**DETERMINANTS OF RATE OF ACCESS TO CREDIT BY SMALL SCALE ARABLE CROP FARMERS IN FEDERAL CAPITAL TERRITORY (FCT), ABUJA, NIGERIA.**

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**Abstract**

*The study examined the determinants of rate of access to credit by small scale arable crop farmers in Federal Capital Territory, Abuja, Nigeria, during the 2015/2016 cropping season. Records of loan obtained by the respondents were obtained for the period 2015/2016. Primary data on the output of selected arable crops were collected from the respondents using well-structured questionnaire accompanied by interview schedule. Data were analyzed using descriptive statistics, regression model, farm budgetary analysis, Z-test, Likert scale etc. The result of the analysis revealed that socio-economic variables influences the rate of access of credit by the respondents in the study area, as most of the variables had a positive relationship with the rate of access to loan at 1%, 5% and 10% level of significance with an estimated regression coefficient of 0.8698. Similarly, credit to arable crop farmers has also enhanced their productivity and income. It was recommended that policies directed at consolidating farmers’ holdings through the formation of farmers’ cooperatives to facilitate their access to agricultural credit to boost their earnings and improve their livelihood be formulated. It was also recommended that the present tempo of microfinance institutions be maintained, and should reach every nook and corner of the farming communities.*

**Keywords:** Rate of Access, Credit, Small Scale, Arable Crops, Nigeria.

**Introduction**

Credit is an important instrument for improving the welfare of the poor directly through consumption smoothing that reduces their vulnerability to short term income. The provision of credit has increasingly been regarded as an important tool for raising the incomes of rural population whose main occupation is farming (Baba, 2004), mainly by mobilizing resources to more productive uses. It also enhances productive capacity of the poor through financing investments in their human physical capital (Okurut *et al*., 2004). Credit is considered as a major aspect of financial services which is fundamental in all production units (Dicken, 2007). Every segment of agricultural production requires the availability of adequate capital, since capital determines access to all other resources on which farmers depend (Ayoola and Oboh, 2000). This is to say that agricultural credit has been identified as the major input for the development of agricultural sector, as its traditional role in covering financial gap for increased productivity. Access to credit is viewed as being necessary for economic growth and the alleviation of poverty (Hazarika and Alwang, 2003), thus leading to the improvement of farmers’ welfare. Economic growth goes hand in hand with agricultural progress; stagnation in the agricultural progress is the principal explanation for poor economic performance, while rising agricultural productivity has been the most important concomitant of successful industrialization, food security, self-sufficiency and self-reliance (World Bank, 1992). Increased agricultural output generally establishes forward linkage (multiplier effect) in terms of development to other sectors of the economy (Hazel, 2008).

In developing countries, the role of agricultural credit is closely related to providing needed resources which farmers cannot source from their own capital. In respect to this, the provision of agricultural credit has become one of the most important government activities in the promotion of agricultural development in Nigeria (Olagunju and Adeyemo, 2008). For example, Brazil, through agricultural financial incentives and agricultural financial intermediation to its famers was able to change its development status to that of newly industrialized economy (Plateau, 2008). Ndanitsa (2014) reported that Brazil has the best Agricultural Policy worldwide.

The need for providing agricultural credit to farmers is universal. Even in highly developed countries of the world, including the US, agricultural credit or in a more broader sense, has been an important instrument for fostering agricultural development, including for improving efficiencies and expanding production. Lack of capital is generally recognized as one of the major constraints to expending production and modernizing agriculture. Expending the scope of farm operations (especially through substitution of physical capital for labour and increased use of purchased inputs) requires the use of capital which are not available on the farm and must be purchased. Agricultural growth and development cannot be achieved against the background of farmer’s poor financial position.

Considering the significance of mechanization and improved farming activities to increase food sufficiency for the teaming population, as well as the need to transform the economy into an industrialized one, the government, over the years had prioritized the agricultural sector in its credit and expenditure policies. This is because as development takes place, one question that arises is the extent to which credit can be offered to the rural poor, to facilitate their taking advantage of the self-developing entrepreneurial activities (Nissanke, 1995). Adera (1995) observed that commercial Banks and other formal institutions fail to cater for the credit needs of smallholder farmers, mainly due to their lending terms and conditions. It is generally the rules and regulations of the formal financial institutions that have created the myth that the poor are not bankable and since they cannot afford the required collateral, they are considered not credit-worthy. Despite efforts to overcome the widespread lack of financial services, especially among the small-scale farmers in developing countries, and the expansion of credit in rural areas, majority still have only limited access to bank services to support their private initiatives. Ijere (2007) submitted that, one factor inhibiting the attainment of development goals in Less Developed Countries (LDCs), like Nigeria is the populace’s general inability to access factors of production especially finance/credits. This, he said limits the entrepreneurial ability of the people, especially the poor. Consequently, potential employment opportunities and household prospects for creating wealth and improving income are lost. The Central Bank of Nigeria, CBN (2005) notes that the formal financial system provides services to about 35% of the economically active population while the remaining 65% are excluded from access to financial services. These 65% are often served by the informal sector, through NGO-MFIs, Friends, Relatives, cooperatives and credit unions. Moreover, experience from informal financial sources indicate that smallholder farmers, especially women often have greater access to informal credit facilities than to formal sources (Aryeetey and Udry, 1997). However, the volume of credit received from this source is characterized by smallness.

Governments of West Africa and many other countries have recognized the role credit can play in agricultural production and have established a number of special agencies to provide agricultural credit to farmers. In Nigeria, for example, the Nigerian Agricultural and Cooperative Bank (NACB) now known as Bank of Agriculture (BOA) (was are of the efforts aimed at injecting oil wealth into the Agricultural sector through the provision of credit facilities to agriculture for increased agricultural output), as well as the rural (commercial) banks are established mainly to provide credit for agricultural purposes and other rural ventures. In Ghana, similarly, the Agricultural Development Bank as well as government owned rural banks perform similar roles and one can find similar institutions in many other counties (Ogunsumi, 2007). Other initiatives included; the Small Scale Industries Credit Guarantee Scheme (SSICGS), the Nigerian Commercial Banks and Agricultural Credit Guarantee Scheme Fund (ACGSF), the CommercialAgricultural Credit Scheme (CACS), Nigeria Incentive-based Risk sharing System for Agricultural Lending (NIRSAL), Agricultural Credit Support Scheme (ACSS) and the Anchor Borrowers’ Progrmame (ABP).

According to Akinleye (2010), government had further continued to increase its credit interventions for instance, the ACGSF established to increase the flow of credit to farmers had since been expanded, while bank’s guarantee rate against default payment on loan was also increased to 75 percent from 55 percent in 2003 (CBN, 2009).

However, a breakdown of BOA’S loan portfolio by the World Bank (2009), revealed that over 80% of the total loan disbursed were directed at individuals, rather than cooperative societies which are expected to catalyse multiplier effect in terms of outreach and cost of operation, while colossal part of the remainder went to corporate bodies. This development among other technical and institutional deficiencies brings to doubt the efficiency of such credit interventions. Aside these, limited capital investment, exposure to various types of risks, as well as lack of perfect knowledge of appropriate technology by the smallholder farmers tends to suggest that most smallholder farmers do not optimize returns. This notwithstanding, the smallholder farmers can be efficient producers on a per hectare basics (Doran and Voget, 2009).

In recent times, there is growing emphasis on the need for a rapid development of the agricultural sector of the economy to break the vicious cycle of poverty that is prevalent in the rural sector. Lending credence to this assertion, Jirgi *et al* (2007) observed that on several occasions, Nigerian government have initiated more encompassing credit and non-credit programs for small scale farmers. In a similar vein, Okoronkwo and Anozie (2007) observed that, despite agricultural credit schemes introduced by the government in the country in a bid to boost small scale agricultural production, this dream has remained evasive. Small scale farmers are still left in the cold in spite of their relentless effort to embrace these credits. The inaccessibility of farm credit to small scale farmers has continued to be a major reason for the persistence of subsistence farming. Nigerian Agriculture inevitably require some capital injection from formal and informal financial sectors of the economy if this vicious cycle is to be brocken.

Although informal credit institutions have proved relatively successful in meeting the credit needs of small scale agriculture in Nigeria, their limited resources restrict the extent to which it can effectively and sustainably satisfy the credit needs of these entrepreneurs (Nappon and Huddlestone, 1993). This is because as the small scale farmers expand in size, the volume of loans required becomes increasingly difficult for informal credit sources to satisfy (Aryeetey and Udry, 1997). To reap the benefits of credit facilities, farmers need information relating to sources of loan such as names of lenders, location and types of existing credit (Manyong *et al,* 1996). It is against this background that this study attempted to examine the level of access to credit facilities by small scale arable crop farmers as well as the impact of such facilities on agricultural output in FCT, Abuja.

**Methodology**

The study was conducted in the Federal Capital Territory (FCT) Abuja, Nigeria. The FCT officially become the capital of Nigeria on the 12th of December, 1991. The FCT comprises of six (6) Area Councils namely: Kuje, Kwali, Gwagwalada, Bwari, Abaji and Municipal Area Councils. It is located in the middle belt of Nigeria, within latitudes 80251 and 90211 North of the equator and longitudes 60451 and 70391 East of the Greenwich meridian. According to the United Nations Population Fund (UNPF, 2014), the projected population of FCT in 2013 was 2,759, 829 people, with an annual growth rate of 9.3%. FCT has two distinct seasons, namely; the rainy season (which begins around March and runs through October) and the dry season (which begins from October and ends in March). Within these seasons, a brief harmattan that is occasioned by the North-East trade winds and attendant dusty haze, increased cold and dryness. During the rainy season, the day time temperature can soar as high as 400C, while night temperatures can drop to 120C (Federal Capital Territory Administration, 2013). Meanwhile, FCT has a rainfall amount of between 1,100mm and 1,600mm per annum.

 FCT, Abuja shares common boundaries in the North-East with Kaduna State, South-East with Nasarawa State, South-West with Kogi State and North-West with Niger State. FCT occupies a landmass of 7,315km2 (NPC, 2006).

 The main ethnic groups in the FCT are Gbagyi, Koro, Gade, Bassa, Gwandara and Ganagana. Economic activities in FCT include farming (about 80%), fishing and blacksmithing. Others are engaged in business, white collar jobs etc. Generally, the climate, soil and hydrology of FCT permits the cultivation of most Nigerian staple food crops such as Yam, Maize, Millet, Sorghum, Groundnut, Rice, Cassava, Plantain, and Cowpea, and still allows sufficient opportunities for grazing, freshwater fishing and forestry development. Livestock produced include cattle, sheep, goat, pigs poultry and catfish. The main minerals abound in the FCT are marble, tin, clay, iron ore, lead and gold (PCTA, 2013).

A multi stage random sampling technique was used in selecting a sample size of one hundred and forty (140) respondents for this study. In the first stage, two Area councils were purposively selected based on the large number of arable crop farmers present, the existence of credit facilities for the arable crop farmers and a good number of financial institutions/financial intermediaries present in the Area councils. The second stage involves the random selection of five villages from each of the selected Area councils. In the third stage, the use of percentage was adopted for the selection of respondents from each village, giving a total sample size of 140 respondents (Table 1).

**Table 1:** Sampling Procedure

|  |  |  |  |
| --- | --- | --- | --- |
| **Area Councils** | **Community** | **Sample frame** | **Sample size (100%)** |
| **Kuje** **Total**  | Chibiri Kiyi GashieKango Kwaku  | 23221088**71** | 23221088**71** |
| **Gwagwalada** **Total**  | Wuna Rafinzurfi Tsauni Ibwa 2Luda 69 | 151616111169 | 151616111169 |
| **Grand Total**  | 140 | 140 | 140 |

 **Source:** Field Survey Data, 2016

The study utilized primary data which were elicited by survey techniques, using well-structured questionnaire, personal interview schedules and observations. The researcher was assisted by trained enumerators as well as extension agents resident in the area. Also, the Village Heads assisted the researcher with the sampling frame from which samples were drawn.

The lists of loan beneficiaries were obtained from FCT-ADP. The arable crops considered include yam, maize, rice, sorghum and cowpea. Data collection was done from December, 2015 to March, 2016. The information collected includes socio-economic characteristics of smallholder arable crop-farmers, such as age, gender, marital status, farm size, household size, educational status, years of farming experience, occupation, household labour, off farm monthly income and number of extension visits per annum. Informations were also collected on inputs and outputs data, sources and volume of credit, interest rate and constraints encountered in accessing credit from lending institutions.

Descriptive statistics such as means, percentages, frequency distribution tables etc, Multiple Regression Analysis (Ordinary Least Square, OLS); Z-test and Farm Budgetary Analysis were used to analyze the data collected.

**Model Specification**

Model is specified implicitly as follows:

Y = $f (X\_{1}, X\_{2}, X\_{3}, X\_{4}, X\_{5}…….X\_{n}+e)$…………………………………………………. (1)

Where Y, the dependent variable is the rate of access to credit by the respondents, $X\_{1}…………X\_{9}$ are the independent variables and $e\_{1}$ is the error term.

Various functional farms were experimented with the one adjudged to be the best based on the normal economic, econometric and statistical criteria was chosen as the lead equation and was used for further forms of the functions fitted to the data are:

**Linear Function:**

$$Y= b\_{0}+b\_{1}X\_{1}+ b\_{2}X\_{2}+ b\_{3}X\_{3}+ b\_{4}X\_{4}+ b\_{5}X\_{5}+ b\_{6}X\_{6}+ b\_{7}X\_{7}+ b\_{8}X\_{8}+ b\_{9}X\_{9}+ b\_{10}X\_{10}$$

$+e$………………………………………………………………………………………………. (2)

**Exponential Function:**

$$In Y= b\_{0}+b\_{1}X\_{1}+ b\_{2}X\_{2}+ b\_{3}X\_{3}+ b\_{4}X\_{4}+ b\_{5}X\_{5}+ b\_{6}X\_{6}+ b\_{7}X\_{7}+ b\_{8}X\_{8}+ b\_{9}X\_{9}+ b\_{10}X\_{10}$$

$+e$………………………………………………………………………………………………. (3)

**Semi – Log Function:**

$$Y= Inb\_{0}+b\_{1}InX\_{1}+ b\_{2}InX\_{2}+ b\_{3}InX\_{3}+ b\_{4}InX\_{4}+ b\_{5}InX\_{5}+ b\_{6}InX\_{6}+ b\_{7}InX\_{7}+ b\_{8}InX\_{8}$$

$+ b\_{9}InX\_{9}+ b\_{10}InX\_{10}+e$……………………….……………………………………………. (4)

**Double – log Function:**

$$In Y= Inb\_{0}+b\_{1}InX\_{1}+ b\_{2}InX\_{2}+ b\_{3}InX\_{3}+ b\_{4}InX\_{4}+ b\_{5}InX\_{5}+ b\_{6}InX\_{6}+ b\_{7}InX\_{7}$$

$+ b\_{8}InX\_{8}+ b\_{9}InX\_{9}+ b\_{10}InX\_{10}+e$…………….……………………………………………. (5)

Where $b\_{0}$ = constant term

 $b\_{1}-b\_{10}$ = Regression coefficients to be estimated

 e = error term.

Specifically,

Y = Rate of access to credit, which was measured in percentages (%) as:

Y = $\frac{Amount of Credit obtained}{Amount of Credit Applied } x 100$…………………………………………………………….(6)

$X\_{1}$ = Age (years)

$X\_{2}$ = Sex (1= Male, O = Female)

$X\_{3}$ = Level of education (years)

$X\_{4}$ = Marital Status (1 = married, O = otherwise)

$X\_{5}$ = Farming experience (years)

$X\_{6}$ = Farm size (Hectares)

$X\_{7}$ = Household size (Number of persons)

$X\_{8}$ = Annual Farm Income (Naira, N)

$X\_{9}$ = Distance to Credit source (Kilometer, km)

$X\_{10}$ = Extension contact (Number of Visits)

**Z-test Model** was need to compare the productivity of the small scale arable crop farmers in the study area before and after they accessed credit.

The model is specified as:

$Z=\frac{X\_{1}- X\_{2}}{\sqrt{\frac{6\_{1}^{2}-6\_{2}^{2}}{n\_{1}-n\_{2}}}}$………………………………………………………………………………….. (7)

Where:

$X\_{1}$ = Mean of Farmers’ Productivity (Naira/ha) after access to credit

$X\_{2}$ = Mean of Famers’ Production (Naira/ha) before access to credit

$6\_{1}^{2}$ = Variance of Farmers’ Productivity (Naira/ha) after access to credit

$6\_{2}^{2}$ = Variance of Farmers’ Productivity (Naira/ha) before access to credit

$n\_{1}$ = Number of Farmers after access to credit

$n\_{2}$ = Number of Farmers before access to credit

**Farm Budgetary Tool:** Farm Budgetary Tool was used to estimate the costs and returns profile of the farmers. Net Farm Income (NFI) according to Olukosi and Erhabor (1980) gives the overall level of profitability of an enterprise by putting both fixed and variable costs into consideration, and subtracting the cost from the total revenue. The expression is given by:

NFI = TR – TC …………………………………………………………………………………..(8)

Where:

TR = Total Revenue (N)

TC = TR = Py. Y

Where:

Py = Price per unit output (N)

Y = Total Quantity of output (kg)

TC = TFC + TVC

Where

TFC = Total Fixed cost (N)

TVC = Total Variable Cost (N)

**Note:** (Average Annual Depreciation allowances of all inputs was used in the analysis)

**Results and Discussion**

**Socio-economic Profile of respondents**

Table 2 shows the socio-economic characteristics of small scale arable crop farmers in the study area, which according to David (1997) in turn reflects human capital. It shows that the mean age of respondents was 39.85 years, most of them (92.86%) were married, average household size was 10.64 persons, average years of farming experience was 27.26years, most of them (73.57%) had modern education and farming or generally agriculture is the principal occupation of most of them (89.29%). Furthermore, most of them (87.86%) realized less than N20,000.00 off farm monthly income. In addition, most of the respondents (69.29%) had farm size of between 1-5 hectares, which is a characteristic typical of small scale farmer. The implication of the result of the findings of the socio-economic profile of the respondents is that, the fact that most of them were 39.85 years or approximately 40 years supports the findings of Afolabi (2010) and implies that most of the respondents were middle aged farmers who were within the working age brackets that would facilitate most production and enhance their repayment capacity. The gender composition of respondents indicates that majority of the rural arable crop farmers were males which may be attributed to the intensive labour requirement. The result also validates the findings of Ng’eno *et al;* (2011) on farmers’ inaccessibility to agricultural credit in Kenya. The fact that majority of the farmers (95.71%) were married shows the big difference that the married respondents had more access to credit in the study area, and this result corroborated with the findings of Tanko *et al* (2012) who reported that majority of the respondents who had access to credit in Niger State were married. Similarly, Ndanitsa (2014) also reported that majority of respondents (71.50%) who access microfinance loans were married, which he concluded that it enables them to have family labour for use on their farms, especially for the polygamous households, which reduce the demand for hired and communal labour. This he said suggests a reduction in operating cost, increase profit, reduce poverty and enhances repayment.

Farming is the principal occupation of most respondents (89.29%), though still engaged in other vacation jobs like driving, health care delivery services, construction work, etc. This means that they also earn incomes outside farming, moreso that farming is a seasonal activity.

Table 2 also reveals the educational status of the respondents. Most of them (73.57%) had modern education while the remaining (26.43%) had no modern education. This means that majority of the respondents were modernized and would be willing to adopt innovations to enhance productivity via credit obtained. This buttresses the findings of Akaya (2015), who stated that the level of education determines the level of available opportunities geared towards improved livelihood, food security enhancement, poverty reduction and consequently enhances repayment capacity. Also, Simoyan (2010) had earlier reported that education increases farmer’s ability to make correct and meaningful choices for farm operations, while Ogbe (2009) had earlier established that the level of education raises human capital and increases their managerial ability. Furthermore, Oladeebo and Oladeebo (2008) opined that literate farmers will repay more of the loans obtained than illiterate farmers having understood the advantages of prompt repayment. Olagunju and Adeyemo (2008), also shared this view, stating that borrowers with higher level of education would have a better repayment performance on the basis of the fact that such farmers would readily respond to improved technologies and innovations that would enhance better returns from farm investments.

Table 2 also reveals the result of the household labour size. The average household labour size was approximately 6 persons per household. This result is in line with the findings of Alao (2003) who reported that household size which has a positive relationship with household labour also has a significant relationship with adoption of new practices in agriculture.

The number of extension visits to respondents is also revealed in Table 2. It shows that most of the respondents 94.29% had extension visits of between 1 – 7 times per annum. This implies low level of extension visits. This finding is in consistent with that of Beck (2007), and Garba (2016) who both reported low extension visits to farmers. Mgbada (2006) affirmed that enhanced extension contacts increases the chance of reducing farmers’ farm level problems and the uptake of modern technologies necessary for improving productivity.

**Table 2:** Summary of Descriptive Statistics of Arable Crop Farmer, Kuje and Gwagwalada Area Councils, FCT Abuja.

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable**  | **Frequency**  | **Percentage**  | **Mean**  |
| **Age (Years)**21 – 3031 – 40 41 – 50 51 – 60 Above 60  | 257624114 | 17.8654.2917.147.862.86 | 39.85 |
| **Sex** Male Female  | 130 10 | 92.867.14 |  |
| **Marital Status** Single Married  | 6134 | 4.2995.71 |  |
| **Household Size**1 – 56 – 1011 – 1516 – 20Above 20  | 147433145 | 10.0052.8623.5610.003.75 | 10.64 |
| **Educational Level**No Formal EducationPrimary Education Secondary EducationTertiary Education  | 37334723 | 26.4323.5733.5716.43 |  |
| **Occupation** Agriculture only Agriculture + Transportation Agriculture + Construction Agriculture + Teaching Agriculture + Healthcare  | 125291 | 89.292.141.436.430.71 |  |
| **Farming Experience (Years)**1 – 1011 – 2021 – 3031 – 40 Above 40  | 62876228 | 4.2920.0054.2915.715.71 | 27.26 |
| **Household Labour** 1 – 56 – 10 Above 10  | 814910 | 57.8635.007.14 | 5.45 |
| **Off Farm Monthly Income (N)**Less than 20,00020,000 – 39,99940,000 – 59,99960,000 and Above  | 1231052 | 87.867.143.571.43 | 5,900 |
| **Farm Size (Ha)**1 – 5 6 – 10 11 – 1516 – 20  | 973742 | 69.2926.432.851.43 | 2.82 |
| **Extension Visit Per Annum** 0 – 34 – 78 – 11 | 62708 | 44.2950.005.71 | 4.07 |

Source: Field Survey Data, 2016

**Sources of Credit**

Availability and acquisition of capital is a yard stick to efficient production by small scale farmers especially if supported with technical advisory services (Tanko *et al*, 2010). The percentage distribution of respondents according to credit sources in the study area is presented in Table 3. Results in Table 3 shows that 40.71% of the respondents got their financial assistance from commercial banks, 31.43% got their financial assistance from Microfinance banks and 27.86% sourced financial assistance from the Millennium Development Goals (MDGs) office. This result implies that farmers’ consciousness of obtaining credit tilted towards commercial banks, given that most commercial banks are vested with numerous credit facilities for the agricultural sector. This result agrees with the findings of Mutua and Oyugi (2006) who concluded that smallholder farmers preferences on the sources of credit largely relies on the flexibility of the credit financial institution’s requirements. The result of the findings of this study is however is contrary to that of Tank *et al* (2010) who reported that half of the loan beneficiaries (50%) got their financial assistance from the cooperative societies, while credit from commercial banks ranked the least (i.e 7%), and that this was due to the tedious procedures needed to formally access loan from the commercial banks, collateral requirement by the banks, low literacy level and ignorance among others, and that banking transactions require some level of literacy.

**Table 3:** **Sources of Agricultural credit available to small scale arable farmers in the study area**

|  |  |  |
| --- | --- | --- |
| **Source**  | **Frequency**  | **Percentage (%)** |
| Commercial Banks Microfinance Banks Millennium Development Goals office  | 574439 | 40.7131.4327.86 |

Source: Field survey Data, 2016

**Regression Analysis of Factors Affecting Access to Credit by Small Scale Arable Crop Farmers.**

The regression estimate of the determinants of access to credit by arable crop farmers is presented in Table 4. Table 4 shows that the lead equation is the Cobb Douglas production functional form based on the normal economic, econometric and statistical criteria, and was used for further analysis. It has an R2 value of 0.8698. This implies that about 86.98% of the total variations in access to credit is explained by variables X1 – X10 included in the model while the remaining 13.02% is as a result of non-inclusion of some important explanatory variables as well as errors in estimation. The model also has an F-ratio of 86.14 which was statistically significant at 1% level of probability, implying that the model has strong explanatory power. The coefficient of the household size and distance to credit source were negative and both significant at 5% level of probability respectively. This implies that there is a negative and significant relationship between household size and distance to credit source and access to credit. In other words, the farther the source of credit from the farmer’s home, the more difficult it becomes for the farmer to access credit and the bigger the household size, the more difficult it becomes for the farmer to access credit. This result is in agreement with the findings of Majeha (2005) who reported that farmers with high household size tend to divert their loans for sustenance and upkeep of family members. Baba and Etuk (1991) and Baba and Wando (1998) also affirmed that the implication of the large household sizes is that household expenditure tends to draw more on family income so that only a meager sum is saved and invested eventually on farming, and that for the borrowed capital, is likely affect the repayment capacity of the borrower.

Age was found to be significant at 5% level of probability. This result is in consistent with the study of Oboh and Ekpebu (2011) who revealed that credit allocation to the farm sector increases with the age of the farmers. The sex of the respondents also revealed a 5% significant level of probability. This result corroborates with the findings of Ng’eno *et al* (2011), who state that sex is a critical determinant of access to agricultural credit. Education was significant at 1% level of probability and showed a positive relationship with credit access. For a Cob-Douglas production function, the estimated regression coefficients are the direct elasticities. The finding therefore imply that education influences a farmer’s chances of accessing credit. This is because higher level of education is associated with the ability to access and comprehend information on credit terms and conditions. This result is consistent with the findings of Ayamga *et al* (2006), Thaicharoen *et al* (2004), Ndanitsa (2014), Tanko *et al* (2010) and Arvai and Toth (2001) who all reported that education significantly influences the decision to participate in formal credit schemes. Farming experience was significant at 10% level of probability. This is not surprising because experience of the farmers reduces aversion to risks, and farmers with higher experience are expected to have higher probability of accessing credit. This result is in consistent with the findings of Akudugu *et al* (2012). The positive influence of farm size at 1% level of probability implies that farmers’ access to credit increases with farm size. This confirmed the findings of Emerole (2004) who reported that increase in farm size necessarily requires the employment of more farm inputs which in turn requires additional capital for their purchase.

 Furthermore, the annual farm income was significant at 1% level of probability. This implies that an increase in income will lead to a positive contribution on access to credit in the study area. The number of extension visits was significant at 1% level of probability with positive contribution towards accessing credit in the study area. The findings of this are in consistent with that of Beck (2007) who noted that extension services play a crucial role in empowering farmers with farming techniques, knowledge and management techniques/skills.

**Table 4:** **Regression Estimates of the Determinates of Access to credit by Arable crop farmers in Kuje and Gwagwalada Area Council of FCT, Abuja, Nigeria.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable**  | **Parameters**  | **Linear**  | **Exponential**  | **Double log**  | **Semi log**  |
| Constant  | b0 | -5.587521 (-0.54) | 2.635156 (13.47\*\*\*) |  0.6716295 (1.20) | -136.4819 (-4.01\*\*\*) |
| Age  | b1 | 0.455496 (1.45) | 0.0045364 (0.76) | 0.4213844 (2.44\*\*) | 3.593363 (3.20) |
| Sex | b2 | 7.175354 (1.33) | 0.167805 (1.64) | 0.040732 (1.94) | 2.146217 (1.68) |
| Education  | b3 | 2.093973 (7.20) | 0.0401152 (7.23\*\*\*) | 0.0789914 (8.54\*\*\*) | 3.553165 (6.33\*\*\*) |
| Marital Status  | b4 | -3.987636 (-0.88) | -0.0219414 (-0.25) | -0.008372 (-0.36) | -1.023799 (-0.72) |
| Farm Experience  | b5 | -0.3128099 (-0.96) | -0.0045495 (-0.73) | 0.2055884 (1.79\*) | 3.745621 (1.97\*) |
| Farm size  | b6 | 5.090332 (6.99\*\*\*) | 0.1011862 (6.45\*\*\*) | 0.3516712 (6.30\*\*\*) | 18.3459 (5.42\*\*\*) |
| Household size  | b7 | -0.4793196 (-1.88\*) | -0.0097546 (-2.01\*\*) | -01210215 (-2.43\*\*) | -7.874239 (-2.61\*\*\*) |
| Annual farm income  | b8 | 0.0000205 (2.63\*\*\*) | 0.0000005 (3.31\*\*) | 0.1640505 (4.95\*\*\*) | 8.026641 (4.00\*\*\*) |
| Distance to credit source  | b9 | -0.0459944 (-0.53) | -0.003211 (-1.93) | -0.073211 (-2.26\*\*) | -6.014107 (-3.07\*\*\*) |
| Number of extension visits  | b10 | 5.018031 (6.26\*\*\*) | 0.1155486 (7.56\*\*\*) | 0.083661 (5.88\*\*\*) | 3.048284 (3.53\*\*\*) |
| R2R2 adjusted F-ratio  |  | 0.82470.811160.70\*\*\* | 0.84670.834871.24\*\*\* | 0.86980.889786.14\*\*\* | 0.80070.785251.81\*\*\* |

Source: Computed from field survey Data, 2016

**Note:** \*\*\*, \*\*, and \* implies statistically significant @ 1%, 5% and 10% levels of respectively, while figure in parentheses are the respective t-ratios.

**Productivity of Arable Crop Farmers before and After Access to Credit**

Table 5 shows the mean difference between farmers productivity before and after access to credit facility. It shows a mean difference of N44255.75 per hectare which is statistically significant at 1% probability level. This implies that there is a significant difference between the productivity of the respondents before and after access to credit. This result corroborates with the findings of Hazarika and Alwang (2003), Khan (1999), who both revealed that improved access to credit by rural farmers can lead to both improved and increased productivity, increased agricultural production and income.

**Table 5:** Z-**test Analysis Comparing Productivity of the Farmers before and after Access to Credit**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable (N/ha** | **Mean**  | **Standard deviation**  | **T-value**  |
| Farmers’ productivity after credit facility  | 157,825.700 | 216,825.90 | 4.2783\*\*\* |
| Farmers’ productivity before credit  | 113,570.20 | 100560.20 |  |
| Productivity difference  | 44,255.75 | 122,394.50 |  |

 Source: Computed from field survey Data, 2016

\*\*\* = significant at 1% level of probability

**Cost and Return Analysis of Respondents in the Study Area**

The farm budget result indicates that overall, the farm breakeven and make profit from their farm enterprises. For instance, from Table 6, the gross margin was positive and the return on investment of 1.53 indicates that for every N1 invested, the farmer earns averagely N1.53. This implies that in addition to recouping the amount invested, the farmers make extra N0.53k. From the cost components, labour, fertilizer and agrochemicals constitute the major cost items representing about 38.83%, 21.77% and 16.28% of the total cost respectively. Seed/seedlings (2.95%) constitute the least cost in the production activities. Majority of the farmers store a portion of their harvested crops as seed/seedlings to be used in the next cropping season and this may be responsible for the observation. The estimations used in computing this result is in line with the technique specified by Adewumi (2007) and Adewuyi *et al* (2006).

**Table 6:** Cost and Return Analysis of Small Scale Arable Farmers in Kuje and Gwagwalada Area Council of FCT, Abuja Nigeria.

|  |  |  |
| --- | --- | --- |
| **Item**  | **Amount (N/Ha)** | **Percentage (%) of Total Cost (TS)** |
| **Total Revenue (TR) Cost Components: Variable Costs**Fertilizer AgrochemicalsLabour Seed/Seedlings Transportation Purchase of Sacks**Total Variable Cost**   | 11,623.438,691.0520,730.681,573.352,574.422,076.35**47,269.28** | 21.7716.2838.832.954.823.89**88.54** |
| **Fixed Cost** Depreciation Interest on Credit **Total Fixed Cost**  | 1,256.714,863.87**6,120.58** | 2.359.11**11.46** |
| Total cost (TC = TFC+TVC)Grass Margin (GM =TR-TVC)Net Farm Income (NFI=TR-TC)Return on Investment (ROI=NFI/TC) | 53,389.8687,784.9681,664.381.53 | 100.00 |

 **Source:** Calculated from Field Survey Data, 2016

 **Constraints to Credit Access by Small Scale Arable Crop Farmers in Kuje and Gwagwalada Area Councils of FCT, Abuja, Nigeria**

A four point Likert scale was used to analyze the opinion of respondents on the constraints faced by the respondents in accessing credit facility. Table 7 shows the result of the Likert scale. From the Table, the type of bank account needed was the most severe constraint (3.80) in accessing credit in the study area. The respondents expected to open savings account with the financial institution is order to be able to access credit. This result is in line with the findings of Okojie *et al* (2010). Demand for Guarantor (3.74) and Distance to credit source (3.52) were also very serve constraints to credit access in the study area. This is in line with the findings of Hussien (2007) who affirmed that farm households are discouraged to borrow when credit sources are located farther away from their farming locations. The repayment period (2.97) was a severe constraint to credit access and this also corroborates with the findings of Philip *et al* (2009) and Ndanitsa (2014), who both reported that the short term nature of loans with fixed repayment periods do not suit annual cropping, and thus constitute a hindrance to credit access. Amount of credit disbursed (2.84) was also a severe constraint to credit access. This implies that the amount of credit disbursed to farmers is insufficient for their farming activities. The result corroborates with the findings of Oboh and Ekpebu (2011) and Ndanitsa (2014) who, both revealed that the mean value of credit received by Arable crop farmers in Benue state, and Niger State, Nigeria was lower than the mean value of credit demanded. The untimely credit disbursement with a mean value (2.80) also indicates of severe constraint to credit access in the study area. This result also validates the findings of Afolabi (2010) who reported that untimely disbursement of loan repayment is a constraint that indirectly affects loan repayment. However, interest rate, collateral, Application fee, farm size, religion and farm experience were not severe constraints to credit access in the study area. These variables have mean scores of less than 2.5.

**Table 7:** Distribution of Respondents according to Constraints Faced in Accessing Credit by the respondents in the study area.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Constraints**  | **Not at all**  | **Not Severe**  | **Severe**  | **Very Severe**  | **Weighted Sum** | **Weighted mean score** | **Remark**  |
| Interest rate  | 89(63.57) | 26(18.57) | 6(4.29) | 19(13.57) | 235 | 1.67 | Not Severe |
| Collateral  | 136(97.14) | 0.00 | 0.00 | 4(2.86) | 152 | 1.09 | Not Severe |
| Untimely credit disbursement  | 33(23.57) | 25(17.86) | 19(13.57) | 63(45.00) | 392 | 2.80 | Not Severe |
| Guarantor  | 3(2.14) | 13(9.29) | 2(1.43) | 122(87.14) | 523 | 3.74 | Not Severe |
| Application fee | 140(100.00) | 0.00 | 0.00 | 0.00 | 140 | 1.00 | Not Severe |
| Type of Bank Account  | 3(2.14) | 9(6.43) | 1(0.71) | 127(90.71) | 532 | 3.80 | Not Severe |
| Farm size  | 140(100.00) | 0.00 | 0.00 | 0.00 | 140 | 1.00 | Not Severe |
| Amount of credit disbursed  | 46(32.86) | 11(7.86) | 2(1.43) | 81(57.86) | 398 | 2.84 | Not Severe |
| Repayment period  | 44(31.43) | 6(4.29) | 0.00 | 90(64.29) | 416 | 2.97 | Not Severe |
| Distance of credit source  | 15(10.71) | 0.00 | 22(15.17) | 103(73.57) | 493 | 3.52 | Not Severe |
| Religion  | 140(100.00) | 0.00 | 0.00 | 0.00 | 140 | 1.00 | Not Severe |
| Farm experience  | 140(100.00) | 0.00 | 0.00 | 0.00 | 140 | 1.00 | Not Severe |

Source: Computed from field survey Data, 2016

Decision Rule: Any weighted mean score greater or equal to 2.5 is a major constraint to credit access in the study area.

**Test of Hypotheses**

The regression result presented in Table 8 shows that the F-ratio of 86.14 was significant at 1% probability level, which explains that the overall fit of the model is significant. The R2 value shows that the included independent variables explained a significantly high percentage (86.98%) of the total variation in the model. Education, Farm size, Annual Farm Income and Number of Extension visit were significant at 1% level of probability. Age, Sex, Household size and Distance to credit source were significant at 5% level of probability. Farming experience was significant at 10% level of probability. This shows a significant relationship between the variables included in the model and farmer’s access to credit facilities. The Null hypothesis (Ho1) which stated that there is no significant relationship between farmers’ socio-economic characteristics and their access to farm credit is hereby rejected and the alternative hypothesis that there is a statistically significant relationship between socio-economic characteristics and farmers’ access to credit is accepted. In other words, socioeconomic characteristics had a positive effect on the farmers’ access to credit facilities in the study area.

 Furthermore, the Z-test analysis presented in Table 9 shows that the mean difference between the farmers’ productivity after access to credit and farmers’ productivity before access to credit is N44,255.75 per hectare which is statistically significant at 1% level of probability. This implies that there exist a statistically significant difference between the productivity of the farmers before and after access to credit. The Null hypothesis (Ho2) which stated that there is no significant relationship between the productivity of the farmers before and after access to credit is hereby rejected.

**Table 8:** Regression Analysis showing the relationship between farmers’ socio-economic characteristics and access to credit.

|  |  |
| --- | --- |
| **Variable**  | **T-value**  |
| Constant Age SexEducation Marital Status Farming experience Farm size Household size Annual farm income Distance to credit source Number of extension visit  | 1.202.44\*\*1.94\*\*8.54\*\*\*-0.361.79\*6.30\*\*\*-2.43\*\*4.95\*\*\*-2.26\*\*5.88\*\*\* |

Source: Field Survey Data, 2016

R2 = 0.8698, Adjusted R2 = 0.8597, F-ratio = 86.14\*\*

\*\*\* = Significant at 1% level of probability,

\*\* = Significant at 5% level of probability

\* = Significant at 10% level of probability

**Table 9:** Z-test Analysis showing the Mean difference in productivity of the respondents before and after access to credit

|  |  |  |
| --- | --- | --- |
| **Variable (N/Ha)** | **Mean**  | **T-value**  |
| Farmers’ productivity after credit Farmers’ productivity before credit Productivity difference  | 157,825.70113,570.0044,255.75 | 4.2783\*\*\* |

Source: Computed from field survey data, 2016

\*\*\* = Significant at 1% level of probability

**Conclusion and Recommendation**

Credit had a positive impact on Arable Crop Production in the study area. The current state of technology used by farmers after accessing farm credit was superior than before accessing credit, as it has brought about increase in productivity level of Arable crops in the study area. However, many factors determine farmers access to credit in the area namely, age, sex, education, farming experience, farm size, annual farm income, to mention but a few. Meanwhile, arable crop farmers in the study area face a number of constraints in accessing farm level credit in the study area, including untimely credit disbursement, demand for guarantor and/or collateral, inadequate amount of loan obtained, short repayment period and distance from bank location among others. The need for the provision of credit has become imminent in increasing farmers’ level of output. This will involve the establishment of sustainable microcredit schemes; the present tempo of Microfinance Institutions in the area should be maintained. More Microfinance Institutions should be established nearer to the farmers, to increase outreach, amount of loans should be increased, and polices directed at consolidating farmers’ holdings through the formation of farmers’ cooperatives will also be useful in the study area. This would translate to increase capacity utilization, increased output and income. Consequently, to improve farmers’ access to credit, the study recommends that efforts should be made to enhance farmer-extension agent contact by providing logistics on time for agricultural extension agents to pay periodic visits to farmers in their farming communities.

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