INFLUENCE OF SOCIO-ECONOMIC ATTRIBUTES ON LOANS UTILIZATION CAPACITY OF SMALL HOLDER CROP FARMERS IN EKITI STATE, NIGERIA.

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ABSTRACT

Inadequate credit supply to agriculture has been identified as the main drawback to sustainable agricultural development in Nigeria. In response to this, most States in Nigeria have put in place, public credit schemes in an attempt to reverse the declining fortunes of agriculture. This study was undertaken to analyze the influence of farmers' socio-economic attributes on public credit utilization in agricultural investments. The case study relied on data from Ekiti State (south-west, Nigeria) Multipurpose Credit Agency (ESMA) scheme. Data on socio-economic characteristics, credit received, credit used and allocation were collected from a total of 135 randomly selected small holder beneficiaries of public agricultural credit. Tobit regression model was used to analyze the influence of farmers' socio-economic attributes on credit utilization. The results revealed that 81.5% of beneficiaries were males with mean age of 48 years and an average of 25 years farming experience. Also, the mean farm size cultivated and credit received were 1.5ha and ₦113,037.04 respectively. The Tobit regression model showed that male ($p<0.05$) and married farmers ($p<0.01$) have greater likelihood to divert agricultural loans for non-agricultural use. However, larger farm sizes (above 1.5ha) ($p<0.01$) as well as farm ($p<0.01$) and non-farm income ($p<0.05$) were significant determinants of borrowers' likelihood to expend borrowed capital on farm expenses. A key recommendation is that to encourage effective utilization of loans and reduce defaults, public loans' agencies, working with small holder farmers, should adopt cooperative disbursement and target economic farmers; those living above subsistence.

Key words: Ekiti, loan utilization, smallholder farmers, Tobit regression, multipurpose credit agency.

INTRODUCTION

Agricultural transformation in Nigeria and Africa in general is inherently linked to small holders' intensification and productivity. Agriculture contributes to the nation's economy through the provision of food, employment, raw materials for agro-allied industries, contribution to the gross domestic product (GDP) and generation of foreign exchange (CBN, 2010). As an agrarian economy, over 65% of the economically active population is employed in agricultural related businesses. However, the agricultural sector witnessed a decline in productivity and its contribution to GDP when the government shifted its focus from agriculture to crude oil and over the years, there have been shortages in food supply and high food

prices in the country (Effiong and Eze, 2010). This has forced the country to continue to rely on food imports to meet the deficit arising from declining domestic production. This is in spite of majority of the population (60%) that live in the rural areas and are engaged in small scale agricultural production (Okuneye, 2003). Their continued reliance on traditional inputs widens the gap in supply in the face of increasing demand from increasing population.

Small holder (less than 2 ha) farmers dominate the agricultural production landscape in the country and accounts for over 90% of agricultural output (Mgbenka and Mbah, 2016). These resource poor farmers use little or no purchased productivity enhancing inputs. Agricultural credit has been identified as an important instrument not only for encouraging agricultural development but also for enhancing production efficiency, effective realignment and reallocation of scarce national resources (Ojiako and Ogbukwa, 2012). Oladeebo and Oladeebo (2008) emphasized that availability of adequate and timely release of credit will cause an expansion in the scope of farm operation and adoption of new technology as farmers would be motivated to purchase and use improved inputs which are not hitherto available on the farm. Also, adequate supply of credit coupled with good production management practices will help in achieving self-sufficiency in the production of food and raw materials for agro-allied industries (Orebiyi, 2004). Agriculture is the store house of essential resources for economic development and there is linear relationship between the two. As agriculture develops, it releases resources that are required in the development of other sectors of the economy and positively enhances the economic wellbeing of the people. It would realign available resources among sectors according to their comparative value advantage.

Access to credit has been fingered as a limitation to intensification of production and increased efficiency in the sector. Access to formal credit are most times elusive to small holder farmers because where they are available the borrowing conditions are stringent and so prohibitive to small holder financing. The informal credit sources are limited in the amount borrowed, regularity is unreliable and with high interest rate. Small holder farmers are constrained in attempts to expand size of holding, adopt modern technology, add value to raw produce and access high value markets (Agbonlahor and Enilolobo, 2013). In response to this, agricultural credit is usually given pride of place in public agricultural policy at all levels of government.

Various agricultural credit schemes have been implemented to facilitate small holders' access to formal credit. At the national level, specialized institutions that were created to facilitate credit supply to small scale farmers include the Nigeria Agricultural and Cooperative Bank (NACB) in 1973 which changed severally into Bank of Agriculture (BOA), Community Banks (CB) and Nigerian Agricultural Credit Guarantee Scheme Fund (ACGSF) and Co-operative Societies. Nigerian Agricultural Insurance Scheme was introduced to provide insurance cover to the farmers and financial institutions against loan default that may arise from natural hazards that are threats to crops and

livestock enterprises (Oladeebo and Oladeebo, 2008).

Both direct and indirect approaches have been tried as ways of facilitating access. The agricultural credit guarantee scheme fund (ACGSF) is one of the indirect means to encourage commercial bank lending to agriculture through a guaranteed claims repayment in the occasion of default by borrowers. Public agro-credit and loans' schemes are examples of direct public lending schemes. Though they are formal loan agencies but they are usually operated outside the formal commercial banking system. The scheme allows small holder farmers to access formal credits at special rates that are usually single digits and lower than commercial bank rates. Also, most agro-credit schemes render free advisory services to farmers.

Ekiti State is one of such states in Nigeria that is implementing the agro-credit schemes. The agro-credit scheme was instituted based on the realization of the fact that agricultural production is the mainstay of the State with a population of over 1.8million farm families out of a total population of 3.9million. The state is endowed with a wide expanse of arable land resources, conducive environmental pattern to sustain all-year-round agricultural production and mass of skilled farm labour. Despite the efforts made by the government to rejuvenate the agricultural sector through the establishment of programmes to facilitate farmers' access to credit and essential resources, there has not been much improvement in the production level of the farmers (ESMA Policy Manual, 2012).

The Ekiti State Micro Credit Agency is one of such interventions, established in the year 2007 as the off shoot of two major poverty reduction agencies in the state: The Agricultural Credit Agency and the Consolidated Poverty Reduction Agency. It was later changed to Ekiti State Multipurpose Credit Agency (ESMA) through an amendment to the law in the year 2011. Apart from credit disbursement, the agencies also render support services such as capacity building through training in loan utilization, savings and repayment for the beneficiaries; formation and development of cooperative societies, farmers groups and homogenous marketing associations among others (ESMA Policy Manual, 2012).

With high default rate and increased lending to "political" farmers, the public loan agencies survival is being threatened, while formal credit sources such as commercial and specialized development banks have adopted the 5 Cs of character, capacity, capital, collateral and condition as lending criteria. However, these criteria are not as rigidly followed by public loans agencies such as ESMA. There are widespread calls to introduce the more stringent criteria of character and capacity of borrowers as a screening measure in accessing credits from public loans agencies. It is against this backdrop, that this study was commissioned to understand how small holder farmers' socioeconomic conditions influence their loans utilization capacity in agricultural enterprises. The specific objectives include:

i. to describe the socio-economic characteristics of ESMA loan beneficiaries in Ekiti State.
ii. to determine the factors influencing loan utilization capacity of ESMA loan beneficiaries in Ekiti State.

THEORETICAL FRAMEWORK

The Tobit Model

Tobit model is a member of the class of regression models in which the observed range of the dependent variable is censored in a way (Hayashi, 2000). The censored regression model proposed by James Tobin (1958) is designed to estimate linear relationships between variables when there is either left- or –right- censoring in the dependent variable (also called censoring from below and above, respectively). Censoring from above takes place when cases with a value at or above some threshold, all take on the value of that threshold, so that the true value may be equal to the threshold and it may also be higher. For censoring from below, values that fall at or below some threshold are censored (Olagunju and Adeyemo, 2008).

Tobin's idea was to modify the likelihood function so that it reflects the unequal sampling probability for each observation depending on if the latent variable falls above or below the determined threshold (Kennedy, 2003). In Tobin's original case, for a sample that was censored from below for zero, the sampling probability for each non-limit observation is the height of the appropriate density function. For any limit observation, it is the cumulative density, that is, the integral below zero of the appropriate density function. Therefore, the Tobit likelihood function can be said to be a mixture of densities and cumulative densities (Bierens, 2004).

In a probit model, the variable of theoretical interest, y^*, is unobserved; what is observed is a dummy variable, y, which takes on a value of 1 if, y_i^* is greater than 0, and 0 if otherwise. In contrast, Splett *et al*. (1994) devised the Tobit (Tobin's Probit) or censored normal regression model for situations in which y is observed for values greater than 0 but it is not observed (that is censored) for values of zero or less. The model assumes that there is a latent (observable) variable, y_i^*. This variable linearly depends on x_i through a parameter vector β which determines the relationship between the independent variable x_i and the latent variable y_i^*. Furthermore, there is a normally distributed error term μ_i to capture random influences on this relationship. The observable variable y_i is defined to be equal to the latent variable whenever the latent variable is above zero and zero otherwise.

The standard Tobit model is defined as:

$$y_i^* = \beta x_i + \mu_i \qquad \mu_i \sim N(0, \sigma^2) \ldots\ldots (1)$$
$$y_i = y_i^* \qquad \text{if } y_i^* \geq 0$$
$$y_i = 0 \qquad \text{if } y_i^* < 0$$

Where y_i^* is the latent dependent variable, y_i is the observed dependent variable, x_i is the vector of independent variables, β is the vector of coefficients, and μ_i is assumed to be independently normally distributed: $\mu_i \sim N(0, \sigma^2)$ and therefore: $y_i \sim N(x_i\beta, \sigma^2)$.

EMPIRICAL REVIEW

Loan utilization capacity of farmers has been variously investigated and reported in literature. Different analytical techniques had been employed by analysts to explain the effects of certain explanatory variables on loan repayment and utilization capacity of borrowers or farmers of public credit schemes. Included among the techniques was the Ordinary Least Square (OLS) regression techniques (Afolabi, 2010; Oladeebo and Oladeebo, 2008; Oke et al., 2007), the Logit/Probit analysis (Awunyo-Vitor, 2012; Kohansal and Mansoori, 2009; Roslan and Karim, 2009) and the Tobit

analysis (Olagunju and Adeyemo, 2008; Gebeyehu, 2002).

Afolabi (2010) used the OLS regression technique in his study of small-scale farmers of Oyo State, Nigeria and found that borrower's farming experiences and gross farm income had positive influence on loan repayment while family size and non-farm expenses had negative influence. Also, Abdelateif and Sayed (2015) in their study on determinants of loan utilization among small farmers in Sudan found that only 18% out of those who obtained loans used their loans for non-agricultural activities. They used bivariate probit model to determine factors influencing loan utilization and repayment in the study area. Out of the variables considered, cost of application fees and locality of the area positively influenced loan utilization. On the other hand, value of assets, frequency of repayment period, expected punishment as well as group lending collateral negatively influenced loan utilization for agricultural purposes.

MATERIALS AND METHODS

The study was carried out in Ekiti State. It is located in the south-western part of Nigeria with 16 Local Government Areas. It is bound to the West by Osun State, to the South by Ondo State, to the North by Kwara State and to the East by Kogi State. It is located between longitudes 40°51' and 50°451' East of the Greenwich Meridian and latitudes 70°151' and 80°51' North of the Equator. The total land area of the state is about 6,353 km2 with a population of about 3,930,212 (NPC, 2010), of which more than 60 percent of her population reside in rural areas (Adesina, 2008). The state is characterized by heavy rainfall with a tropical climate feature. The rainy season is from April to October while the dry season starts from November to March. The state is predominantly agrarian and most of the inhabitants are farmers who engage primarily in the production of food crops such as yam, cassava, maize, rice and vegetables at subsistence level. They are also involved in the production of cash crops such as cocoa which is often intercropped with kolanut, plantain and banana.

A Multi-stage random sampling technique was used for this study to select the beneficiaries that provided the requisite data. The first stage involved the random selection of two zones (Ekiti Central and Ekiti South) out of the three operational zones of the state credit agency. The second stage involved a random selection of two local governments in each of these zones which amounted to about 40 percent of the local governments in each zone selected. At the third stage, ten percent of the beneficiaries in each of these local governments were randomly selected. This makes a total of 136 respondents that were used for the study. However, out of the 136 questionnaires administered, only 135 questionnaires were valid for this study. The summary of the sampling procedure is presented in Table 1.

TABLE 1: DISTRIBUTION OF RESPONDENTS.

Total Number of Zones	Number of zones selected (67%)	Zones selected	Number of LGA in each zone	Number of LGA selected	LGA selected	Total Number of Loan Beneficiaries in each LGA	Number of Loan Beneficiaries selected in each LGA (10%)
3	2	Ekiti Central	5	2	Ado	510	51
					Ekiti West	240	24
		Ekiti South	6	2	Ikere	420	42
					Ekiti South West	190	19
Total			**11**	**4**		**1360**	**136**

Data collected were analyzed using both descriptive statistics and Tobit Regression model. While the descriptive statistics was used in summarizing the data, the Tobit regression was used to ascertain the socio-economic correlates of loans utilization among small holder farmers.

The implicit form of the Tobit model is as represented below:

$$LU = \beta + \alpha_1X_1 + \alpha_2X_2 + \alpha_3X_3 + \alpha_4X_4 + \alpha_5X_5 + .. + \alpha_{10}X_{10} + \mu_i \quad \ldots\ldots\ldots\ldots\ldots (2)$$

Where:

LU = Loan utilization = Proportion of the total loan obtained that was used for agricultural production.

X_1-X_{10} = Variables hypothesized to influence loan utilization

μ_i = Error term (which is assumed to have zero mean and constant variance (Gebeyehu, 2002).

Table 2 is the variables definition and their measurement unit as used in the estimation. The *a priori* expectations were stated with reference to economic theories and previous works. The mean value is a reflection of the central tendencies of the variable with reference to the sample characteristics.

TABLE 2: OPERATIONALIZATION AND SUMMARY STATISTICS OF VARIABLES.

Variable	Descriptions	Measurement	Apriori expectations	Mean
X_1	Gender of beneficiary	Male/female	+/-	0.81
X_2	Marital status	married=1, otherwise =0	+	0.84
X_3	Age of beneficiary	Years	+/-	48.29
X_4	Household size	Number	+/-	7.31
X_5	Education	Years of Schooling	+	11.33
X_6	Years of farming experience	Years	+	24.93
X_7	Years of using farm credit	Years	+	11.01
X_8	Farm size cultivated	Hectares	+	1.5
X_9	Farm Income	Naira/Hectare	+	179,112.59
X_{10}	Other income	Naira/Month	+	12,551.803
LU	Loan utilization	Proportion		0.79

Source: Author's compilation

RESULTS AND DISCUSSION

Descriptive Statistics

Descriptive analysis of the data found that majority (81.5%) of the loan beneficiaries were males (Table 3). This finding may not be surprising because the rigour of farming may make it too tasking for a lot of women. However, a higher proportion female would be found in activities that add more value to farm produce such as harvesting, storage, processing and marketing. This finding agrees with that of Gebeyehu (2002) who reported 80.8 % of the loan beneficiaries in Kuyu, Ethiopia to be male. The average age of the beneficiaries was 48 years (Table 3). This result conforms to the findings of Oladeebo and Oladeebo (2008) where the average age of the beneficiaries was 47 years thereby implying that the farmers are in their productive age and as such there is expectation that they will be able to utilize the loans obtained effectively through the adoption of new and improved production technology.

Result of analysis further revealed that 79.3% of the beneficiaries were married while 11.1% were single. Also, 5.2% and 4.4% of the beneficiaries were divorced and widowed respectively. The high percentage of the married beneficiaries is expected to have a positive effect on the utilization of loans obtained due to the emotional, physical and mental stability that marriages are supposed to enhance. The average household size of 7 (Table 3) indicates a large household size which could have either positive or negative effect on loan utilization. The large households may have access to increased family labour which they could fully utilize on the farm for increased level of production. On the other hand, a large household size may cause the loan beneficiary to divert all or part of the loan obtained to attend to recurring family issues such as school fees, housing, clothing, thereby decreasing the effective utilization of the loan for the intended purpose (Orebiyi, 2004).

Years of formal education was proxied as educational attainment of the beneficiaries. The result shows an average of 11 years in formal education which is indicative that most of the beneficiaries have post junior secondary education. Education is expected to positively influence the farmers' decision in adopting new and improved production practices thereby enhancing their ability to utilize their loans effectively. Education would facilitate and reduce application processing time, comprehension of instructional manuals on improved production technologies and application of efficient production management practices on the farm. The study found the average farm size operated by the farmers to be 1.5 ha (Table 3). This implies that most of the beneficiaries were operating on a small scale according to Ohajianya and Onyenweaku (2002) classification. It is expected that the larger the farm size the more obliged the farmer will be to utilize the loan obtained to boost his production level. The average years of farming experience was obtained as 25 years (Table 3). This implies that a large proportion of the beneficiaries are not novice to the act of farming business, they are well acquainted to the intricacy and the environments of farming. Farmers' years of farming experience is expected to significantly influence the utilization of loans obtained by the beneficiaries (Olagunju and Adeyemo, 2008).

The analysis further revealed that the sampled farmers have been using credit in their farm businesses for an average of 11

years (Table 3). Past experiences are so important in management decisions and business operations and it is expected that farmers with more years of experience in using credit will exhibit better management of the funds thus efficiently utilizing the loans obtained (Oladeebo and Oladeebo, 2008). The average amount of loan applied for was ₦178,518.52 while the average amount of loan received by the beneficiaries was ₦113,037.04. This shows about 62% short fall and a reflection of credit rationing practices by public loans administrators.

TABLE 3: DESCRIPTIVE STATISTICS OF VARIABLES.

Variable	Mean/Mode	Percentage/SD
Male	110	81.5
Married	107	79.3
Age (Years)	48.29	±11.613
Education (Years)	11.33	±4.583
Farm Size (Ha)	1.5	±1.122
Farming Experience (Years)	24.93	±12.43
Farming Experience with Credit (Years)	11.01	±6.964
Household Size	7	±4.38
Loan Applied for (₦)	178,518.52	84,451.863
Loan Received (₦)	113,037.04	63,695.569

Source: Field Survey, 2013.

Tobit Regression Estimates of ESMA Loan Utilization.

The parameters estimated through the Tobit Regression model are shown in Table 4. Only four variables (gender of the beneficiary, marital status, farm size and other income of the respondent) were found to be statistically significant.

Gender of the beneficiary was found to be negative and significant at $p<0.05$. This implies that the female beneficiaries were more prudent in their utilization of loan obtained than their male counterparts. This could be due to the peculiarities in the nature of both genders because it is generally believed that women are better managers of money than men as can be seen in this study. Also, another justification for this result is that males generally are saddled with more responsibilities than their female counterparts, especially in Nigeria regardless of their marital status. They are obligated to their parents, siblings and other extended family members and as their dependants increase, they may be forced to divert the loan obtained to meet the needs of their dependants (Gebeyehu, 2002).

Marital status of the beneficiary was also found to have negative effect on loan utilization at 1% significance level. This result does not conform to the *a priori* expectation. However, the justification for this could be that married beneficiaries have larger households than single or divorced or widowed beneficiaries and so have more obligations to meet than other beneficiaries. In addition, farm size was found to be positive and significant at $p<0.01$. It is expected that the larger the farm size, the larger the amount of loan the farmer would be willing to spend on his farm. This implies that as farm size increases, the farmer becomes more inclined to use the loan obtained to adopt improved technology and production practices and with increase in farm investment, the farmer might devote more

of their time and resources to safeguard their assets. This is in similarity with the findings of Ojiako and Ogbukwa (2012) who found farm size to positively influence repayment capacity through utilization of loans to adopt improved technologies.

In addition, farm income of the beneficiary impacted loan utilization positively at $p<0.01$. It is expected that the higher the income generated from farming activities; a reflection of its economic viability, the more willing the farmer is to expend loans obtained on farm activity financing. Furthermore, income from non-farm activities was also found to impact positively on loan utilization at 10% level of significance. Income from other activities is expected to boost the level of income of the loan beneficiary and as such he or she may not be tempted to divert the loan to meet other obligations. This is corroborated by the findings of Agbonlahor *et al*. (2016) who revealed that small holder farmers cross-subsidizes financing farm activities with income from non-farm activities.

TABLE 4: FACTORS INFLUENCING PUBLIC LOAN UTILIZATION

Variable	Coefficient	Standard Error	t- ratio
Gender of beneficiary	-0.7495**	0.3354	-2.2345
Marital status	-0.6857***	0.2321	-2.9540
Age of beneficiary	-0.0040	0.0138	0.0261
Household size	-0.0544	0.0690	-0.7883
Highest level of education	-0.0184	0.0263	-0.6980
Years of farming experience	-0.0040	0.0132	-0.3042
Years of using farm credit	0.0076	0.0198	-0.3832
Farm size cultivated	0.1805***	0.0506	3.5695
Farm Income	0.8115***	0.3081	2.6337
Other Income	0.0570**	0.0269	2.1205
Constant	4.4358	0.6362	6.9723
Log-Likelihood function	-52.004461		
Mean Square Error	0.032833355		

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

Source: Field Survey, 2013.

CONCLUSION AND RECOMMENDATION

The main objective of the study is to examine the influence of socio-economic attributes of small holder crop farmers on loans utilization. The socio-economic characteristics of the sampled loan beneficiaries revealed that majority of them were males, married and in their productive age. Most of them operated on a small scale with considerable experience in the use of credit in their farming activities.

The study obtained that the significant determinants of loan utilization were gender of beneficiary, marital status, farm size, farm income and other income. It is therefore recommended that ESMA should rank highly farmers farm size, farm income and income from other sources. Female farmers should also be given more consideration in issuing out loans to farmers by the credit agency.

The study found that these socio-economic attributes of small holder farmers influence their capacity to utilize loan in agricultural ventures through the proportion of the loan committed to farming with a probable application in adoption of new and improved technology which will help to boost farm production and supplies in the market and allow the state reclaim its status

as the toast of agricultural production in the country. The recommendation is to target economically viable farmers in public loans disbursement as this consideration will enhance the sustainability of public loans board and stimulate needed growth in small holder sector. Also, farmers who do not rely solely on agriculture as source of income should be given consideration in public loans disbursement.

Furthermore, single farmers especially women should be given preference in public loans disbursement as they are likely to be more committed than their male counterparts in utilizing the loans obtained for agricultural purposes.

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