



**IMPACT OF MICRO CREDIT FACILITY ON PRODUCTIVITY OF RICE FARMERS'
IN KATCHA LOCAL COMMUNITIES OF NIGER STATE**

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Abstract

This study examined how micro credit influences rice farmers productivity in Katcha local communities of Niger State. A simple random sample was used to obtain a sample data of 389 rice farmers across the rural communities through the use of structural questionnaire. This study used multiple regressions to analyze rice farmers' credit access in relation to their productivity. Finding shows that having access to credit enhanced farmers' productivity especially when the farmers are fully supported. Therefore, this study recommends a more easy access to credit facilities for the farmers by creating local financial agents so as to facilitate credit access.

Keywords: Micro credit, Farmers, Rice, Productivity,

1. Introduction

Nigeria is among one of the countries where formal financial institutions play an elementary role in its verge for economic development. Financial institutions like the micro finance banks emerged as a result of the overriding objectives of making credit available to those in the rural areas with limited access to credit. Majority of farmers and business people in rural areas always operate in a small scale, these areas practice subsistence agriculture, qualifying them as small scale farmers. Microfinance offers them small amount of credit without collateral through the aid of financial services like cooperatives (Molenaar, 2009). This facilities anchored by rural banks aid farmers' agricultural productivity and welfare (Adeoye & Ugalahi, 2017; Akwaa-sekyi, 2013). The adoption of microfinance policy in the early 1990s has assisted many countries in poverty reduction especially the rural people (Ihugba, Bankong & Ebomuche, 2013). Evidence shows that over 80% of the rural populace in Nigeria are small scale farmers, with about 30% being fully employed in the sector (Aikhionbare, 2016; Mellor, 1999).

Despite the achievement of microfinance banks in transforming the rural areas, they have been met with stiff difficulties like installment repayment problem (Saad, Waraich & Ijas, 2014). However, government had formulated and embarked on several policies to tackle problems hindering peasant agricultural growth and improve its main source of finance, i.e. the microfinance banks. Policies, activities and projects such as developing rural infrastructure, supply of fertilizers, seeds and other inputs and provision of credits aimed at encouraging small scale agriculture. A sustained small scale agriculture cannot be achieved without putting in place well focused programmes to reduce the problem militating small scale farmers by increasing their access to factors of production especially credit (Soludo, 2006). Some of these programmes were the rural banking programmes, Agriculture Credit Guarantee Scheme (ACGS), Anchor Borrowers Scheme among others.



Most of these programmes embarked upon are faced with mismanagement and inefficient allocation of resources. Diverse views have been put down by different scholars to address the issues. Abel, Ali and Johanna (2015) analyzed the impact of savings and credit cooperative societies in combating poverty. Adeoye and Ugalahi (2017) examined the socio-economic characteristics of participating and non-participating small holder food crop farmers in Bank of Agriculture (BOA) loans and determined factors that influenced the probability of participation in BOA loans. Nmadu, Eze and Jirgi (2012) described the socio-economic characteristics of the farming households and determined the relationship between risk status and socio-economic characteristics and the food security status. Zahid (2017) focus on the impact of microfinance in the profitability of small crop farmers. However, despite numerous studies, only few empirical studies are study-specific with a small sample size (Bashir & Mehmood, 2010; Akinbode, 2013). Hence, this study seeks to determine the impact of micro credit facility on rural rice farmers. This will provide the basis for knowing the extent to which the activities of microfinance banks are effective to rural rice farmers especially in the aspect of their productivity.

2. Literature Review

Microfinance is a way to help alleviate poverty in rural communities (Dhakal & Nepal, 2016). Zahid (2017) assessed empirically the impact of microfinance on the profitability of small agriculture farmers in Pakistan. The results from 150 observations show that microfinance is functional in generating profit for small agriculture farmers. Akwa-seky (2013) investigated the impact of micro credit on farming activities but specifically to determine the impact of micro credit on labour employed, working capital, output and income of farmers and other forms of support rural banks give to farmers. Although the study failed to look at how micro credit intervention has been use in combating poverty among farmers. Emelesi and Yusuf (2014) assessed the impact of micro credit on poverty alleviation among farmers in Kirfi Local Government area of Bauchi state, which indicates 45% of the results, identified purchase of farm implements as the main impact of microcredit on their agriculture enterprise. Saad *et al.* (2014) examined the socio-economic effect of loans on farmers' daily life and to identify the social and cultural gaps that expel farmers to debts. Similar studies were carried out by Girabi and Mwakaje (2013), they investigated the impact of microfinance on agricultural productivity by smallholder farmers in Tanzania, and their findings showed that, credit beneficiaries realized high agricultural productivity. In the same vein, Lawin, Tamini and Bocoum (2018) identified the casual effects of micro credits, and found some significant impact of microcredit on the adoption of innovations, investments, farm incomes and profits.

However, some studies found negative or insignificant effect of micro credit on farmers. Ibrahim and Bauer (2013) assessed the access to credit problem that persists in dry land of Sudan, and their results shows that credit has limited effect on farm profits. Adeoye and Ugalahi (2017) analyzed small holders' food crop farmer participation in Bank of Agriculture loan (BOA) scheme in Ogun State, Data were analyzed for 224 smallholder food crop farmers and the probit regression result shows that membership of farmers association had negative and no significant effect on loan participation. Study by Bashir and Mehmood (2010) emphasize on how institutional credit affects rice crop productivity in Pakistan, the result from the 120 respondents shows that credit positively impacted on the productivity of rice. Also, Akinbode



(2013) examined how access to credit influence rice production in Nigeria, and the result from 208 rice farmers shows very limited access to credit. In analyzing the utilization of land on different land typology, Zahri, Adriani, Wildayana, Sabaruddin and Harun, (2018) found farmers who participate in the land with better irrigation/drainage systems to have increase the land area acquired by buying more land. Paresys, Saito, Dogliotti, Malézieux, Huat, Kropff, and Rossing (2018) found on average, one hectare contributed twice as much to Beninese rice production. But Sapkal, Kamble, Kumar, Kar and Jha (2019) found small size of land to be a major constraint when increasing the productivity of paddy rice in North- Eastern IndoGangetic Plains of Bihar in India. Si, Xie, Ma and Wu (2018) assessed the main effects and interactive effects of rice straw biochar fertilizer on rice growth and found a significant increase on rice yield. A more elaborate study by Tiwasing, Dawson and Garrod (2018) examines the impact of micronutrient intake on the labour productivity of rice-producing households in Thailand in 2011, their result entails that labour, farm size and fertiliser use have a positive effects on farm output. Similarly, Paul and Gīthīnji (2018) explore the relationship between yield, farm size and fragmentation in Ethiopia found that small farms do apply more labor per unit of land, and thus have higher yields. Also Nakano, Tsusaka, Aida and Pedé (2018) investigated technological dissemination pathways among smallholder rice producers in Tanzania, and found increase in rice yield for those farmers that adopt technology dissemination than the yields of ordinary farmers.

3. Methodology

In determining how micro credit influences farmers productivity in rice farming, primary data were employed through the use of structured questionnaires which were issued to rice farmers in Katcha Local Government of Niger State. Niger State in particular has continued to remain one of the major contributors of rice production, with Katcha having the highest rice field base in the state (Meren *et al.*, 2017). This necessitates the establishment of National Cereal Research Institute Badegi in 1975. With a minimum of 14,000 farmer’s beneficiaries of Anchor Borrowers on various crops production value chain initiated by Central Bank of Nigeria (Ebbo, 2017); a sample of 389 was randomly selected from the population using Krejcie and Morgan (1970). In line with the studies of Akinbode (2013); Akwa-seky (2013); Bashir and Mehmood (2010); Emefesi and Yusuf (2014); Girabi and Mwakaje (2013); and Lawin *et al.* (2018) this study used variables such rice productivity measured by quantity of rice harvested (RP), a dummy variable for credit facilities (CF) with one as access and zero otherwise, land size (LS) measured in hectares, fertilizer (FZ) measured by number of kilograms used, labour (HL) measured by expenditure on hired labour, seeds (SP) denotes quantity of its planted in kilogram and technology (TC) measured amount of cost incurred on tractor usage. The study also measured farmers characteristics with age as number of years a farmer attain, gender being male as one and zero otherwise, education measured by number of years schooling, occupation with a value of one as full time farmers and zero otherwise.

Following the study of Bashir and Mehmood (2010) and Akinbode (2013), this study employed a regression model with farmers productivity as dependent variable. The model is express as

$$RP_i = \beta_0 + \beta_1CF_i + \beta_2LS_i + \beta_3FZ_i + \beta_4HL_i + \beta_5SP_i + \beta_6TC_i + \mu \dots\dots\dots 1$$



Where RP is rice productivity, CF denotes credit facilities, LS indicates the land size, FZ is level of fertilizer applied, HL shows the hired labour, SP represents the seeds planted and TC means technological level used. Also the model for farmers’ characteristics is shown as

$$RP_i = \beta_0 + \beta_1AG_i + \beta_2GN_i + \beta_3ED_i + \beta_4OC_i + \mu \dots\dots\dots 2$$

Where AG is farmers age, GN indicates farmers gender, ED represents farmers educational level, and OC entails farmers occupation. However, farmers education where interacted with equation one to see the level of relationship with farmers productivity. The model is expressed as

$$RP_i = \beta_0 + (\beta_1CF_i + \beta_2LS_i + \beta_3FZ_i + \beta_4HL_i + \beta_5SP_i + \beta_6TC_i) * ED + \mu \dots\dots\dots 3$$

4. Results

The result in Table 1 shows the descriptive statistics of all the variables used in this study. The characteristics of the farmers’ show the average age to be 37.76, gender and education to be 0.75 and 2.48 respectively. With their predominance in agriculture, majority of them are within the active age with male counter parts dominating the occupation. Also, majority of them have acquired elementary education, despite their occupation are unskilled. Being predominant in rice production with average production of 35.92 signifies majority of them are into commercial production. Despite their commercial participation in the production of rice, majority are yet to access micro credit, due to it stiff conditions and accessibility. Microfinance banks are one in a thousand located in most rural areas. Farmers’ productivity increases given the nature of land size with mean of 1.99 hectares per person, other input includes fertilizer with average application of 10.89 per bag, average of 6.61 labourers used for the farming activities. In seed planting, the average kilogram used is 22.30 with majority of the farmers using farm machinery in form of tractor for tilling the land before planting. Requiring a nearly normal data for every analysis, the Skewness and Kurtosis were used to achieve an unbiased result. Skewness measures the nature of distribution in respect to its mean, and the value should be less than 2,

Table 1: Descriptive Statistics

Variable	Mean	Std Dev.	Skewness	Kurtosis
Age	37.76	13.29	-0.13	1.89
Gender	0.75	0.43	-1.17	2.38
Education	2.48	0.84	-0.52	2.61
Occupation	0.49	0.50	0.02	1.00
Rice productivity	35.92	44.76	-0.27	2.75
Access to Credit	0.34	0.48	0.65	1.43
Land Size	1.99	1.53	1.47	6.58
Fertilizer	10.89	4.06	0.64	3.09
Labour	6.61	3.40	0.56	2.96
Seed	22.30	27.17	-0.21	3.22
Technology Cost	0.78	0.42	-1.34	2.81

Source: Field Survey 2019.

while Kurtosis measures the peakedness in terms of probability distribution and value should be less than 7 (West *et al.*, 1995; Curan *et al.*, 1996; Kline, 2016; Rindskopf & Shiyko, 2010). The



result of the Skewness and Kurtosis in the dataset is normal because they fell within acceptable threshold.

Table 2 shows the regression result by explaining how micro credit influences farmers productivity in rice farming. The analysis captures the three specified model in the methodology. The result in the first model shows that all the variables are positive and significant at 1% level of significance, except fertilizer application which is not significant. An increase in access to credit increases rice production by 0.46, despite various obstacles in accessing micro credits by farmers and its inability to locate some of their outlets in many rural areas, it has still influenced the productivity of the few opportune among them, which is in consistence with the study of Girabi and Mwakaje (2013). Land size contributes 0.16, indicating the more hectares of land, the more rice harvested as obtained in the study Paresys *et al* (2018). The allotments of land in most communities are traditionally inclined with high level of supremacy. The small scale farmers find it difficult to acquire more land due to high cost of renting and some few available have some element of communal clashes. Fertilizer application is positive but has no significant relationship with rice productivity which is contrary to the study of Tiwasing *et al* (2018). Most fertilizer with high subsidization are political distributed which doesn't get to the hands of real farmers, while the few opportune; do received it lately in

Table 2: Regression Results

Variable	Model 1	Model 2	Model 3	Robust
Age		1.0432*** (0.1574)		0.3438*** (0.0886)
Gender		0.8489*** (0.1389)		0.1757** (0.0829)
Education		0.1138 (0.0736)		0.0233 (0.0411)
Occupation		-0.4226*** (0.1105)		-0.0626 (0.0621)
Access to Credit	0.4699*** (0.0718)		0.1889*** (0.0359)	0.4674*** (0.0725)
Land Size	0.1683*** (0.0278)		0.0837*** (0.0157)	0.1483*** (0.0260)
Fertilizer	0.0086 (0.0078)		-0.0216*** (0.0035)	0.0091 (0.0075)
Labour	0.0621*** (0.0108)		0.0111* (0.0059)	0.06187*** (0.0106)
Seed	0.4614*** (0.0466)		0.0642*** (0.0230)	0.4305*** (0.0443)
Technology Cost	0.8576*** (0.0859)		0.2562*** (0.0509)	0.7795*** (0.0841)

Notes: Robust standard errors are in parentheses, P values: significance *10%; **5%; ***1%

Source: Field Survey 2019

some cases during the peak of harvest. At this period applying the fertilizer might not be necessary to the plantation, because they have passed the stage of nutrient management. Labour



service is highly significant and it influence productivity by 0.06, indicating it relevance to the process as obtained by Akwa-seky (2013). Many farmers particularly those with small hectares of land employ more service of labourer due to their persistence use of crude implements in rice farming. The presence of research institute in the vicinity has contributed to the use of improved rice seeds. This contribute 0.46 to rice productivity and significant at 1% level of significance. The use of cost incurred in technology application in rice farming process is positive and significant at 1%, with influence value of 0.86. Costs are mostly incurred by those farmers that are into large scale production especially in land clearing and water management.

The second model was regressed on farmers' characteristics, and the result shows age and gender to be positive and significant, that an increase in farmers' age increases rice productivity by 1.04, this may be attributed to the fact that more experience is gained in the production of rice as the year passes by and being a male rice farmer increase rice production by 0.85, indicating that higher productivity can be influenced by the gender of the farmer, given the strength and ample time dedication mostly attributed to male rice farmers compare to their counterpart. Majority of farmers that engage in large scale production are aged with experience of acquiring some land through inheritance, with few of them being female farmers. Education is positive but not significant to rice productivity, indicating that most of them have acquired some level of elementary education, which has contributed to their some level of literacy in rice production. Occupation on the other hand is negative and significant at 1% level, suggesting that being a skilled worker makes one not to be full engaged in rice farming. A lot of skilled workers do have little commitment in agricultural farming, because majority of them are usually busy with their primary assignment. However, the result in model 3 shows the interaction of education on independent variables in relation to rice productivity. Given the level of education from the result, access to credit will increase rice productivity by 0.19. With certain obtainable level of education, many farmers within the category prefer not to access the credit due to some conditionality attached to the credit facilities. Land size being one of the important factors in rice production has a little increase of 0.08 on productivity when farmers level of educational is considered. Majority of farmers with high qualification are associated with the farming because of the culture and norms of the area, where most of them farm on inherited land. Fertilizer value is negative and significant with a decrease value of -0.02, evidence shows that most of the farmers hardly utilize the fertilizer for it purpose. Most of the farmers obtain it at subsidize from government and decide to resale to make profit rather than using it in the farm. Apart from that some farmers do not believe in increasing their productivity with the use of fertilizers, as it is seen as reducing the quality of their rice, instead they stick to the crude way of improving their lands i.e. bush fallowing and the use of local manure. Labour, seed and technology cost are positive and significant when farmers' education is considered. The cost of this inputs are subject to farmers' financial capability, which enable them to curtail unnecessary financial expenditure. In other to validate the regression analysis, a robust analysis was carried to confirm the earlier result in model 1, 2, and 3. The result shows age and gender to be significant as earlier obtained in model 2. Education is not significant as seen in model 2, but occupation is negative and not significant which differs from the previous result in model 2. The robust result for access to credit, land size labour, seed and technological cost remain positive and significant, when compared to model 1 and 3. But in the case of fertilizer, robust result differs with model 3 and the same with model 1.



5. Conclusion and Recommendation

In determining how micro credit with other inputs influences farmers productivity in rice production, this study concludes that credit access enhance farmers productivity especially when the farmers are granted the amount they requested from micro banks. Although a lot of farmers are faced with the problem of accessibility because most microfinance banks are located in Local Government headquarters, others sees collateral used in mortgaging some of these loans as an obstacle, while many microfinance banks are comfortable in dealing with farmers in a cooperative manner to avoid remittance problem. This made it difficult for many of them to access loans in isolation, whereas other inputs such as land size, labour, seeds and cost on technology also influence rice productivity if they are effectively utilized. However, the presence of NCRI Baddegi has led to the used of improved seeds by the farmers with adequate extension services. Fertilizer doesn't count because every farmer do have access to it as it doesn't matter whether a farmer has small or large farm size. Most farmers obtained it with subsidy and resell at any amount.

This study therefore recommends a more friendly and acceptable mode of credit access with ease. Farmers can equally be given support not necessary in financial terms but in support through further inputs, so as to enhance farmers productivity. Easy access has to be created by the banks by engaging financial agents in order to curb the distance between them and farmers. The distribution of fertilizers and improved seeds should be base on size of the land owned by each farmer, in order to avoid concentration of more of it in the hands of those with small lands.

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