

Accessibility and Utilization of Agricultural Credit in Odisha:

Constraints and Opportunities

Comment [D1]: Constraint analysis of accessibility and utilization of agricultural credit and associated socio-economic traits in Puri district of Odisha

Abstract:

Comment [D2]: Rewrite taking Findings part together.

The study aimed at investigating constraints in access to institutional agricultural credit and pattern of utilization of the credit obtained by the farmers in the state of Odisha. With the application of multi stage random sampling technique, 175 farmers are selected for the analysis of the study. Descriptive statistics, Credit Adequacy Ratio have been employed in the study to identify the constraints in accessibility of credit for different groups of farmers. An index used by Lalhunthara & NVR (2014) is employed in the study to find out major difficulties faced by the farmers. Descriptive statistics, correlation and regression technique have been incorporated in the study to examine the credit utilization pattern and its relationship with other farm related socio-economic variables. The study found that credit gap is high for landless and marginal farmers while smaller for large farmers. As per the opinion of the farmers, red tapism in the bank is the biggest problem faced by them in access to institutional credit followed by certain collateral problems. The study depicts that nearly half of the credit accessed by the farmers is utilized for unproductive purposes of which the proportion of marginal and small farmers is more. Productive credit utilization is mostly made for machinery implementation and payment to the hired labour. Similarly, unproductive uses are in favor of building houses, social functions and ceremonial purposes. The study also reveals that there exists a positive relationship between agricultural productivity and productive utilization of agricultural credit.

Key words: agricultural credit, credit constraints, credit adequacy ratio, productive utilization

Introduction:

Comment [D3]: Rewrite giving more emphasis on Odisha situation. You may include some references on Odisha/ Indian situation. Backgrounding on taking caste category may be included too.

In a developing country like India, agriculture is the prime source of engagement and livelihood of the people. Excessive dependence on agriculture in this country makes this sector more critical and crucial for accelerating the path of economic development. Though the contribution of the agricultural sector to the GDP is declining in India, but its urgency as a source of livelihood of the people is at a high level. The progress of agricultural sector continues to be at a slower pace due to various constraints. Many studies reflect that deepening of technology to a larger extent in this sector can bring a potential development to this sector. Various strategic policies of the government of India as well as the state governments are undertaken for the development of agricultural sector through productivity improvement and price protectionism. One of the targets of the government is to provide financial assistance to the farmers for improvement in production and productivity. Again finance stands as a constraint in effective implementation of technology in this sector. To deal with issue, government has set up different institutions and mechanism to facilitate cheap and easy credit for the farmers. The issue lies in adequacy and timely access to credit as well as the proper utilization of the credit accessed. But often credit rationing is practiced by financial institutions. Credit rationing occurs due to excess demand of loanable fund or an excess supply of workers. In this aspects credit rationing is there by financial institutions as price could not do its job properly (Stiglitz & Weiss, 1981). Imperfection in credit market is there in developing and underdeveloped countries by which theories on informational constraints and psychological limitations can be build up (Banarjee & Duflo, 2010). So there are many factors affect credit accessibility.

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Land holding by farmers often becomes a crucial factor for institutional accessibility of credit. Therefore, Small and marginal farmers have less accessed to institutional source of agricultural credit for various reasons (Mohamed & Temu, 2008). In rural areas, land is considered as a major form of collateral in the financial institutions. But the problem of collateral among marginal and particularly landless farmers leads to difficulties in access to institutional source of agricultural credit (Woldekidan et al., 2017; Ibrahim & Aliero, 2012). The density of financial institution in the rural areas is very less. Thus, formal financial institutions are situated far away from the farmers. As a result, farmers become constrained in access to agricultural credit (Anyiro & Oriaku, 2011). Studies found that there is a trade-off between distance of the financial institutions and access to formal agricultural credit (Lemessa & Gemechu, 2016). The social conditions of the farmers also affect access to agricultural credit. Some studies reveal that dalit

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and tribal farmers are excluded from credit provisions (Vijendra Jain, 2014). The socially vulnerable classes are not free from exploitation in the form of credit constraint. Education of the farmer is also an important factor in the same issue. Education of the farmer increases the probability to access credit from institutional sources (Sarap, K. (1990)), (Yazdani&Gunjal (1998)) (Nwaru et.al, (2011)) (Etonihu&Rahman (2013)). As is obvious, education level of Indian farmers is significantly low. So farmers are suffering from different kinds of constraints in access to institutional agricultural credit. In rural credit market access to formal is limited as there is high demand for credit. Thus high degree of effective credit rationing by formal sector is there in rural market like Odisha (Swain Ranjula Bali. (2002)). But studies confirm that extent of rationing is considerably less than what is conventionally assumed (Kochar Anjini, (1997)). Credit rationing is performed by the criteria of debt service obligation and income of the farmer (Zeller Manfred. (1994)). Financially poor farmers are more like to be quantity rationed compared to price rationed because the risk of non-performance is greater their (Chui, Khantachavana & Turvey. (2014)). Thus in accessibility of agricultural credit farmers faces different problems. In fact access to formal agricultural credit is important, but it is more important to make proper utilization of the credit accessed.

Mostly, Indian farmers do not fully utilize the credit for intended purposes. The financial unsustainability of the poor farmer enforce him to diverse the accessed credit into different other purposes. So only a part of the credit is used for production purposes and the rest is used for unproductive purposes. Utilization of credit for productive purpose here is defined as the source which gives direct return to farmer. The manifold requirements of the farmer enforce him to utilize the credit for different purposes other than the intended purpose (Adekoya, 2014). The poor farmer used to diverse a larger a proportion of the credit for unproductive purposes (Satish, 2006). Indian farmers prefer to purchase bullocks from obtained credit by which they can sell them in required time period for smoothening the consumption pattern (Wolpin & Rosenzweig, 1993). Smooth consumption is not greatly affected by shocks in income, if the individual accessed to credit (Kotwal & Eswaran, 1990). So many time credits are diverted towards consumption expenditure. But when the credit is to be utilized fully for production purposes, output will increase and ultimately the income of the farmer will increase (S. U. Isitor, 2014). This is because of the fact that credit has a positive influence upon production and productivity (Chughtai, 2012)

Comment [D8]: Jain, 2014; it is not mentioned in References section.

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Socio economic characteristics and conditions affect remarkably the use of credit for productive or unproductive purposes. Higher the family requirements, means higher is the chance that credit will be utilized for unproductive purposes. So if the family size is big, there is a greater chance of higher unproductive utilization of the credit. When the farmer uses the credit for productive purposes, mostly it is used for purchase of seed and fertilizer (Saleem, 2009)(Chughtai, 2012). But if the farmer uses the credit for unproductive purpose, most of it is used for the building of house or ceremonial activities (Dey, 2015). Again, the matter of concern is that small cultivators are more in favor of unproductive utilization of credit (Dinakar, 1990). In India, 84 percentage of operational land holding is by marginal and small farmers. In this context, the present study aims to investigate the constraints in access to institutional credit by farmers and utilization of credit obtained by them.

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Research Methodology:

The study is based on primary data for which a survey has been conducted through multi stage sampling technique. In the first stage Puri district has been chosen from 30 districts of Odisha. There are 11 blocks in the concerned district. In the second stage, Nimapara block has been chosen from these 11 blocks. The third stage considers selection of Gram Panchayat (GP). Out of 28 G.Ps of respective block, Nuasantha G.P has been selected through simple random sampling technique. In this study 175 households have been included through simple random sampling technique. A structured schedule is used as a tool to collect data from primary sources.

Farmers can only obtain the required amount of credit if they do not have any constraints (Cox and Jappelli, 1993). But in reality farmers are facing many constraints, resulting in difference between demand for and supply of credit, conventionally known as the credit gap. To access the credit gap, a credit adequacy ratio is calculated for the various categories of farmers by using the following formula

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$$CAR = \frac{\sum}{D} \times 100$$

CAR - Group's Credit Adequacy Ratio

\sum - Annual average amount of agricultural credit received by or supplied to jth group from any sources

$$\check{S} = \frac{\sum_{i=1}^n S}{n}$$

Comment [D24]: j=1

Where, n- Number of farmers in jth group

S- Amount of credit received by the individual farmer HH

$$\check{D} = \frac{\sum_{i=1}^n D}{n}$$

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\check{D} -Annual average amount of agricultural credit demanded by jth group from any sources

D- Amount of credit demanded by the individual farmer HH

CAR analyzes the distribution of the group's formal and informal credit among all the farmers irrespective of type of credit they are receiving.

To investigate the various **constraints** and major difficulties faced by the farmers, descriptive statistics and an index as used **by (Lalhunthara & NVR , 2014)** have been employed in the study.

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The different heads under which the farmer utilizes agricultural credit is partly identified from review of literature and mostly through the pilot survey. Broadly two major heads are identified as utilization of credit for production purposes and consumption purposes. The data has been collected in this respect and presented in percentage to show the utilization pattern. To investigate impact of socio-economic variables on productive utilization of obtained credit, the study has used a multi variable regression model. The functional form of the model is given as follows.

$$Y_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + \beta_7 X_{7i} + \epsilon_i$$

Where,

Y- Percentage of productive utilization of credit

α and β 's are the parameters to be determined

X1- years of education, X2- cost of cultivation per acre, X3-Access to formal sources of credit (yes-1, no-0), X4- credit constrained (yes-1, no-0), X5-Annual **off farm** income, X6- Days to get credit, X7- Credit amount

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ε- Error term

Results and discussion

The financial unsustainability of the farmers compels them to demand for more credit in order to meet the various requirements of the agricultural sector. On the other hand, financial Institutions take a second thought while disburse the loan to the poor farmers as they apprehend the problem of increase in Non-performing Assets. So a credit gap i.e. inequality between demand for and supply of credit is created. In this context, the present study aims to analyze the disbursement of credit and credit gap by different group of farmers by using credit adequacy ratio (CAR) technique.

Table 1 | Credit Adequacy Ratio and Credit Gap

Category of farmer	Rupees/household/year		Credit adequacy ratio	Credit gap/ credit inadequacy
	Average credit demanded \check{D}	Average Credit Supplied (formal+ informal) \check{S}	$CAR = \check{S} / \check{D} \times 100$	$100 - CAR$
Landless	13965	10138	72.59	27.41
Marginal	23695	18424	77.75	22.25
Small	33864	28864	85.23	14.77
Large	20000	18333	91.66	8.36

Source: Own calculation from primary survey data

The annual average amount of credit demanded by the landless farmers is Rs13965/- . But they have received an annual average amount of Rs 10138 /-. So there is a gap in received amount and the amount demanded. This gap is known as credit gap or credit inadequacy. The credit adequacy ratio of landless farmers is 72.59. This means that landless farmers received around 73 percent of their demanded credit amount. Therefore the credit gap of landless farmers is 27.41 percent. The average annual amount of credit demanded by the marginal farmers is Rs 23695 /-,

Comment [D29]: Discussion. This portion is largely missing in the manuscript. The similar studies on Odisha or Indian situation may be referred for an in depth discussion. Suddenly taking caste category has not been fully explained. This hampers clarity of understanding. Opportunities part of the title is missing. Suggested modifications are required to be incorporated.

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Comment [D31]: Add 'for different categories of farmers

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but the amount received is Rs. 18424/-. The credit adequacy ratio of the marginal farmers is 77.75. This indicates that marginal farmers received around 78 percent of their demanded credit and credit gap is 22 percent. The credit requirement is highest for small farmers. They require higher amount of credit to invest on land development and purchase of new land. The average annual credit demand of small farmers is Rs. 33864/-. There is about 15 percent gap in the credit received by the small farmers as they received 85 percent of their demanded credit. So the access to credit of small farmers is comparatively better than the landless and marginal farmers. The credit received in relation to demand is highest for large farmers. The average annual credit demanded by the large farmers is Rs. 20000/-. The demand for credit by the large farmers is less than the marginal and small farmers. It is because of the fact that the large farmers belong to the rich families and they have money in their hand to carry out small expenditures. Therefore to meet the large expenses only, they go to the financial institutions. The table shows that the large farmers receive 92 percent of their demanded credit and thus the credit gap is only 8 percent for them.

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Credit constrained

The situation faced by farmer is said to be credit constrained when a person fails to access formal source of credit or access inadequate amount or not getting credit in time. On the other hand, if a person is getting full credit as demanded and also in the required time or not demanding for credit is known as credit non-constrained. The following table shows the credit constrained of the sample HHs in the study area.

Table 2: Caste and Credit Constrained

Caste category	Credit constrained		Total
	Yes	No	
General	23 (51)	22 (49)	45 (100)
OBC	71 (79)	19 (21)	90 (100)
SC	37 (92)	3 (8)	40 (100)
Total	131 (75)	44 (25)	175 (100)

Source: primary survey

Comment [D38]: Replace with "Figures in parentheses indicate percentages."

The table reveals that most of the farmers of OBC and SC category are credit constrained. It also shows that around half of the farmers in general category do not face any problem in regard to access of credit from formal sources. Therefore, we derive the impression that farmers other than General category are definitely more sufferers while they go for accessing of credit in the study area. In general 75 percent of the farmers are credit constrained and therefore 25 percent are credit non-constrained. This reveals that most of the farmers in the study area face problems in access to agricultural credit from formal sources. The picture of credit constrained will be more informative from different type of constrained, which is shown in the following table.

Table 3: Caste and Type of Credit Constrained

Caste category	Type of Credit constrained				Total
	Inadequate amount	Timely unavailability	Not getting at all	Both inadequate amount and timely unavailability	
General	9 (39)	6 (26)	2 (9)	6 (26)	23 (100)
OBC	9 (13)	4 (6)	11 (15)	47 (66)	71 (100)
SC	4 (11)	2 (5)	25 (68)	6 (16)	37 (100)
Total	22 (17)	12 (9)	38 (29)	59 (45)	131 (100)

Source: Primary data

Comment [D39]: As given in Table 2.

This table shows some interesting findings. Most of the General category farmers argue that credit of inadequate amount is the major constraint. Similarly, most of the OBC category farmers view that they do not get the credit timely and the amount of credit is also inadequate. The response of the SC category of farmers is that they do not getting the credit at all. But in total we see that most of the farmers are facing problem in both timely availability as well as inadequate amount of the credit.

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Table 4: Type of Farmers and Credit Constrained

Type of farmers	Credit constrained		Total
	Yes	No	
Marginal	93 (79)	25 (21)	118 (100)

Small	9 (41)	13 (59)	22 (100)
Large	1 (16.67)	5 (83.33)	6 (100)
Landless	28 (97)	1 (3)	29 (100)
Total	131 (75)	44 (25)	175 (100)

Source: Primary data

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This table gives a very realistic picture about credit constrained in the study area. It can be seen that all most all the Land less farmers are credit constrained while most of the Marginal farmers also have the same problem. But the situation in case of Large and Small farmers is quite different. They do not face much problem in this regard.

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Table 5: Type of Farmers and Types of Credit Constrained

Type of farmers	Type of Credit constrained				Total
	Inadequate amount	Timely unavailability	Not getting at all	Both inadequate amount and timely unavailability	
Marginal	17 (18)	11 (12)	12 (13)	53 (57)	93 (100)
Small	1 (11)	1 (11)	3 (33)	4 (45)	9 (100)
Large	1 (100)	0	0	0	1 (100)
Landless	3 (11)	0	23 (82)	2 (7)	28 (100)
Total	22 (17)	12 (9)	38 (29)	59 (45)	131 (100)

Source: Primary data

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This table has some unique observations. The Large farmer has identified inadequate amount of the credit as the major constraint. The Landless farmers have complained about not getting the credit at all. Most of the Marginal farmers response is that they do not get credit neither timely nor in adequate amount. The same response is also for the Small farmers. In total, we find that timely unavailability as well as inadequate amount are the major constraints for most of the farmers in the study area.

Types of credit non-constrained

When any kind of problem is not faced by the farmers in access to credit, is known as credit non-constrained. This is a healthy indicator of the financial structure of any economic system. The credit non-constrained is also appearing in many forms. The following table shows the type of credit non-constrained according to the **Economic category** of the farmers in the study area.

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Table 6: **Economic Category** and Types of credit non-constrained

Comment [D45]: Caste category

Caste category	Type of Credit non-constrained		Total
	Fully Received	Not demanded	
General	21 (95)	1 (5)	22 (100)
OBC	15 (79)	4 (21)	19 (100)
SC	2 (67)	1(33)	3 (100)
Total	38 (86)	6 (14)	44 (100)

Source: primary survey

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The table reflects that most of the farmers in all **economic** categories have fully received the amount of credit they have demanded. It is also found that very few farmers have not demanded credit at all.

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Table 7: Types of Farmers and Types of credit non-constrained

Type of farmers	Type of Credit non-constrained		Total
	Fully Received	Not demanded	
Marginal	19 (76)	6 (24)	25 (100)
Small	13 (100)	0	13 (100)
Large	5 (100)	0	5 (100)
Landless	1 (100)	0	1 (100)
Total	38 (86)	6 (14)	44 (100)

Source: Primary data

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This table shows that farmers of all types have demanded and fully received the amount of credit. It is also seen that all the Large, Small and Landless farmers have demanded and received the full credit but few Marginal farmers have not demanded credit. In credit **constrained** farmers

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are facing different kind of **problem** but the extent is different. So rank of problems is presented in the below table.

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Table 8: Major constraints in Access to Institutional Agricultural Credit

Constraints	1st	2nd	3rd	Weighted Score	Percentage	Rank
Collateral	66	26	13	263	30.23	2
Guarantor	3	35	30	109	12.53	3
Interest Rate	0	0	12	12	1.37	7
Distance	2	3	4	16	1.84	6
Red tapism in bank	61	47	21	298	34.26	1
Red tapism in govt. office	9	29	15	100	11.49	4
Any other	4	5	50	72	8.28	5
Total	145	145	145	870	100	

Source: primary data

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The study reveals that red tapism in the bank is the most important constraint in access to institutional agricultural credit. The study considered six relevant constraints in accessibility to institutional agricultural credit by the farmers through literature survey and pilot survey. At the time of interview, the farmers were asked to rank top three problems faced by them in the process of credit access. Then a weighted score assigned to each rank as 3 for first rank, 2 for second rank and 1 for third rank as followed by (Lalhunthara & NVR , 2014). After that a weighted value for each constraint is calculated as per the response of the farmers. There after it is found that red tapism in banks is the most important constraint followed by collateral problem. The procedural delay and other lingering formalities are also some serious concerns for a farmer in the bank. As agricultural **activity** a seasonal work, it requires timely and adequate amount of inputs. But the time taking procedure in banks is creating a number of difficulties for the farmers. The third most important problem faced by farmers is guarantor problem followed by red tapism in the government offices. As interest rate in informal sources is largely higher than formal sources, it is the least ranked constraint by the farmers.

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The financial requirement of the Indian farmers is well known. The farmers need finance not only for the agricultural production purposes but also for the maintenance of their family.

Farmers receive credit from both formal and informal sources. They use the accessed amount of credit not only for the specific intended purposes but also for many other different purposes. The present study has divided credit utilization into two categories as credit utilized for production purposes and credit utilized for consumption purposes. Credit utilized for production purposes includes purchase of seed, purchase of fertilizer, payment to the hired labour in crop production, payment to machineries in crop production, purchase of pesticide, expenditure on livestock, and increase in scale of operation & improvement and for allied business purposes. On the other hand, credit for consumption purposes includes expenditure on social ceremony, family health expenditure, expenditure on building and maintenance of houses, expenditure on education of the children etc.. In fact the expenditure on consumption is not less useful as it facilitates return in latter periods. In this respect, the following table explains the credit utilization by the farmers in different heads and also from different sources.

Table 9: Credit utilized for different purposes (in rupees)

Particulars	Formal source	Informal source	Total
Total production	1278000(57.12)	349500(38.03)	1627500(51.57)
Total consumption	959200(42.88)	569500(61.97)	1528700 (48.43)
Total	2237200 (100)	919000(100)	3156200 (100)

the numbers in the brackets represents the percentages

Source: primary survey

The total credit received by the farmers from formal as well as informal sources are utilized for both production and consumption purposes. The Table shows that 57 percent of the total credit taken from formal sources is used for production purposes and thus 43 percent is used for consumption purposes. Similarly, a higher proportion of the credit i.e. 62 percent taken from informal sources is used for consumption purposes while only 38 percent is used for Agricultural production activities. Therefore, the Table gives an impression that the farmers use more of their credit for production purposes when they take it from formal sources in comparison to the amount of credit when they take it from informal sources.

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Relationship between productive utilization of credit and Socio-economic variables

The productive utilization of credit is defined as the amount of credit utilized for production purposes. Productive utilization of credit is influenced by socio economic factors. There are some relationship between productive utilization of credit and other variables. To examine the relationship between productive utilization of credit and the socio economic variables, the present study uses variables such as years of education, family size, economic category, own land holding, productivity of paddy, cost of paddy, and annual off farm income. The analysis is done on the basis of Correlation and Regression techniques.

Table 10: Summery of Correlation Analysis

Variables	Correlation
Years of Schooling	0.298**
Family size	0.048
Economic category	.180*
Owned land holding (in acre)	0.367**
Productivity of paddy(per acre)	0.198**
Cost of paddy(per acre)	0.293**
Annual total off farm income	0.213**
**, * represents the correlation is significant at 1% and 5% respectively	

Source: primary survey

Productive utilization of credit has significant positive relationship with years of schooling. An educated person is more concerned about the purpose of credit. So he utilizes the agricultural credit for productive purposes. The table reflects that family size has insignificant relation with productive utilization of credit. Economic category is a dummy variable in the study which takes value 1 for Above Poverty Line (APL) and 0 for others. Economic category has significant relationship with productive utilization of credit. Own land holding has a correlation value of 0.367 with productive utilization of credit and it is significant at 1% level of significance. Farmers having large size of land are more capable to use modern technology. Adoption of

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modern technology is very much influenced by availability and accessibility of credit. So as own land holding increases productive utilization of credit also increases. Productivity of paddy has a correlation value of 0.198 with productive utilization of credit and it is significant at 1% level of significance. This states that productivity is much influenced by productive utilization of credit and thus there is a positive significant relationship between them. Cost of paddy and annual off farm income also have positive correlation with productive utilization of credit and significant at 1% level of significance. To give a better picture of socio-economic impact on percentage of productive utilization of credit, a multi variable regression is shown in the following table.

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Table 11: Regression model summary

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Variables	Coefficient	Standard error	t value	Sig.
Constant	50.791***	21.197	2.396	.018
Years of education	.947	.621	1.525	.130
Cost of cultivation per acre	.005*	.003	1.786	.077
Access to formal sources of credit	12.548	7.604	1.650	.101
Credit constrained	-3.493	5.617	-.622	.535
Annual off farm income	2.030E-005	.000	.597	.552
Days to get credit	-3.682***	.791	-4.652	.000
Credit amount	-.001***	.000	-5.663	.000
Dependent variable – percentage of productive utilization of credit				
Number of observations -131				
R square- 0.386				
F statistics – 11.055 (0.000)				
*, ** and *** represents significant at 10%, 5% and 1% level of significance respectively				

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Source: primary data

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The model reflects that years of education have positive impact on productive utilization of agricultural credit but the impact is not statistically significant. Likewise cost of cultivation per

acre also has positive impact on productive utilization at 10 percent level of significance. Access to formal agricultural credit is a dummy here, where it takes value 1 if access to formal source and 0 if not. This variable also have positive impact but not statistically significant. Credit constrained is also a dummy variable in the study which takes value 1 for constrained from formal sources and 0 for non-constrained. Credit constrained negatively impact productive utilization of credit but not statistically significant. As a farmer gets inadequate amount of credit or do not get timely, the scope for diversification of the obtained pool increases there. So this has negative impact of productive utilization. Annual off farm income has positive impact on productive utilization of credit. Days take to get credit and credit amount both have negative significant impact on productive utilization of agricultural credit at 1 percent level of significance. To check the hetroscedasticity residuals are plotted with fitted values. No pattern is observed from residuals and fitted value. So hetroscedastic problem is not there.

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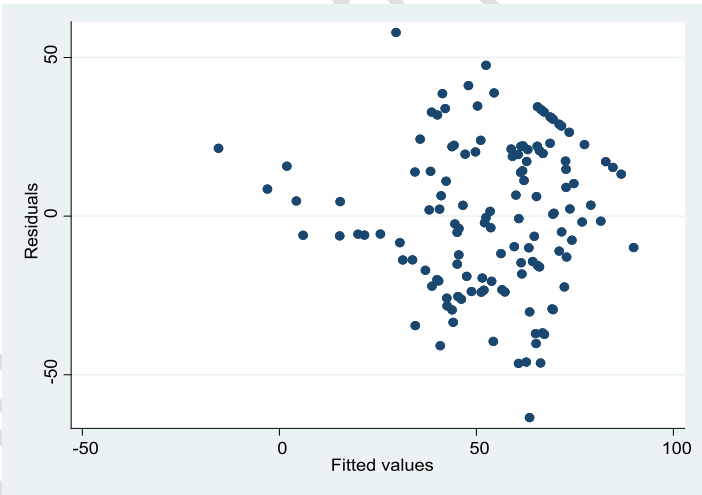


Fig 1. Credit utilization by different category of farmers

The credit utilization pattern is different for different category of farmers. The groups of farmers are categorized as per their land holding. The following table represents the utilization pattern by different category of farmers.

Table 12 Credit utilization by different Category of farmers (Amount in Rs and percentage in bracket)

Category of farmer	Productive utilization	Consumption utilization	Grand total
Landless	141000 (41.60)	198000 (58.40)	339000 (100)
Marginal	1090000 (47.18)	1220000 (52.82)	2310000(100)
Small	466000 (73.38)	169000 (26.62)	635000 (100)
Large	70000 (63.63)	40000 (36.37)	110000 (100)

Source: primary survey

The table reflects that Marginal farmers utilize 47 percent of the total credit for production purposes and 53 percent of the credit for consumption purposes. Similarly, landless farmers use 42 percent of the credit for production purposes and therefore 58 percent of credit is used for consumption purposes. Field experience states that the landless and marginal farmers divert a major proportion of their credit to health expenditure and building of houses (Annexure II). Poor farmers are more vulnerable and the nutrition level of these families is low. Small farmers utilize 73 percent of their total credit for production purposes and thus 27 percent of the credit is used for consumption purposes. For production purposes, large farmers use 64 percent of their credit and only 36 percent is diverted to consumption purposes. Thus, small and large farmers utilize a higher proportion of the credit for production purposes.

Findings:

Farmers are facing different kind of constraints in access to institutional agricultural credit. As Indian farmers are predominantly poor they do not utilize the entire credit for the intended purposes. They diversify the credit into different requirement of their family. So the major findings of the credit utilization by the sample farmers are as follows.

- The credit adequacy ratio for large farmer is highest (91) while for landless farmer it is lowest (72).
- Nearly 75 percentages of farmers were credit constrained in different forms. And red tapism in the bank is the most important constraint in accessibility to institutional agricultural credit.

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Comment [D77]: kinds

- Farmers diverting approximately half of the credit amount from intended purposes. Particularly marginal and landless farmers utilize 53 and 58 percent of their credit for consumption purposes respectively while large & small farmers utilize 64 and 73 percent of their credit for production purposes respectively.
- Years of education, own land holding, productivity of paddy, cost of paddy, economic category and annual off farm income have significant positive relationship with productive utilization of credit.
- Cost of production per acre has positive significant impact on productive utilization of agricultural credit while days take to get credit and credit amount have negative significant impact.

Comment [D78]: and

Comment [D79]: purposes,

Comment [D80]: off-farm

Comment [D81]: This section can be summarized in Abstract section.

Conclusion:

Access to institutional agricultural credit is still a challenge to a group of farmers. Delivery of financial services for the purpose of agriculture is not touching all farmers. Credit access is surrounded by different constraints. Comparatively higher amount of credit is utilized for production purpose by the small and large farmers but lesser amount of credit is utilized for production purpose by marginal and landless farmers. The study found some problems in effective credit utilization. For such problems the study suggests some policy implications to improve the credit utilization mechanism among the farmers.

1. Procedural complexities to be minimized in financial institutions and hassle free loans to be given to farmers with minimized collateral.
2. Creating awareness among farmers about the utilization of credit for production purposes by the institutions, government agencies and NGOs should be made at the time of credit sanctioning.
3. Satisfactory amount of credit with early time should be given for proper utilization of credit in intended purposes.

References

- Adekoya, O. A. (2014). The Patterns And Determinants Of Agricultural Credit Use Among Farm Households In Oyo State, Nigeria. *Asian Economic and Financial Review*, 1290-1297.
- Anyiro, C., & Oriaku, B. (2011). Access to and investment of formal micro credit by small holder farmers in abia state, nigeria. A case study of absu micro finance bank, uturu. *The Journal of Agricultural Sciences*, 6(2), 69-76.
- Atieno, R. (1998). Institutional Lending Policies And The Use Of Credit Funds Among Smallscale Farmers In Nakuru District, Kenya. *Giordano Dell-Amore Foundation*, 233-246.
- Banerjee, A. V., & Duflo, E. (2010). Giving Credit Where It Is Due. *Journal of Economic Perspectives*, 61-80.
- Berg, E. (2013). Are poor people credit-constrained or myopic? Evidence from a South African panel. *Journal of Development Economics*, 195-205.
- Chavan, R. R. (2008). Revival of Agricultural Credit in the 2000s: An Explanation. *Economic and Political Weekly*, 57-63.
- Chiu, L. J., Khantachavana, S. V., & Turvey, C. G. (2014). Risk Rationing and the Demand for Agricultural Credit: A Comparative Investigation of Mexico and China. *Agricultural Finance Review*, 1-45.
- Chughtai, M. W. (2012). Utilization Of Zarai Taraqiati Bank Agricultural Credit In Rural Areas Of Tehsile Rawalpindi: An Empirical Study. *Journal of Arts, Science & Commerce*, 96-100.
- Dey, S. D. (2015). A Study on Utilisation of Credit by Marginal Farmers in Nadia District of West Bengal. *Economic affairs*, 181-186.
- Dinakar, H. K. (1990). Rural Credit In India: An Evaluation Of Its Changing Pattern During 1961-81 . *Giordano Dell-Amore Foundation*, 193-213.
- Eswaran, M., & Kotwal, A. (1990). Implications Of Credit Constraints For Risk Behaviour In Less Developed Economies. *Oxford Economic Papers*, 473-482.
- Etonihu, K. I., & Rahman, S. A. (2013). Determinants of access to agricultural credit among crop farmers in a farming community of Nasarawa State, Nigeria. *Journal of Development and Agricultural Economics*, 5(5), 192-196.

Comment [D82]: This section must be written as per the style of the Journal. Some references are missing, they should be added. Some more references may be added as it is needed as per the comments in the text.

- Hussain, A., & Thapa, G. B. (2012). Smallholders' access to agricultural credit in Pakistan. *Food Sec*, 73-85.
- Ibrahim, S. S., & Aliero, H. M. (2012). An analysis of farmers' access to formal credit in the rural areas of Nigeria. *African Journal of Agricultural Research*, 7(47), 6249-6253.
- Kaleb, S., Berhanu, G., & Dereje, L. Z. (2016). Factors affecting household decision to allocate credit for livestock production: evidence from Ethiopia. *Agricultural Finance Review*, 1-33.
- Kochar, A. (1997). An empirical investigation of rationing. *Journal of Development Economics*, 339-371.
- Lalhunthara, & NVR, J. K. (2014). Financial Problems of Microenterprises in Mizoram: Issues and Dimensions. *The IUP Journal of Entrepreneurship Development*, 50-60.
- Lemessa, A., & Gemechu, A. (2016). Analysis of Factors Affecting Smallholder Farmers' Access to Formal Credit in Jibat District, West Shoa Zone, Ethiopia. *International Journal of African and Asian Studies*, 25, 43-53.
- Mishra, R. (2014). Institutional Credit and Rural Development: A Case Study of Dasarathpur Block of Jajpur District, Odisha. *Journal of Commerce & Management Thought*, 625-634.
- Mishra, S. (2017). Institutional Finance: An Achilles Heel to Agricultural Sector. *Jamshedpur Research Review*, 6(25), 73-80.
- Mohamed, K. S., & Temu, A. E. (2008). Access To Credit And Its Effect On The Adoption Of Agricultural technologies: The Case Of Zanzibar. *African Review of Money Finance and Banking*, 45-89.
- Mohan, R. (2006). Agricultural Credit in India: Status, Issues and Future Agenda. *Economic and Political Weekly*, 1013+1015-1017+1019-1023.
- Muhammad Iqbal, M. A. (2004). The Impact of Institutional Credit on Agricultural Production in Pakistan. *Pakistan Institute of Development Economics, Islamabad*, 469-485.
- Nwaru, J. C., Essien, U. A., & Onuoha, R. E. (2011). Determinants of Informal Credit Demand and Supply among Food Crop Farmers in Akwa Ibom State, Nigeria. *Journal of Rural and Community Development*, 6(1), 129-139.

- Obeta, M. E. (1992). Agricultural Credit In Nigeria: Performance At Farm Level. *Giordano Dell-Amore Foundation*, 173-184.
- Rosenzweig, M. R., & Wolpin, K. I. (1993). Credit Market Constraints, Consumption Smoothing, and the Accumulation of Durable Production Assets in Low-income Countries: Investments in Bullocks in India. *Journal of Political Economy*, 223-244.
- S. U. Isitor, D. A. (2014). An Analysis of Credit Utilization and Farm Income of Arable Crop Farmers in Kwara State, Nigeria. *Global Journal of Science Frontier Research: D Agriculture and Veterinary*, 27-34.
- Saleem, M. A. (2009). Sources and Uses of Agricultural Credit by Farmers In Dera Ismail Khan (District). *European Journal of Business and Management*, 111-122.
- Sarap, K. (1990). Factors Affecting Small Farmers' Access to Institutional Credit in Rural Orissa, India. *Development and Change (SAGE)*, 21, 281-307.
- Satish, P. (2006). Institutional Credit, Indebtedness and Suicides in Punjab. *Economic and Political Weekly*, 2754-2761.
- Singh, V. J. (2014). *Agricultural Finance in India A Study of Small, Marginal, Dalit and Tribal Farmers*. Jaipur: The Indian Council of Social Science Research.
- Soni, R. N., & Malhotra, S. (2013). *Leading Issues in Agricultural Economics*. Jalandhar: Vishal Publication CO.
- Stiglitz, J. E., & Weiss, A. (1981). Credit Rationing in Markets with Imperfect Information. *The American Economic Review*, 393-410.
- Swain, R. B. (2002). Credit Rationing In Rural India. *Journal Of Economic Development*, 1-20.
- WoldeKidan, H., Hadush, G., & Gereziher, K. (2017). Impacts of Credit Constraint on Small Holder Farmer's Technology Adoption in Ethiopia: In Case of South Ethiopia. *Journal of Land and Rural Studies*, 5(2), 110-119.
- Yazdani, S., & Gunjal, K. (1998). Farm credit and the factors affecting the uptake of loans by farmers in Iran. *Giordano Dell-Amore Foundation*, 22(3), 263-277.
- Zeller, M. (1994). Determinants of Credit Rationing: A Study of Informal Lenders and Formal Credit Groups in Madagascar. *World Development*, 1895-1907.

Annexure I

Particulars	Formal source	Informal source	Total
Seeds	23500(1.05)	13500(1.47)	37000(1.17)
Fertilizer	13500(0.60)	60500(6.58)	74000(2.34)
Machinery implementation	191000(8.54)	66000(7.18)	257000(8.14)
Pesticides	48500(2.17)	8000(0.87)	56500(1.79)
Payment to hired labour	233500(10.44)	156500(17.03)	390000(12.35)
Increased scale of farm operation	235000(10.50)	20000(2.18)	255000 (8.07)
Livestock	133000(5.94)	5000(0.54)	138000(4.37)
Business	400000(17.88)	20000(2.18)	420000 (13.30)
Total production	1278000(57.12)	349500(38.03)	1627500(51.57)
Ceremony	285000(12.74)	74000(8.05)	359000(11.37)
Consumption	10700(0.48)	52500(5.71)	63200 (2.00)
Health expenditure	156500(7.00)	115000(12.51)	271500(8.60)
Education of children	167000(7.46)	187000(20.35)	354000(11.21)
Building houses	280000(12.52)	101000(10.99)	381000(12.07)
Others	60000(2.68)	40000(4.35)	100000(3.16)
Total consumption	959200(42.88)	569500(61.97)	1528700 (48.43)
Total	2237200(100.00)	919000(100)	3156200 (100)

Annexure II

Category of farmer	Productive utilization					Non-productive utilization							Grand total
	Total crop production	Increase scale of operation	Livestock	Business	Total	Cereals	Consumption	Health expenditure	Education of children	Building houses	Other	Total	
Marginal	614000 (56.33)	110000 (10.09)	79000 (7.24)	28700 (26.33)	109000 (47.18)	27000 (22.13)	120500 (9.87)	171500 (14.05)	272000 (22.29)	28600 (23.44)	10000 (8.19)	122000 (52.82)	231000 (100)
Small	193000 (41.41)	95000 (20.38)	45000 (9.65)	13300 (28.54)	46600 (73.38)	10000 (5.91)	10000 (5.91)	15000 (8.87)	84000 (49.70)	5000 (29.58)		16900 (26.62)	635000 (100)
Large	20000 (28.57)	50000 (71.43)			70000 (63.63)	40000 (100)						40000 (36.37)	110000 (100)
Landless	127000 (90)		14000 (10)		141000 (41.60)	39000 (19.70)	29000 (14.64)	85000 (42.92)		45000 (22.72)		198000 (58.40)	339000 (100)