics $X_i$, as expressed in Equation (2).

$$Y_i^* = \delta_0 + \sum_{j=1}^{k} \delta_j X_{ij} + \psi_i$$ \hspace{1cm} (2)

Where, $Y_i$ = Access to credit, $X_i$ = determinants of credit access, $\delta_j$ = coefficients to be estimated, $\psi_i$ = error term.

A binomial Logit model depends on the assumption of the logistic distribution of the error term in (2). Following Pindyck & Rubinfeld (1981), the cumulative Logistic probability function is specified as:

$$P_i = F(Z_i) = F(\gamma + \sum_{j=1}^{k} \delta_j X_{ij}) = \frac{1}{1 + e^{-\gamma}}$$ \hspace{1cm} (3)

Where $P_i$ is the probability that a farmer participated in formal credit market given his household and farm characteristics. To understand the interpretation of the coefficients, the Logit model could be written in terms of the odds and log of odds. The odds ratio implies the ratio of the probability ($P_i$) that an individual would choose an alternative to the probability $(1 - P_i)$ that the person would not choose it. After simple mathematical manipulation of (3), can be shown as Equation (4).

$$(1 - P_i) = \frac{1}{1 + e^{\gamma}}$$ \hspace{1cm} (4)

or, \hspace{1cm} \left( \frac{P_i}{1 - P_i} \right) = \frac{1 + e^{-\gamma}}{1 + e^{\gamma}} = e^{\gamma} \text{ which is the odds ratio.}

C. Specification of the Empirical Model

Following the empirical work of Alene et al. (2008), Ololade and Olaganju (2013), Sabina et al. (2013), Shah et al. (2008), Daramola and Oparinde (2014), and Gujarati (2007), the present study decided to construct and use the Binomial Logit model. To determine the shares of the selected variables in the process of credit accessibility, the specification of the model (5), in Logit framework, is employed.

$$Z = \log \left( \frac{P_i}{1 - P_i} \right) = \gamma + \sum_{j=1}^{k} \delta_j X_{ij} + \psi_i$$ \hspace{1cm} (5)

Where,

$Z$ = Probability of access to credit (1 if the respondent has access to formal credit and 0 if the respondent has no access to formal credit); $\gamma$ = constant term; $\delta_j$ to $\delta_0$ = logistic coefficient for the independent variables; $\psi_i$ = error term; $X_1$ = Age; $X_2$ = Farm size; $X_3$ = education; $X_4$ = farming experience; $X_5$ = Access to extension service; $X_6$ = Access to guarantor; $X_7$ = Default on loan repayment; $X_8$ = off-farm income; $X_9$ = Own savings account.

The definition of variables used in the model is shown in Table V.

| Variable                        | Type            | Measurement                                |
|--------------------------------|-----------------|--------------------------------------------|
| Age                            | Continuous      | Number of years (in years)                |
| Farm size                      | Continuous      | Number of years (in acre)                 |
| Education                      | Continuous      | Number of years (in years)                 |
| Farming experience             | Continuous      | Number of years (in years)                 |
| Access to extension service    | Dummy           | 1 if yes, 0 otherwise                       |
| Access to guarantor            | Dummy           | 1 if respondent has access to            |
| Off-farm income                |Dummy            | 1 if the respondent has defaulted         |
| Default on loan repayment      | Dummy           | before, 0 otherwise                        |
| Savings account                | Dummy           | 1 if the farmer has a savings              |

V. RESULTS AND DISCUSSION

A. Socio-economic Characteristics of the Farmers

The socio-economic characteristics of the farmers studied in Naogaon district are presented in Table VI. The socioeconomic characteristics of farmers are analyzed in terms of their age structure, educational background, occupation, family size, year of experience, off-farm income etc. The study observed that 41% of the farmers fall within the age range of 31 to 40 years. Only 20% of the farmers were between 51-60 years of age. When the farm size is considered, it is observed that about 47% farmers fall in the small category and 17% farmers were in the medium category. In addition, 24% farmers were found to fall in the marginal farmer category while 12% farmers were in large category.

Table VI shows that 15% farmers had no formal education and 49% farmers had primary education, while the number of farmers who had taken secondary and higher secondary education were 27% and 7%, respectively. Only 2% had university level education. Table also shows that 57 percent respondents were related with agriculture activities for 1 to 10 years while 36 percent were 11 to 20 years. The study also indicates that 37% farmers had non-farm income while 63% farmers had no non-farm income. With respect to loan repayment, it is found that 6% farmers failed to repay their loan while 94% timely repay their loan. In case of use of agricultural credit, it is evident from Table that 68% farmer’s use agricultural credit for managing their agricultural expenses while 17% respondents use loan for the purpose of paid their previous loan. In addition, 10% respondents use loan for the purpose of maintains their family expenses.

B. Criteria for Loan Allocation and Reasons for Application Rejections

Formal credit institutions use some specific criteria to allocate loans such as, farming experience, presence of guarantor, mutation of land, signature of the union chairman. The present study observed that non-guaranteed application, default on previous loan, incomplete application form, timing of applications, absent of collateral security etc. are some of the major reasons for the rejection of credit application by formal credit institutions.
### C. Factors Influencing Access of Farmers to Formal Agricultural Credit

In order to investigate factors influencing access of farmers to formal credit market, a Binary Logit model is employed. Estimation results found from the model as shown in Table VII indicate that factors like farm size, education, farming experience, access to extension service, access to guarantor and own savings account are positively related with the log of odd ratio in favor of farmers’ access to formal credit market.

| Variable                          | Coefficient | Z-statistic | Probability |
|----------------------------------|-------------|-------------|-------------|
| Constant                         | 5.4180      | 2.6068      | 0.0291      |
| Age                              | -0.1372     | -0.2743     | 0.6547      |
| Farm size                        | 0.3190***   | 4.2831      | 0.0009      |
| Education                        | 0.1041**    | 2.5743      | 0.0275      |
| Farming Experience               | 0.2357*     | 1.5473      | 0.0580      |
| Access to extension service      | 0.8561      | 1.0863      | 0.1581      |
| Access to Guarantor              | 0.3865**    | 2.4528      | 0.0217      |
| Off-farm income                  | -0.0128     | -1.1287     | 0.1175      |
| Default on loan repayment        | -0.3591     | -0.2561     | 0.7345      |
| Own Savings account              | 0.4392      | 0.1921      | 0.7529      |

LR Chi-Square Value: 82.41
Log likelihood: 57.34
Pseudo R²: 0.532

Note: ***Significant at 1%, **Significant at 5%, * Significant at 10%

Source: Authors Own Calculation

It indicates that, a unit increase in values of variables—farm size, education, farming experience, access to extension service, access to guarantor and own savings account have positive impact on farmers’ access to credit as the log of odd ratio in favor of access to formal credit market increased by the values 0.3190, 0.1041, 0.2357, 0.8561, 0.0275 and 0.1581, respectively. Among them, however, ‘age’ and ‘access to extension services’ do not have any significant effect on the odds in favor of getting credit. On the other hand, log of odd ratio in favor of access to formal credit market is influenced negatively by ‘age’, ‘off-farm income’ and ‘default on loan repayment’. It indicates that, a unit increase in age, off-farm income and default on loan repayment would result in a decrease in the log of odd ratio of access to formal credit market by the values 0.1372, 0.0217 and 0.1581, respectively.

From the results it is found that the coefficient of the variable ‘farm size’ is 0.3190 and its sign is positive. The coefficient is statistically significant at 1% level. It means that a unit change in the farm size results in a 0.3190 unit change in the log of odd ratio in favor of farmers’ access to formal credit market. This finding is normal because the larger is the farm size, the higher will be the chance of the farmers to access in formal credit market. The level of education attained by farmers was statistically significant and showed a positive relationship with farmers’ access to formal credit market. It indicates that for a unit increase in education, the log of odd ratio in favor of farmers’ access to formal credit market goes...
up by 0.1041. This may be due to the fact that educated farmers have a better understanding of banking procedures and rules for acquiring and using formal banking financial services. This finding is similar to studies in China (Tang et al., 2010), Pakistan (Shah et al., 2008), Uganda (Kiiza & Pederson, 2001), and Zanzibar (Mohamed, 2003). The variable ‘access to guarantor’ has a positive impact on farmers’ access to formal credit market and its coefficient is statistically significant. It means a unit change in the values of guarantor results in an increase in the log of odd ratio in favor of farmers’ access to formal credit market. It is seen that experience of the farmers is also a significant determinant of farmer’s access to credit.

The coefficient of age has a negative impact on farmers’ access to formal credit market but it is not statistically significant. Although the coefficient did not turn significant, it could be due to the negative relationship between farmers’ age and ability to take risk. Similarly, farmers’ ‘access to extension service’ appeared to have positive relationship with the probability of getting credit, although the relationship is statistically insignificant.

The negative sign of ‘off-farm income’ indicates that higher off farm income has contracting effect on the possibility of getting loan from formal credit market as people with higher income from off-farm sources are less eager to get loan. However, the coefficient is statistically insignificant. The coefficient of ‘default on loan repayment’ is negative and statistically insignificant. It means that higher possibility of default on loan repayment contracting the possibility of getting loan from formal sources.

The values of log likelihood and chi-square statistic computed from the model are 57.34 and 82.41, respectively. The computed value of pseudo $R^2$ is 0.532 which indicates that the overall model is significant and the explanatory variables are jointly able to explain the decision regarding to farmers access to formal credit market.

D. Farmers’ Perceptions about Constraints Regarding to Credit Acquisition

It is found from the survey that farmers are relatively conscious about constraints regarding the access in formal credit market. The present study used Likert scale in order to rank the constraints relating to access in formal credit market. A higher index value establish the top ranking of a constraints as compared to lower index value. Table VIII indicates the ranking of constraints relating to market constraints. The farmers in the study area have recognized collateral security as the major constraint relating access to formal credit market (mean index value 3.83) followed by the lack of guarantor and bureaucratic complexity. On the other hand, late approval, lack of information, high interest rate hold 4th, 5th and 6th rank with index values 2.17, 1.81 and 1.52, respectively. Mode of repayment is also considered as one of the problems related to access to formal credit market holds 9th rank with index value 0.92.

| Name of the Constraints | Mean | SD | Rank |
|-------------------------|------|----|------|
| High interest rate      | 1.52 | 0.705 | 6    |
| Bureaucratic complexity | 2.87 | 1.058 | 3    |
| Collateral security     | 3.83 | 1.201 | 1    |
| Late approval           | 2.17 | 1.206 | 4    |
| Mode of repayment       | 0.92 | 0.517 | 9    |
| Limited number of banks in the locality | 1.37 | 1.198 | 7 |
| Lack of guarantor       | 3.08 | 1.167 | 2    |
| Long distance to nearest bank | 1.26 | 1.251 | 8    |
| Lack of information     | 1.81 | 0.896 | 5    |

Source: Authors’ Own Calculation

TABLE VIII: RANKING OF CONSTRAINTS REGARDING TO ACCESS TO FORMAL CREDIT MARKET

VI. CONCLUSION AND POLICY RECOMMENDATION

The major objective of this paper was to identify the factors influencing farmers’ access to formal credit market in Naogaon district. It is found that although there are many banking institutions working in the study areas, most of them do not provide credit for agriculture. Results found from the Binary Logit model indicate that factors like farm size, education, farming experience, access to extension service, access to guarantor, own savings account are positively related with access to formal credit. Age of the farmer, off-farm income and default status of the farmer on earlier loan repayment are the negative factors against credit accessibility. Using the Likert scale technique, the constraints in getting credit are ranked, where it is found that collateral security and lack of guarantor in the bank are the two major problems in obtaining credit from the bank. Many farmers have in the study area pointed bureaucratic complexity as a major problem in getting credit. Based on the findings of this research, it is necessary to put forward some recommendations regarding farmers’ access to formal credit market. Some of the suggestions emerge from the field survey experiences by the researchers. Based on the findings of the study, the following recommendation can be made:

(i). It is found from the study that few branches of local private bank and foreign private banks are located in rural areas. Government should take initiatives so that formal financial institutions are bound to open their branches in rural area.

(ii). Collateral security is marked as number one constraint regarding in access to formal credit market. Farmers, in case of collateral security, should be motivated to form cooperative groups that enable them to collect credit from formal credit market.

(iii). The problem of late approval should be adequately addressed so that farmers can easily access to formal credit market.

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