EXAMINATION OF ACQUISITION AND UTILIZATION OF CREDITS BY MAIZE FARMERS IN DELTA STATE, NIGERIA

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ABSTRACT: *The study examined the acquisition and utilization of credits by maize farmers in Delta State, Nigeria. A simple random selection technique, on the whole, 210 respondents were selected and utilized for the study. The results indicate that male and female farmers were all actively involved in the production of maize in the study area, with male and female farmers accounting for 58.1% and 41.9 % respectively. It was further observed that that all the maize farmers practiced one type of cropping system or the other, with the respondents distributed as follows; sole cropping (33.3%), mixed cropping (62.9 %) and other cropping systems (3.8%). Majority of farmers engaged in mixed cropping because it reduces risk of revenue loss in the event of crop failure. Different varieties of maize were grown by the farmers, with 44.8% planting local varieties, 47.1% improved variety and only 8.1% mixed variety. The study found that only 43.81% of all respondents had access to credits associations mostly from Isusu/Esusu. In term of total volume of credit sourced, cooperative societies ranked highest contributions. On the determinants of farmers' decision to access and utilize production credit, five of the eight parameters included in the model were significant, these being age, farm size, farming experience, membership of farmers association and distance to nearest credit center. The percentage loan repayment rate was a mean of 80%. The t - test statistics revealed that maize farmers that utilized credit produced significantly higher output per hectare (1.740 tonnes/ha) (p < 0.01) than farmers that had no access to credit (0.914 tonnes/ha). The findings also indicate that the farmer encountered number of problems, with the major constraint being high cost of production (55.2%). The main costs of production that really contributed to this high costs were labour, fertilizers and transportation. Next in weight of the constraints was non availability of improved maize seed (23.8%). It was recommended that formal credit outlets should be established within close distance to farmers, to encourage credit and acquisition utilization and time repayment.*

KEYWORDS: acquisition, credits, maize farmers, utilization

INTRODUCTION

Agriculture has been dominated by small-scale farmers who produce large part of the agricultural output. Improved variety of crops and animals has helped to meet the ever increasing demand for farm production or simply put food (IITA 1992). Maize is as a staple food crop of great importance in Sub-Saharan Africa. Maize is one of the staple foods that can remedy food insecurity in the tropics (FAO, 2003).

Agriculture in the pre-historic periods sustained humanity over the years with little or no significant attachment to capital for production (Anthony Ezedinma and Onazi, 1995). However in the contemporary period, lack of capital is regarded as one of the major constraints in establishing new farms expanding existing ones and modernizing agriculture value chain (Nnadozie and Uzodigwe, 2002). In view of this, the need to provide credit to farmers is warranted. Its significance in fostering agricultural development and improving efficiency in the production process cannot be overemphasized. Maize is among the crops that possess the potentials for the attainment of food security, improved income and general welfare. In Nigeria, it is the third most important cereal crop after sorghum and millet (Ojo, 2000). Maize has been in the diet of Nigerians for centuries. Its production was initially on subsistence level and has gradually become commercialized in recent time. Hence, maize has become a commercial crop on which many agro-based industries depend on as raw materials.

Every part of maize plant has an economic value: the grain, leaves, stalk, cob and tassel can all be used to produce a large variety of foods and non-food products. In Nigeria, maize cultivation, harvesting, shelling, processing and marketing provide employment and source of income to a large proportion of the population (Adeleke *et al.,* 2008). In the last two decades, Nigeria has been largely self-sufficient in maize cultivation. In the last couple of years, production rate has increased when compared to consumption indicating exportable surplus. Historical trends have suggested that the majority of increased maize production in Nigeria reflects an expansion in land under its cultivation and this is attributed to availability of credit.

Currently, Nigeria's yield per hectare remains lower than what the world average was in the 1960's (1.9 tons/ha). It ranged between 1.63 and 1.76 tons per hectare between 2004 and 2007, much lower than the world average which has ranged between 4.88 and 4.93 tons per hectares for the same period (USDA, 2008). This shows significant room for the improvement of maize production in Nigeria which is necessary if the newly developing trend of exportable surplus is to be sustained and expanded. The land area under maize increased at about 2,800 hectare per year from 1982-2002. Thus areas cultivated to maize decrease as fertilizer subsidies are withdrawn. The estimated average annual growth rate in maize production over the last five years was 5.46% which is about twice the projected 3.2% needed to meet our demands (Shaibu, Aliya and Bakshi, 1997).

Despite the increase in production, the demand for maize is higher even than the target set for self-sufficiency. In order for Nigeria to be self-sufficient in maize production, it must produce enough for its consumption and have surplus for export. To this end, the Federal Government approved the doubling of maize production from 4.5m tons to 9.0m metric tons by 2007. To satisfy maize production demand, Nigeria needs to produce a minimum output of 10m tons annually (Ahmed, 1996).The doubling maize committee estimates a total of 11.3m tons annually to meet the demands of human consumption (1 metric tonnes), livestock industry (Smetric tonnes), industrial use (2metric tonnes), national food reserve (0.1 metric tonnes) and export to neighbouring countries (0.2metric tonnes) (Anon. 2005). Crop production and in particular maize produce been dominated by mall scale farmers, who by their characteristics low level of farm income, have low saving capacity.

Credit has assumed a dominant role in agricultural finance in the agricultural sector and has significantly influenced the rate at which farmers adopt innovation, increase farm output and returns on investment

(Belshaw, 1999). Credit is the money or financial aspect of capital. It includes money, cash, bank overdraft or items of land which can be classified as long, medium and short term credit. Ijere (1998) maintained that the role of credit should be to improve the economic well-being of the rural population, to promote development generally and to increase agricultural output. Credit is equally needed by farmers to expand their farm size, Ijire more labour, to supplement the limited and fixed supply of family labour. The usefulness of any agricultural credit programme depends on availability of funds and proper utilization by the intended beneficiaries. In other words, accessibility to credit without good management by beneficiaries cannot guarantee the expected improvement in farmer's food production level and income (Bitrus 1981, Odoemenem and Obinne (2010). The main source of agricultural credits to farmers in the rural areas includes loan from neighbours, produce buyers, money lenders and cooperative societies. The demand for credit is high among all categories of Nigerian farmers. The importance of credit lies in removing the financial constraints faced by farmers, thereby increasing the likelihood of their adoption of new technologies which often involves additional expenditure on improved inputs and chemicals.

The problems in agricultural credit in Nigeria include source, availability and use. There is inadequate or complete absence of financial projection and planning, high level of illiteracy and lack of relevant information as to how to obtain credit, where to obtain credit and how to use credit.

What are the issues with the acquisition and utilization of credits by maize farmers? Agricultural credit is expected to play a vital role in agricultural development of the Agricultural sector in Nigeria (CBN,2007). It determines access to all the resources on which farmers depend (Shepherd, 1979). In most developing countries, agricultural credit is considered an important factor to increased agricultural production and rural development because it enhances productivity and promotes standard of living by breaking the vicious cycle of poverty of small scale farmers (Adebayo and Adeola, 2008).

It was often said that credit institutions have a major role to play in enhancing food production (Adeyemo and Fakorede (1989); Ijere (1993). Agricultural credits are essential in Agricultural development in the sense that when we want farmers to adopt new methods such as the use of improve seeds and higher producing livestock, simple hand operated machines, fertilizers and other agro-chemicals, there must be credit.

Roe (1977) asserted that production credit will permit farmers to buy improved production inputs that they would otherwise, have been unable to procure. Credit departments of the State Ministries of Agriculture, Agricultural cooperative societies, Commercial and Merchant Banks (NACB) operate as lending agencies through which Agricultural credits are expected to reach the small scale farmers (Aku, 1986). It is believed that ability to utilize credit is related to socio-economic characteristics of the farmers. Collateral and interest charges are among the major problems of maize farmers faced in Delta state. The major problem of this study revolves around these research questions: How accessible are the various sources of credit to maize farmers? If they are accessible to these farmers, were there differential level of patronage and volumes of credits accessed? What are the variables that influence farmer's decision to use production credit? Are the accessed credit actually used for maize production? Are the farmers able to repay their loans and if so or otherwise what determines their level of loan repayment? Did the use of production credit impact positively on the output of the maize farmers?

Objectives of the Study

The broad objective of the study is to examine acquisition and utilization of credits by maize farmers in Delta State. The specific objectives are to;

(i)   examine the socio-economic characteristics of maize farmers.

(ii)   describe the farm characteristics of the respondents in the study area.

(iii)   determine the factors that influence maize farmers' decision to utilize credit.

(iv)   identify the sources of credit accessed by the farmers.

(v)   determine the volume of credit accessed by maize farmers in the study area.

(vi)   ascertain the uses to which accessed credit were put.

(vii)   assess the loan repayment performance of maize farmers.

(viii) compare maize output between farmers who utilized credit and those who did not.

Research Hypotheses

In order to achieve the specific objectives, the Ho are stated as follows:

Ho_1:   The socio-economic characteristics of the maize farmers do not have significant effect on credit utilization.

Ho_2:   The socio-economic characteristics of the maize farmers, volume of credit utilized interest rate and profitability of the maize production do not have significant effect on their loan repayment performance.

Ho_3:   There is no significant different in maize output per hectare between farmers who utilize credit and those who did not.

METHODOLOGY

The study area is Delta State. The state is blessed with fertile soil and favourable climate which makes it an important producer of food and cash crops. Delta state is an oil producing state of Nigeria situated in the region known as the Niger Delta, south-south geopolitical zone with population of 4,098,291 (Federal Republic of Nigeria, Official Gazette, 2007).

The state presently covers a landmass of about 18,050km of which more than 60% is land. The state has approximately between longitude 6°45' East and latitude and 5° 12' North. It is bounded in the North by Edo state, the East by Anambra state, and South-East by Bayelsa state and on the Southern flank is the birth of Benin, which covers about 160km of the State's coastline. The state has a wide coastal belt inter-lace with rivulets and streams, which form part of the Niger-Delta.

Sampling Procedure and Sample Size
Multistage sampling procedure was used to draw samples for the study. Two Local Government

Areas (LGAs) was randomly selected from each of the three Agricultural Zones in the state; Delta North, Delta South and Delta Central. Seven Farming communities were selected from each of the six LGAs earlier selected, to give a total of 42 farming communities. The 210 selected farmers were made up of 92 who used credit and 118 who did not use credit during the production season covered in the study.

Method of Data Collection
Primary (cross sectional) data was used for this study and this was collected through the use of structured questionnaire designed to elicit information from maize farmers on their production activities, their acquisition and utilization of credits, their socio-economic
variables.

Methods of Data Analysis
Generally, data was summarized using descriptive statistics such as frequency counts and percentages. Objective I, II and IV were achieved using frequency distribution and percentages. Objective III was achieved using loan utilization model specified as Logit regression model. Logit regression model is a binary choice technique, which allows for the prediction of effects of the farmers' socio-economic characteristics on their decision to utilize a production unit (credit). This model was employed by (Giroh, Abubakar, Balogun, Wuranti, Ogbebor (2006) in their study on farmer's adoption of improved techniques. It is mathematically represented as follows:

$$Z = a + \beta_1 X_1 + + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 + \beta_8 + u_1 \quad \textbf{\textit{Eq. 1,}}$$

where;
Z_i = credit utilization decision by maize farmers. (1 if utilized and 0 otherwise)
a = intercept/constant
X_1 = age a farmer (in years)
X_2 = level of education (measured in years spent in school)
X_3 = household size (measured as number of people in the household)
X_4 = farms size in hectares (hectare)
X_5 = farming experience (years)
X_6 = profitability of maize output (N)
X_7 = Membership of farmers association (Dummy)
X_8 = Distance to the nearest farm credit centre (km)
u_1 = term error
Objective V was achieved by using loan repayment models specified as follows:
Average Loan Repayment Rate (ALR)

$$ALR = \frac{\sum \frac{(AD_i - AO_i)}{(AD_i)} * 100}{n} \quad \textbf{Eq.2}$$

Where
ALR = Averag
AD_i = Amount to loan due from a given source
AO_i = Amount of loan due but still outstanding from a given source as at the time of assessment.

n = number of sources by which the farmer obtain credits

Empirical Loan Repayment Regression Model
The choice of the explanatory variables considered for inclusion in the empirical loan repayment model was guided by theory evidence from past studies on loan repayment behaviours, and hypothesized relationships with the dependent variable. The variables considered for inclusion was of five categories: borrower-specific characteristics, farm-specific attributes, lender specific attributes, loan-specific characteristics and institutionally determined variables. The variables were screened to ensure that's only the plausible ones are retained for inclusion in the empirical model. Regression for loan repayment rate

$$ALR = (X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9) \qquad \textbf{Eq. 3}$$

X_1 = Average Interest rate paid for loans (%)
X_2 = Education (measured in years spent in school)
X_3 = Volume of credit accessed
X_4 = Household size (number of people in the household)
X_5 = Farming experience
X_5 = Profitability of maize output (N)
X_6 = Age of farmers (in years)
X_7 = Farm size (in hectares)
X_8 = Average duration of credit (years)
X_9 = Debt to equity ratio (%)

This regression analysis was expressed in a four functional form, namely: linear, double log and semi-log and exponential as follows. Linear functional form:

$$ALR = b_0 + b_i X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 + b_8 X_8 + b_9 X_9 + ui$$
Eq.4
Semi-log:

$$ALR = \log b_0 + b_1 \log X_1 + b_2 \log X_2 + b_3 \log X_3 + b_4 \log X_4 + b_5 \log X_5 + b_6 \log X_6 + b_7 \log X_7 + b_g \log X_g + b_9 \log X_9 + J.i \qquad \text{Eq. 5}$$

Exponential functional form:
$$\log ALR = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 + b_8 X_8 + b_9 X_9 + ui \qquad \text{Eq. 6}$$

Double log
$$\text{Log } ALR = \log 2_1 = \log b_0 + b_i \log X_i + b_2 \log X_2 + b_3 \log X_3 + b_4 \log X_4 + b_5 \log X_5 + b_6 \log X_6 + b_7 \log X_7 + b_8 \log X_8 + b_9 \log X_9 + ui \qquad \text{Eq. 7}$$

Out of these four functional forms, the best fit which was used as the head functional form was chosen on the basis of number of variables with significant coefficient, statistics, of conformity with a prior expectation and other statistical and economic criteria. Objective VI was

achieved by comparing the mean maize output per hectare between farmers who utilized and do not utilize credit and Z statistics will be adopted to achieve this objective:

$$Z = \frac{\overline{M}_c - \overline{M} = 0}{\delta_{M_c - M}} \; \text{Eq. 8}$$

$$\delta_{M_c - M} = \sqrt{\frac{\delta_{Mc}^2}{N_c} + \frac{\delta^2}{N}}$$

Me   =   Farmers who utilized credit

M   =   farmers who did not utilized credit
Me   =   Mean of output of those who utilized credit
M   =   Mean of output of those who did not utilize credit.

RESULTS AND DISCUSSION

Table 1 shows that male and female farmers were all actively involved in the production of maize in the study area, with male and female farmers accounting for 58.1% and41.9 % respectively. This shows that male fanners dominated in the maize farming. This result agrees with Adubi (2002) who noted that male farmers are more positioned to go into farming because of the advantage they have over females in acquiring land for farming.

Regarding their marital status, the result of the study shows 21.9%, 54.8%, 3.8% and 19.5% were single, married, divorced and widow or widower respectively. This indicates that married people were more in number than other farmers as they have the tendency to settle down to do farm work. Married people also have advantage of family labour and combining knowledge and resources for better outcome than others. This agree with Onu, (2003) who noted that in farming and acquisition of credit, married people are said to be trust worthy because of the tendency of settling down.

A good number of the farmers had no formal education (29.5%). However, majority of the farmers were educated, made up of those with primary education (7.6%), secondary education (21.4%) and tertiary education was (41.1%). This relatively good level of formal education of the farmers implies that they had more dispositions to take more rational decisions than their counterparts in other farming enterprises.

Table 1: Distribution of respondents by their socioeconomic characteristics

Gender	Frequency	Percentage
Male	122	58.1
Female	88	41.9
Total	210	100.0
Marital status		
Single	46	21.9
Married	115	54.8
Divorced	8	3.8
Widow/ Widower	41	19.8
Total	**210**	**100.0**
Educational Level		
No formal education	62	29.5
Primary education	16	7.6
Secondary education	45	21.4
Tertiary education	87	41.4
Total	**210**	**100.0**

Farm Characteristics
The variables discussed under farm characteristics were sources of farmland type of labour utilized, use of fertilizer, cropping system, crop mixtures and types of maize varieties grown.

Source of Farmland
Table 2 shows the distribution of respondents by their sources of farm lands/The analysis shows that majority of them (51.9%) had theirs by Inheritance, others were by purchase (11.4%), rented (8.6%), community allocation (105%), multiple sources (18.1%). In the study area it is shown that land tenure by inheritance is the main practise whereby only the male offspring has right to acquire family land.
This finding is akin with what obtains in most Nigerian societies where access to farm is mainly by inheritance. This system of land ownership is obviously associated with small farm holdings.

Types of Labour Used
Utilization of labour in the study area was captured by hired labour, family labour, and both family and hired labour. This, as presented in Table 2 indicates the following distributions, hire accounted for (26.7%), family labour accounted for (15.7%) while a combination of family and hired labour account for (57.6%). this finding shows that farmers used a combination of hired and family labour because of the relative cheapness hired labour and the fact that family labour only were not enough to carry out the farm activities. This finding agrees with Masteron. (2007) who reported that maize families employed both labour because every family is not as much as others and labour from family is mostly free or cheap.

Also, hired labour is moderately cheap and farmers can afford it with ease. This has a positive implication for farmer's welfare, sustainability of the enterprise cost minimization in the maize

industry.

Adoption and types of fertilizers used

Table 2 presents an indication whether fertilizer was used or not and the types used by respondents in the study area. The table shows that 74.3% used fertilizer and 25.7% did not use fertilizer. By all implications, fertilizer application is well adopted by the maize farmers in the study area. The high rate of adoption of fertilizer by the farmers is commendable and points to the awareness by the farmers of the benefits of fertilizer application in farming. Fertilizers are necessities for growing maize crops in areas where fertile land are rare. With respect to the types of fertilizer used, the result indicates that about 50% applied inorganic fertilizer, about 19% applied organic fertilizers, while only about 6% used both organic and inorganic fertilizers. The study shows that high number of farmers applied inorganic fertilizer. The findings could also be that, they did not have the experience in using organic fertilizer because hitherto, they had relied on the natural fertility of the soils. The bulkiness of most organic fertilizers could have contributed to their low usage by the farmers.

Cropping System Used

The cropping system adopted by maize fanners in the study area came under focus here as shown in Table 2 observes that all the maize farmers practiced one type of cropping system or the other. The distribution is as follows; sole cropping (33.3%), mixed cropping (62.9 %) and other cropping systems (3.8%). Maize is grown all-round the year and could be done with the help of irrigation system during the dry season. It could be seen in the table that farmers were more engaged in mixed cropping than sole or other cropping systems. Alongside the maize, the farmers plant other crops such as okro, tomatoes, leafy vegetables, melon, cassava, yam, among others.

The adoption of mixed cropping was the prevalent cropping system, the fanners. This is akin with the earlier findings of many authors (Manyong, 1999; Sullivan, 2001; Chukwuji, 2006) who noted that it is common among farmers with limited resources and whose production activities are carried out with hoes, cutlasses and other labour - intensive implements. Also, practice of mixed cropping is an enterprise and income diversification strategies which fetch the farmers stable incomes when they are sold. Also majority of farmers engaged in mixed cropping because it reduces risk of entire loss that is if one enterprise fails the others are leaned on to sustain the farmer's households through all seasons.

The regularity of other crops that were planted together with maize in the study area is given in Table 2. The table shows the following distribution of respondents with respect to other crops planted; melon was (8.1%), yam (30.0%) okra (6.2%) cassava (21.4%), other crops (12.4%), no other crops (21.7%). Yam appears to be the most frequently planted other crop, the reason being that yam is a food generally accepted by everybody, eaten either pounded boiled, fried, flour among other forms.

Type of Maize Varieties Grown by Farmers

Different varieties of maize were grown in the study area as presented in Table 2. It could be seen that 44.8% of the respondents planted local varieties, 47.1% improved variety and only 8.1% mixed variety. The preference for the use of improved variety of maize could be attributed to the high yielding ability and its high demand by their major trading customers in the study area. The available information

indicated that generally, the variety under cultivation in every locality is mostly a function of its demand and yield potentials. This agrees with Orji (2010), who opined that additional increase in maize output can be expected with the development of improved varieties.

Table 2: Distribution of respondents by sources of farmland

Sources of farmland	Frequency	Percentage
Inheritance	109	51.9
Purchase	24	11.4
Rented	15	8.6
Community	21	10
Multiple choice	38	18.1
Total	210	100
Type of farm labour		
Hired	56	26.7
Family	33	15.7
Both hired and family	121	57.6
Total	210	100
Types of fertilizer		
Inorganic	104	49.52
Organic	39	18.57
Both organic and inorganic	13	6.19
None	54	25.71
Total	210	100
Cropping system used		
Sole cropping	70	33.3
Mixed cropping	132	62.9
Other cropping system	8	3.8
Total	210	100
Other crops grown		
Melon	17	8.1
Yam	63	30
Okra	13	6.2
Cassava	45	21.4
Other crops	26	12.4
No other crops	46	21.9
Total	210	100
Maize varieties grown		
Local	94	44.8
Improved	99	47.1
Mixed	17	8.1
Total	**210**	**100**

Sources of credit accessed by the farmers

The distribution of respondents according to their sources of credit is as presented in Table 3. The

table shows that only 43.81% of all respondents had access to production credits for the period under consideration. That means that as many as 56.19% of them did not access credit either as a result of not indicating interest or inability to access credit for their production purposes. Among the sources from which borrowers accessed credit, cooperative societies, rotatory credit associations (Isusu/Esusu) and microcredit schemes were more important in terms of number of borrowers who made use of them. These accounted for 14.29%, 12.85: respectively. Moneylenders and banks among others also contributed to lesser e: pool of credit accessed by the respondents.

Table 3: Distribution of respondents by sources of credit accessed

Sources of credit	Number of farmers	Percentage
None	118	56.19
Cooperatives	30	14.29
Microcredit scheme	19	9.05
Banks credits	3	1.43
Money lenders	7	3.33
Rotatory credit associations	27	12.86
Other sources	6	2.86
Total	210	100.00

From these results, it is obvious that the indigenous credit systems are the readily sources of external finance to smallholder farmers. Proximity and less requirements were the reasons cited by the respondents.

Volume of credit accessed
The volume of credit accessed by respondents who made use of credit in terms of mean values according to the sources are as shown in Table 4. It could be seer table that in term of total volume of credit sourced, cooperative societies, followed by microcredit scheme and distantly, rotatory credit associations made highest contribution external finances to the maize farmers. These contributed about 34%, 27% and 21% credit available to the farmers respectively.

However, in terms of mean amount of credit per beneficiary, bank credit, where c respondents accessed was the highest, with a mean amount of ₦125,780. Distantly following were microcredit schemes and Cooperative societies, where the mean amounts accessed were N64,205 and N52,340 respectively. The overall mean amount of credit accessed across all sources was N49,522.

Table 4: Distribution of respondents according total and mean values of credit by source

Sources of credit	Number of farmers	Total Credit Accessed	Percentage of total loan to borrowers %	Volume of credit (N)
None	118	0	0	0
Cooperatives	30	1570200	34.46	52340
Microcredit scheme	19	1219895	26.78	64205
Banks credits	3	377340	8.28	125780
Money lenders	7	261100	5.73	37300
Rotatory credit associations	27	953640	20.93	35320
Other sources	6	17320	3.82	28970
Total	210	4555995	100.00	49522

These results indicate that while the informal sources of credit scored highly in terms of number of borrowers covered, the formal sources outweighed them when the mean amount of credit accessed becomes the issue. Considering the fact that the informal sources are at home with the smallholder farmers, it will be more productive if the formal sources advance their loans to the farmers through the informal bodies. When this is done, the fears from the lenders of default by the borrowers could be overcome.

Credit Utilisation by Respondents
The respondents who accessed credits indicated a number of uses to which the credit were put. These are as presented in Table 5. The table indicates that the respondents utilised their accessed credits in different ways. Among these uses, payment for hired labour and purchase of agrochemicals were the main purposes for which these farmers sought for credits. These were as indicated by 87% and 76% of the respondents respectively. Worthy of note however, is the fact that as many as about 43% of those who accessed credit indicated using part of it for household consumption purposes. This agrees with what Chukwuji, (1991), Abe, (1981), Ihimodu, (1996),said or opted that the actual use which credit are put by the farmers determines the ability of the farmer to repay. It has been noted that farmers use the credit for a number of purposes other than farming. Abe (1981) stated that the temptation to utilize credits for purpose other than what they were granted results in the farmers pushing themselves into over-expansion, over-trading, extravagant living or even fraudulent or highly speculative ventures. Oladeebo (2008) reported that farmers in most cases use less than 40% of credit obtained for farming activities while the rest go into non-farm engagements. He therefore recommended that in order to encourage farmers to invest more in Agriculture, welfare services such as housing, health, education, etc., should be stepped up by governments in the rural area. Ijere (1975) recommended the integration of credit programmes with extension and farm management programmes.

Table 5: Uses of credits by the maize farmers

Uses of Accessed Credit	No of respondents	Percentage*
Payment for hired labour	80	86.96
Acquisition of farmland	10	10.87
Purchase of Agrochemicals	70	76.09
Purchase of seeds and farm tools	20	21.74
Household consumption	40	43.48
Transport and other purposes	10	10.87

Note: * multiple responses were recorded

Determinants of Maize Farmer's Decision to Utilize Credit

Table 6 shows the analysis of the regression to establish the determinant of maize farmers' decision to utilize production credit.The R^2 in the logit regression model is of secondary importance and the expected signs of the regression co-efficient and their statistical or/practical significance. The Pseudo R^2 as computed here, only tells us the number of correct predictors expressed as a percentage (%) of total numbers of observations. Therefore with a value of 0.86 the estimated model was able to predict 86% correctly, so that only 14% of observed outcome could be accounted for from the model. The estimated functions were evaluated in terms of the magnitude of the coefficient of pseudo multiple determinations R^2, the significance of the coefficients and the magnitude of the standard errors.

The values of the Pseudo R^2 and the Log likelihood (LR) ratio-test thus provide reliable measures of the overall explanatory power of the logit regression model using a one tail test at 1% level of significance. The LR Chi^2 (8) of 202.32, and being greater than the critical value, we reject the null hypothesis (H_0 at $p \le 001$, $\beta x = 0$) which states that the selected socio economic variable have no significant effect in the decision to acquire and utilize production credits by maize farmers and accept the alternate hypothesis.

Table 6: Determinants of Farmers Utilization of Credit

Variables	Std. Error	Coefficients	z-cal	P>z	95% Conf. Interval	
Intercept	5.853	2.337	2.50	0.012*	1.272	10.435
Age	-0.135	0.047	-2.86	0.024*	-0.227	-0.043
Education	0.077	0.075	1.03	0.305	-0.070	0.224
Household size	0.177	0.180	0.98	0.325	-0.176	0.531
Farm size	0.795	0.371	2.14	0.047*	-0.076	1.507
Farming experience	0.218	0.098	2.23	0.026*	0.027	0.409
Profit _	0.000	0.000	0.27	0.784	-7.35E-06	5.55E-06
Membership of association	4.587	1.297	3.54	0.007**	2.044	7.130
Distance to credit centre	-1.326	0.611	-2.17	0.033*	-1.936	-0.716

Note:*Significant at $P < 0.05$ and **= $P < 0.01$

As earlier started in the methodology, this analysis was based on assumption that acquisition and utilization of credit by maize farmers is a function of the socio-economic variables, namely. Age of farmers (X_1), Level of education (X_2), Household size (X_3), Farm size (X_4), Farming experience (X_5) Profitability (X_6), Membership of farmers association (X_7) and distance to the nearest farm credit centre (X_8).

In the estimated logit regression model an attempt was made to identify which of the coefficient of the selected socio-economic variable provided a statistically significant contribution to the specific model. The significance of the parameter estimate was evaluated by means of/-test at 5% and 1% levels of significance.
The estimated model can be explicitly given as;
Z=5.853-0.135Age+0.77Hhs+0.795Fms+0.218Fmx+0.000Prft+4.587-1.326Dis
Where;
Z_1 = credit utilization decision by maize farmers. (1 if utilized and 0 otherwise)
Age = age a farmer (in years)
Edu = level of education (measured in years spent in school)
Hhs = household size (measured as number of people in the household)
Fms = farms size in hectares (hectare)
Fmx = farming experience (years)
Prft = profitability of maize output (N)
Ass = Membership of farmers association (Dummy)
Dur= Distance to the nearest farm credit centre (km)

Five of the eight parameters included in the model were significant. The parameter relate to age (X_1),

farm size (X_4) farming experience (X_5) membership of farmers association (X_7) and distance to nearest credit centre(x_8).

The results obtained further indicate that all the explanatory variables enter the model with the expected signs, thus conforming to the apriori expectations. Therefore the decision is to reject the null hypothesis and accept the alternate hypothesis. Further discussion on the significant variables is as follows.

Age (X_1)
The result shows that age is negatively correlated with likelihoods of credit utilization among maize farmer. Every additional unit on the age of maize farmers reduce the likelihoods of credit utilization by 13.5%. Age was significant ($p < 0.05$) factors on the likelihoods of farmer utilizing credit. This negative effect follow from the established finding that older farmers are more conservative and resistant to changes. Younger farmers are more progressive and visionary than older ones, and therefore more likely to seek for credit in order to modernise and expand their production activities.

Farm size (X_4)
From the result, it is shown that farm size had a significant ($P < 0.05$) positive effect on credit utilization. That is it had positive impact on farmers likelihood to utilize credit. Farm size thus had significant contributory effect on credit utilization and thus is a major socio-economic factor to be considered in deciding on credit utilization among maize farmers. A unit change in farm size will result in 79.5% variation, in credit acquisition and utilization. This positive relationship implies that as farm size increase so also the likelihoods of credit acquisition and utilization among the farmer s will increase. According to *apriori,* this will lead to a higher level of income and production hence higher loan repayment capacity which contradicts the finding of Oladeebo (2008). This is necessary because with increase in farm, the need to employ other farm inputs which the meagre saving of the farming household cannot guarantee arises. In particular, the farmers need to employ labour saving devices and agrochemicals.

Farming experience (X_5)
Farming experience as one of the determinants of utilization of credit by farmers had positive and significant ($P < 0.05$) impact on the likelihood of credit acquisition and utilization. It had 21.8% likelihood impact on credit acquisition and utilization. According to Casky and Kling (1997), this goes to tell that more experienced farmers were more likely to acquire production credits to boost their farming activities than the less experienced ones. Over the years the farmers have learn to act of borrowing farm credits and have established good credit ratings among lenders. With experience, the farmers have learnt ways of overcoming many of the problems that are associated with acquisition and utilisation of credits.

Membership of Farmers Associations (x_7)
This variable also had a significant ($P < 0.01$) effect in the farmers' decision to utilize credit as a unit change in the farmers' membership of farming association increases the log odd ratio of the maize farmers likelihoods of acquisition and utilization of credit facilities by about 45.8%. It could be recalled that membership of farmers associations increases the farmers' access to farm credit, since

one of the motives of joining such associations is the ability to access improved farm inputs, affordable credit being one of such.

Distance to Nearest Credit (X_9)

The coefficient of this variable was significantly ($P < 0.05$) negative and is in line with *apriori* expectation. This implies that a unit increase in the distance to the nearest credit centre decreases the likelihood of farmers accessing farm credit facilities by about 132.6%. This is so probable because of the discouraging effect long distance has on farmers' willingness to employ externally sourced farm inputs. To that effect, the success of any credit scheme lies on its proximity to the intended beneficiaries. The distance compounds the bottlenecks that are associated with acquisition and utilisation of credits especially as it relates to rural farm families many of who are not well educated to enable them withstand the rigorous process involved. This implies that relatively more distant farmers who acquire and utilize credit will be less. This finding agrees with those of Abbot (2006) who had noted that distance is a constraint to credit acquisition and utilization.

Farmers Loan Repayment Performance

Table 7 presents the Percentage distribution of respondents according to their loan repayment by sources accessed. The percentage loan repayment rate ranged between 59% and 92% with a mean of 80% across all sources. Repayment rate was highest among borrowers from moneylenders (92%), followed by those who borrowed from rotatory credit association (89%) and cooperative societies (87%). Although not many borrowed from the moneylenders those who did achieved highest rate of repayment probably due to the rigid approach towards loan recovery. Farmers only access credit from this source as a matter of last resort especially when the high interest rates charged by them are considered.

Table 7: Percentage distribution of respondents according to their loan repayment

Sources of credit	Number of farmers	Total credit accessed	Mean Percentage repayment
Personal savings	118	0	N/A
Cooperatives	30	1570200	87
Microcredit scheme	19	1219895	59
Banks credits	3	377340	70
Money lenders	7	261100	92
Rotatory credit associations	27	953640	89
Other sources	6	173820	68
Total	210	4555995	80

The general picture here is that borrowers from indigenous sources made higher repayments than those who did from the formal sources. The probable reasons for this are the proximity of lenders to borrowers which facilitated close monitoring of borrowers and the fear of sanctions from further

participation in group activities in the events of default by a borrower.
This buttresses the need for farm credits to channeled through farmers associations which serve as monitoring agency for effective loan recovery

Loan repayment by farmers
Regarding the determinants of loan repayment by the respondents, Table 8 shows the analysis of using linear regression model to ascertain the socioeconomic variables that significantly affect maize farmers' loan repayment performances.

The F-cal of 92.61 was statistically significant (p<O.01) implying that at least of the included socioeconomic factors had significant impact on the loan repayment performance of the farmers. In other words, the variation in the loan repayment of the farmers did not arise by chances but statistically explained by the socio economic characteristics of maize farmers.

Table 8: Socioeconomic variables that affect loan repayment by farmers

Repayment rate (dependent)	Coefficient,	S.E	t-Cal	P>|t|	95% Confidence Interval	
Interest	-0.0396	0.0348	-1.137	0.262	-0.10992	0.0307
Education	0.2009	0.1316	1.526	0.135	-0.46673	0.0649
Volume of credit accessed	0.0300	0.0100	2.996	0.013*	-2E-05	6.25E-05
Household size	-0.2140	0.3289	-0.651	0.5190	-0.8783	0.4503
Farming experience	0.3749	0.1692	2.216	0.0320*	0.0332	0.7165
Profitability of maize	0.0001	- 0.0000	3.543	- 0.001**	3.01E-05 -	0.0001 -
Age Farm size	0.2160	0.1009	2.141	0.038*	0.420 -	0.012
	1.3173	1.7248	0.764	0.449	2.166	4.801
Duration	3.8299	1.1629	3.293	0.022*	2.087	5.573
Debt to equity ratio	5.1566	1.9562	2.636	0.036*	-5.833 -	10.146
Intercept	9.0746	5.8635	1.548	0.129	2.767	20.916

Fcal	=	33461
Ftab	=	10 3346
Prob of F	=	0.0000
R-squared		= 0.9576
Adj. R-squared		= 0.9473

The model multiple coefficient of determination R^2 was 0.9576 indicating that 95.67% variation in loan repayment was explained by changes in socio-economic characteristics.
As could be seen from the table, variables that were significant includes volume of credit accessed, farming experience; profitability of maize production, Age of farmers, duration of loan repayment and debt to equity ratio. These are discussed further as follows.

Volume of Credit (X_3)

Volume of credit utilized was significantly positive ($P < 0.05$) in determining loan repayment among maize farmers. This implies that all things being equal, the higher volume of loan a farmer has the more the likelihood of loan repayment performance.

This shows that the higher the volume of credit accessed by a farmer, the more serious, such farmer will be in repaying such because they will not be at peace if the loan is not paid back so it makes them to be more serious.

Farming Experience of the Farmer (X_5)

Farming experience was also positive and statistically significant ($P = 0.0320$). This, points to the fact that more experienced farmers are more likely to repay their loans than those fresh in farming business. This could be attributable to the fact that experience has taught the older farmers the dangers inherent in loan repayment default. The benefit of timely loan repayment among other thing is the enhancement of the borrower's credit rating. The positive effect may also be due to fact that farmers are becoming more knowledgeable in farming practice which can increase the level of income and hence loan repayment capacity. This confirmed the finding of Oladeebo (2008).

Profitability of Maize (X_6)

Profitability of maize production is an indication of net positive returns over the farmers investment. This factor also had positive and significant effect in explaining loan repayment ($P = 0.001$). This also follow prior expectation that the more profitable an enterprise is the more rewarding it is for farmers to seek external funding to enhance its expansion and diversification. To realise the full benefit of this, the farmers known that any default on loan repayment will thwart their efforts to that regard.

Duration (X_9)

Duration connotes the time frame allowed for borrowers to fully pay up the loan obtained. This variable was a positive and significant ($p = 0.022$) factor in determining loan repayment. The result indicates that each unit change in repayment duration will increase loan repayment performance of the borrowers by about four times. Enough time is required for borrowers to realise enough revenue, possibly about four batches of maize production to enable them pay back any loan that is due payment. Farmers who are given longer duration to pay up their loans are more likely to pay back their loans than those given shorter duration. This is so particularly for maize farmers because, they require at least 2-3 maize farming seasons to be able to generate enough revenue to enable them pay their loans.

Debt to Equity (X_{10})

Debt to equity is a measure of the weight of externally sourced funds in comparison to the farmer's equity in the farm assets and liabilities. It is shown in the table to be positive and statistically significant ($P = 0.0036$). The result points to the fact that farmers who make use of more externally sourced funds are motivated to work harder than those who rely mainly on their meagre saving to finance their farm activities. The implication is that the higher the debt to equity ratio, the more the loan repayment performance of the maize farmers.

Comparison of maize output /hectare

To enable the establishment of the productive effect of credit on maize output, the mean quantity of maize produced per hectare by farmers who accessed credit was compared with the output of those who did not access credit, using t - test statistics. The result is shown in Table 9. The t-test analysis indicates that maize farmers that utilized credit produced significantly higher output per hectare (1.740 tonnes/ha) ($p < 0.01$) than farmers that had no access to credit (0.914 tonnes/ha). Therefore, under the assumption of equal mean variance, we have to upheld the alternative hypothesis that maize output per hectare by farmers who accessed credit is different and higher from output from farmers that did not access credit This test shows that farmers who had access to credit produce higher output per hectare than those who did not. This implies that accessibility to credit can enhance output.

Table 9: A t-test comparison of maize output per hectare among farmers

Credit status	Maize output per hectare	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Did not access credit (n=118)	0.914	208	1.7400		
			.000**	- 0.82596	.21337
Accessed credit (n = 92)					

Note: ** = significant at $p < 0.01$

CONCLUSION AND RECOMMENDATIONS

Maize farming is generally accepted by all and it has at least three periods in a year. The socio economic characteristics, sources of finance, volume of credit obtained between beneficiaries and non-beneficiaries of credits in the study area were discussed. It is shown in the study area that male farmers and married who were married were more active in the study area. More farmers had tertiary education and farmlands were mainly by inheritance. Different types cropping systems and fertilizers were used.

Maize farmers who accessed credit produced a higher yield per hectare than farmers who did not access credit. This implies that accessibility to credit can enhance the production capacity of maize farmers.

Based on findings of the study, the following recommendations were made:
i.   Formal credit outlets should be established within close distance to farmers, to encourage credit and acquisition utilization and time repayment.
ii.   To enable maize farmers be able to repay loans advanced to them either from formal or informal agencies, duration of repayments should be long enough so as to enable them produce at least three batches of maize and hence generate adequate revenue for repayments to be made.
iii.   All weather access roads to and from farms should be maintained so as to reduce transportation costs that impacted negatively on farm income.
iv.   While it is discouraged to subsidise the cost of fertilizers to avoid black marketing, it is recommended to set up sales outlet close to farmers to encourage utilisation at affordable costs,

   v.   More farmers should be encouraged to join cooperative societies as doing so, will increase their chances of affordable and adequate production credits.

Contributions to Knowledge

The study made the following contributions to knowledge.

   i.   The study established that it was more effective to channel credit through semi-formal credit institutions such as rotator credit associations (Esusu clubs) to smallholder farmers in Delta State,

   ii.   It also established that improved education for farmers reduce the incidence of repayment loan default.

   iii.   The study has also brought out the need to encourage indigenous/non-formal credit systems considering the facts that they are at home with the farmers and the more efficient loan recovery systems they enjoy compared to institutional agencies.

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