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**ANALYSIS OF FACTORS AFFECTING ACCESS TO AGRICULTURAL CREDIT IN BOKO HARAM
 AFFECTED AREA OF ADAMAWA STATE**

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Abstract

This study examined the impact of Boko-Haram activities on agricultural production in some selected areas of Adamawa state, the study focused on; access to agricultural credit to farmers, access within the Boko-Haram affected areas of Adamawa state. Structured questionnaire was designed to collect sufficient data intended to address the objectives of the study. The study employed a logistic regression model; Age, Sex, Value of collateral, Employment and Level of security were used to examine access to agricultural credit facility (AACF); The study provides valuable insights into the factors affecting access to agricultural credit facilities in conflict-affected areas. This is because a number of loans obtained from agricultural banks, age grade and security to lives and properties significantly determine the level of Agricultural output in the Boko-Haram affected areas. That is, the higher the number of loans obtained from agricultural banks, and security to lives and properties the higher agricultural output. This implies that Agricultural output increases with the increase in the number of loans obtained from agricultural banks, and security to lives and properties. The findings suggest targeted interventions to improve farmers' access to agricultural credit, in Boko Haram-affected areas: The study also recommended that the government should provide loans to farmers at a subsidized rate, and security to the lives and properties of farmers. Furthermore, gender disparities in access to credit facilities by implementing gender-sensitive financial policies, providing financial education to women, and encouraging financial institutions to adopt non-discriminatory lending practices.

Key words: Factors, Agricultural Credit, Boko Haram Affected Areas

1. Introduction

The importance of the agricultural sector to the Nigerian economy cannot be overemphasized against the backdrop of the economic diversification drive being pursued by the government. The agricultural sector being one of the vital sectors in the Nigerian economy accounts for almost one-third of the Gross Domestic Product (GDP) and employs about two-thirds of the labour force directly and indirectly. Before the era of the oil boom, agriculture was the mainstay of the economy and was the highest source of revenue for the government. Agriculture makes its contribution to economic development by providing food for the populace, raw materials for industrial use, serving as a

source of employment generation, and also as a source of revenue generation for the government. The inadequate funding of the sector, lack of adequate infrastructural facilities and the neglect of the rural sector where small-scale farmers live in large numbers has caused a tremendous decline in agricultural productivity in Nigeria.

International Food Policy Research Institute (IFPRI) (2008) noted that the declining importance of agriculture in the Nigerian economy can also be seen in the steady fall in the share of the population residing in rural areas, the share of the labour force employed in agriculture, and the share of the nation's export earning derived from agricultural commodity exports. Interestingly, the

relative importance of agriculture declined even though private investment in the sector increased as a share of overall private investment in the country (Manyong et al., 2005). Between 1981 and 2000, aggregate domestic capital investment in agriculture, measured by gross fixed capital formation in the sector, steadily increased as a share of domestic capital investment across all sectors, rising from around 5% early in the period to around 14% during the later years (Manyong et al., 2005; IFPRI, 2008). Economists have traditionally identified three factors of production: land, labour and capital. Capital and labour were wedded to the land, and economic power belonged to those who could control its use. With the Industrial Revolution, capital became the critical economic factor. In modern society, the role of labour as a factor of production is becoming increasingly important (Levitan et al., 1972).

The reasons for limited access to agricultural credit from formal sources are that, each credit source has its own constraints that limit either the ability of a farmer to obtain credit from the source or the amount of credit the farmer wishes to borrow. For instance, (Owusu-Antwi and Antwi, 2010) state that formal financial markets often require collateral in the form of land or houses as a pre-requisite for granting loans to borrowers which are often out of reach of majority of the farming population. As a result, there is a wide gap between owned and required capital to finance the agricultural activities of smallholder farmers since the income from subsistence agriculture does not yield much surplus beyond family consumption and other social obligations (Amentae et al., 2017).

2. Literature Review

2.1 Conceptual Issues

Farmers Credit Scheme in Adamawa State

Despite the important role played by credit, the farmers in Adamawa state suffer from a lack of access to formal credit, which has significantly limited the ability of rural poor farmers to increase productivity (Akinbile, 2014). Most farmers in Adamawa state are in rural areas and their only source of income is farming, this makes their income seasonal since most of them do not farm all year

round, and this instability in income makes it difficult for banks and microfinance institutions (MFIs) to give out loans to them. One of the reasons for the failure of the credit scheme in Adamawa state is their supply-leading approach or their non-adaptation to the demand for the service by the rural households. Many of these farmers cannot farm on a large scale because they mostly use family labour for farming, so if the family size is small, farming a large piece of land would be very difficult. So, the only other possibility would be to get paid labour for a larger farm which entails money to pay this extra labour. Banks and microfinance institutions always ask for collateral security before giving out loans, and these farmers have only their farmlands as collateral.

More importantly, according to Freeman et al. (1998), farmers' access to credit is also very crucial in the sense that it can facilitate the levels of input use closer to their potential levels when capital is not a constraint, consequently leading to higher levels of output per farm and productivity, given fixed resources such as land. This implies that the marginal contribution of credit brings input levels closer to the optimal levels, thereby increasing output and productivity (Feder et al., 1990). Additionally, access to credit is also considered to be an important tool for smoothing consumption and promoting production especially for poor households (e.g. Swain et al., 2008; Conning and Udry, 2005; Armendariz and Morduch, 2005; Robinson, 2001; Zeller et al., 1997). This means that access to credit can significantly increase the ability of households with no or few savings to meet their financial needs for agricultural inputs; especially those that are highly necessary for weed, pest, and disease control and productive investments. Furthermore, easy availability and access to credit enables farmers and entrepreneurs to diversify by undertaking new investment

Overview of Credit Scheme to Farmers in Nigeria

Agricultural development is a process that involves the adoption by farmers (particularly small farmers) of new and better practices (Garba, 1987; Orebiyi, 10 1999). This is because most of the new practices have to be purchased but few farmers have the financial resources

to finance it. Before the introduction of credit schemes to farmers in Nigeria, commercial banks were often sceptical about giving credit to farmers. This is because small-scale farmers lack acceptable collateral security whereas bankers are interested in collateral securities which are highly liquid and which possess “money value” certainty. It was in recognition of this fact that the federal government at various periods put in place credit policies and established credit institutions and schemes that could facilitate the flow of agricultural credit to farmers (Adegeye & Dittoh, 1985).

Food Security

Over the years, the definition of food security has evolved getting the attention of the international community. The widely accepted definition of the term food security was developed at the World Food Summit in 1996, states that “Food security exists when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs, and food preferences for an active and healthy life” (WFP, 2009, FAO, 1996). Clapp 2021, argues that it is time to revise the conceptual understanding of food security to include the broader dynamics that affect hunger and malnutrition. Clapp 2021, Further incorporates 2 additional dimensions to the definition of food security which are agency and sustainability. She further argues that the addition of agency and sustainability into food security definitions and frameworks ensures that everyone in the world is food secure long term (Clapp, 2021).

The definition of food security consists of four pillars which are the main components of food security: food availability, economic and physical access, stability, and utilization, agency, and sustainability. Around the early 1970s, the term food security originally focused on ensuring the availability of food and stability in the price of food, which was because of the intense instability of agricultural commodity prices and instability in the currency and protein markets during that period (Berry et al, 2015). The events of hunger, food crises, and famine needed a definition of food security that viewed the serious needs of vulnerable people and people affected (Shaw 2007). The term food security was defined at the

World Food Conference in 1974 as “the availability at all times of adequate world food supplies of basic foodstuff to sustain a steady expansion of food consumption and to offset fluctuations in production and prices” (United Nations, 1975). The definition of food security in this context during that period showed concern about an unfolding global food crisis that saw hunger increase as food prices also increased in the markets (Clapp, 2021). The way hunger was understood during that period was a decline in the availability of food within countries which was a key cause of hunger and that instability in the prices of food resulting from uneven availability made the crises worse (Clapp, 2021).

Evolution of Boko Haram in Nigeria

Boko Haram is a group in Nigeria that seeks to Islamize of country, especially the Northern region of Nigeria. Boko haram has unleashed terror on people by killing people and destroying valuable properties. The group is one of the deadliest terrorist groups in the world. The group wants Sharia law to be imposed in the Northern states of Nigeria. Ideologically, the group has an aversion to Western education culture, and modern science (Duma, 2010). Therefore, accepting and imbibing Western education and culture such as wearing shirts and trousers, taking part in any social or political activities attributed to the Western society, receiving a Western education, working in banks and any government establishments, watching television etc., are sins. The group real name is Jama’atu Ahlissunnah Lidda’awati Wal Jihad. The group’s aversion to Western education may be the reason the general public tagged them as Boko Haram (Idris, 2011; Omipidan, 2011).

Adebayo (2014) defined Boko Haram as a group of persons that forces their ideology on people through bombings, slaughtering, and abduction of human beings, creating fear and a sense of insecurity in society. According to Marc (2014), Boko Haram has been seen as a violent insurgency, a radical religious sect, a terrorist organization, a network of criminal gangs, a political tool and a cult. According to Web (2013), Boko Haram is a group of people or a militant Islamist movement who are

forcefully required to create an Islamic state in the Federal Republic of Nigeria. Eze and Agwanwo (2014) explained Boko Haram as a group that is characterised by some negative activities such as bombings, abduction and slaughtering of human beings. As such development can never take place in an atmosphere of insurgency.

This is because of the destruction of lives and properties as well as population displacement, etc. Aro (2013) asserted that the Boko Haram insurgency has not only led to an abundant of people's business activities within the affected region but also led to the movement of individuals from the affected region decreasing the patronage of products from the northern region because of the rumour that Boko Haram are planning to send poisonous products to other parts of the country.

2.1 Theoretical literature

The Rational Choice Theory

The rational choice theory is propounded by neo-classical economists. The theory, generally, starts with the consideration of the choice behavior of the individual farmers making the decision. The proponents of the rational choice theory believe that the individual making the decision is a "representative" of a group in a financial market, such as farmers. The analysis of the rational choice theory of demand for financial services generally involves a description of the following: (i) the desire for financial services (savings, credit, and money transfer services); (ii) the nature and type of services provided by the financial institutions; (iii) the condition under which these services are provided. The individuals face the problem of choice among services provided by the intermediaries. The approach of the rational choice theory is based on the fundamental principle that the choices made by the individual are the best choice to help him/her achieve their objectives in the light of all the uncontrollable factors. The utility function is used by the rational choice theory as a mathematical function that assigns a numerical value to each of the possible alternatives the individual making the decision faces. The demand for financial services is a function of the service characteristics, the attributes of the provider of the service, and the decision-making unit. This theory

has been heavily criticized on the basis that the assumptions made under the rational choice theory fail to take into account the fact that the success of the outcome of a decision is also influenced by conditions that are not within the control of the individual making the decision. Despite this criticism, the theory has demonstrated a good basis for explaining how individual economic decisions are affected by their attributes. In this regard, this theory is important in explaining access to financial services as the attributes of the individual heavily influence both the demand and supply dimensions of access to financial service. However, the relevance of rational choice theory has been justified in the study. Starts with the consideration of the choice behavior of the individual farmers making the decision

2.2 Empirical Review

Mekonnen et al. (2017) investigated the effects of conflict on agricultural productivity and access to credit in Ethiopia. Their findings showed that insecurity led to reduced credit supply as banks perceived lending to conflict-affected areas as too risky. Farmers in these regions faced difficulties in accessing formal credit, which hindered their agricultural productivity and investment in farm inputs.

Olomola and Gyimah-Brempong (2019) study Determinants of Agricultural Credit Access in Rural Nigeria: Evidence from Oyo State. The authors explored socio-economic factors such as income, education, and farm size that affect access to agricultural credit in rural areas. They found that higher income levels and larger farm sizes significantly increased the likelihood of accessing credit. Education also played a crucial role in improving farmers' ability to obtain loans

Adeola and Bolarinwa (2020) study Conflict, Displacement, and Agricultural Development: The Case of North-Eastern Nigeria. The research focused on the effects of conflict-induced displacement on agricultural activities and credit access. The study concluded that displacement and insecurity severely disrupted agricultural activities and made it difficult for farmers to access credit, leading to increased poverty and food insecurity

Auta et al (2021) analyzed how ongoing conflicts in Northern Nigeria have influenced access to agricultural credit. It found that insecurity led to reduced lending by financial institutions due to the perceived high risk. Farmers in conflict zones were less likely to receive credit, which affected their productivity and income.

Agbor and Ekpo (2022) Analyze Determinants of Credit Access in Rural Nigeria research utilized logistic regression to quantify the influence of various factors on access to agricultural credit. It provided a statistical basis for understanding which factors had the most significant impact, with a focus on socio-economic variables and the level of financial literacy.

3. Methodology

3.1 Research Design

Research design simply refers to the preparation of condition of collection and analysis of data in such a manner, which aims at combining relevance to the research purpose with economy in procedure. In other perspective, the word research design refers to the arrangement of the research project. Besides, the decision like what, where, when and how etc, in regard s to the research study, create a research design. The researcher questionnaires design to capture factors

affecting access to agricultural credit facilities in Boko Haram affected areas of Adamawa state. Questionnaires research design is the type of research design in which there is a dependent variable and independent variables, where by dependent variables response to the changes in independent variables

3.2 Data and Sources

The major survey instrument used in the collection of primary information was a structured questionnaire. The questionnaire was designed to collect sufficient data intended to address the objectives of the study. In this regard, the questionnaire included questions properly set to collect information required in running all the anticipated statistical and econometric analyses for testing hypotheses and answering research questions. The actual process of data collection was preceded by two weeks of pre-survey and adjustments of the questionnaire. The data collection exercise was done by the researcher assisted by four enumerators on July 2024.

3.3 Method of Data Collection

The population size of the study consists of crop farmers, poultry farmers, and livestock farmers in selected local government of Adamawa state. Using the Taro Yamani technique for sampling ($n = N/1 + Ne^2$)

Table 1: Sampling Procedure

Senatorial Zone	Local Government Areas of the Study	Total number of estimated farmers in each Local Government
Central	Gombi	182,320
	Hong	208,720
North	Mubi north	186,880
	Mubi south	160,320
	Madagali	166,720
	Michika	191,520
	Maiha	135,920
South	Ganye	209,680
	Mayo Belwa	188,480
Total	09	1,630,560

Source: Generated from estimated farmers population 2022 in Adamawa state

The total estimated population of the farmers is **1,630,560**, and using Taro Yamani techniques for sampling, the number of respondents is **385**. Below are several questionnaires issued to the nine local government studies areas in Adamawa State.

3.4 Model Specification

This research employs a binary logit model analyse the determinants of access to credit facilities in the study area.

The model is explicitly stated below; the functional relationship is stated below:

$$AACF = f(\text{AGE, SEX, VC, EMP, and LS}) \quad (1)$$

the linear logistic Relationship is stated below

$$AACF = (P_i/1-P_i) = \beta_0 + \beta_1 \text{AGE}_i + \beta_2 \text{SEX}_i + \beta_3 \text{VC}_i + \beta_4 \text{EMP}_i + \beta_5 \text{LS} + \mu_i \quad (2)$$

Where; AACF = Access to agricultural credit facilities; AGE = Age limit; SEX = Sex (3)

VC = Value of Collateral; EMP = Employment Status; LS = Level Security

β_0 = intercept of the regression line (i.e., constant); $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ = regression coefficients to be estimated. P_i = probability of success; $1-P_i$ = probability of failure

3.5 Method of Data Analysis

The study employed a logistic regression model to “analysis factors affecting access to agricultural credit in Boko Haran affected area of Adamawa state Individuals with access were the only category of respondents used in this analysis. The binary logit regression model using maximum likelihood methods was used to estimate the probability of “analysis factors affecting access to agricultural credit in Boko Haran affected area. The purpose of the qualitative choice model is to determine the probability an individual with a given attribute will make one choice rather than one or more choices (Gujarati, 1995). Choice models predict the likelihood that an individual will choose an option that will have some relationship to their attributes of socioeconomic factors. This will be achieved with the help of Stata Econometrics computer software. Logit is chosen due to its advantage over Ordinary Least squares in the face of using dummy variables as dependent variables in research.

4. Results and Discussion

Table 2: Descriptive statistics

Variable	Mean	Std. dev.	Min	Max
AGE	40.08571	15.09416	16	90
VC	53179.22	16571.39	10000	97000
LS	2538.234	271.7708	2000	3600
Binary variable				
AACF	.5090909	.500569	-	-
SEX	.5116883	.5005138	-	-
EMP	.4545455	.4985775	-	-

Source: Author's computation using Stata 10, 2024

Table 2 shows the average age of respondents is 40 years, with ages ranging from 16 to 90. The standard deviation indicates some variability in age, suggesting a diverse age group among respondents. The average value of collateral available is 53,179, with a wide range from 10,000 to 97,000, indicating significant variability in the collateral value among respondents. The average wage is

2,538.23 units, with relatively moderate variability. Level of security from 2,000 to 3,600 units.

Binary Variables: AACF (Access to Credit Facilities) shows the Mean of 0.5091 and Standard Deviation of 0.5006 at 5%. Approximately 51% of the respondents have access to credit facilities, with a standard deviation indicating the presence of both groups (those with and without access). Approximately 51% of the respondents

are male, with a standard deviation indicating a near-even split between males and females. Approximately 45% of the respondents are employed, with a standard deviation indicating the presence of both employed and unemployed individuals. Approximately 51% of the respondents have access to the agricultural labor force, with a standard deviation indicating the presence of both groups (those with and without access). Approximately 51% of the respondents have access to the market, with a

standard deviation indicating the presence of both groups (those with and without access). Access to credit facilities, labor force, and market are relatively balanced, with around half of the respondents having access, highlighting potential areas for policy intervention to improve accessibility. These insights can inform targeted interventions to address disparities and enhance access to resources, ultimately supporting the development and sustainability of agricultural activities in the study area.

Table 3: Regression results of the determinants of Access to Credit Facilities in the study area. (AACF)

AACF	Coefficient	Odd ratio	Marginal effect
AGE	0.034*(0.262)	0.9665*(0.262)	0.0085*(0.262)
SEX	797**(0.000)	2892.377**(0.000)	0.9632**(0.000)
EMP	1.251**(0.030)	3.4939**(0.30)	0.3029**(0.30)
LS	0.463*(0.021)	1.0011*(0.021)	0.0003*(0.021)
VC	1.00002*(0.478)	1.00002*(0.478)	4.96*(0.478)
Constant	4.415**(0.033)	-1.18*(0.3069)	-
LR $\chi^2_{(4)} = 468.16$			
Pseudo $R^2 = 0.3830$			
Peason $\chi^2_{(67)} = 70.87$			
p. value = 0.0000			
Hosmer–Lemeshow $\chi^2_{(67)} = 72$			
p. value = 0.3500			
Note(s):. *, ** and *** indicate statistical significance at the 10, 5 and 1% levels			

Source: Author's computation using Stata 10, 2024

In Table 3 we observed the Likelihood Ratio at 5% level LR $\chi^2_{(4)} = 468.16$: ** this indicates that the likelihood ratio chi-square statistic with 4 degrees of freedom revealed overall model significance. Pseudo $R^2 = (0.3830^{**})$ this suggests that approximately 38.3% of the variance in access to credit facilities is explained by the model. Peason $\chi^2_{(67)} = 70.87$, p-value = (0.0000**) The Pearson chi-square statistic with 67 degrees of freedom and a significant p-value indicates a good fit. Hosmer–Lemeshow $\chi^2_{(67)} = 72$, p-value = (0.3500**) The Hosmer–Lemeshow test with 67 degrees of freedom and a non-significant p-value suggests a good fit of the model. Nevertheless, the other part of the results is based on the suggestion of Hosmer et al. (2013).

4.1 Interpretation of Logistic result for Determinants of Access to Agricultural Credit Facilities (AACF)

The result displayed in Table 2 shows that Age (AGE) of farmers (households) is positively and statistically significant (at 10%) relationship with the probability that farmers (household) would have access to agricultural credit facilities. The marginal effects shows that an increase in household age by one year led to 0.85% increase in the probability of famers having access to agricultural credit facilities. It might be due to the fact that older farmers have large capital basis to seek for agricultural credit facilities than the youth. Sex (SEX) of a farmer (households) is positively and statistically significant (10%) relationship with the probability that farmers (household) would have access to agricultural credit facilities. The marginal effects show that being male headed increase the probability of accessing the agricultural credit facilities by 96.6% than being a female headed. The implication is that women have few assets and small land-holding with low productivity

there by affecting their access to agricultural credit facilities.

Employment status (EMP) of a farmer (households) has positive and statistically significant (at 5%) relationship with the probability of farmers access to agricultural credit facilities. This demonstrates that an increase in one unit of employment status of farmers (Households) would equally increase the probability of farmer's access to agricultural credit facilities by 30.3%. The finding is that a large proportion of agricultural credit intervention like IMF is targeted at poor farmers and employed individuals. Level of Security (LS) in the other hand has positive and statistically significant (at 5%) relationship with the probability of farmers access to agricultural credit facilities. The marginal effects shows that at 1% increase in level of security of a particular place bring about 10% increase to famers (households) access to agricultural credit facilities. The reason is that financial institution doesn't want to issue loan to places that are not having security problem, because the risky of inverting in such area is very high.

Finally, Value of collateral (VC) is positive and statistically insignificant (at 10%) relationship with the probability of farmers access to agricultural credit facilities. The marginal effects show that an increase in farmers (households) value of his collateral by one thousand naira bring about corresponding increase to farmers access to agricultural credit facilities. This means that farmers with high values of collateral have high tendency of secure loan in commercial bank than does that their collateral value is very low.

5. Conclusion and Recommendations

The study provides valuable insights into the factors affecting access to agricultural credit facilities in conflict-affected areas and underscores the need for comprehensive policy measures to address these challenges effectively. This is because the number of loans obtained from agricultural banks, age grade and security to lives and properties significantly determine the level of Agricultural output in the Boko-Haram affected areas. That is, the higher the number of loans

obtained from agricultural banks and security to lives and properties the higher agricultural output. This implies that Agricultural output increases with the increase in the number of loans obtained from agricultural banks and security to lives and properties. With the presence of Boko Haram activities in society, the number of loans obtained from agricultural banks, and security to lives and properties are significantly affected, in which the level of Agricultural output is affected. Conclusively, Boko Haram activities indirectly and significantly affect agricultural investment due to lack of loans from agricultural banks.

The findings suggest targeted interventions to improve farmers' access to agricultural credit in Boko Haram-affected areas:

- i. The study also recommended that the government should provide loans to farmers at a subsidized rate, and security to the lives and properties of farmers to make farming activities more lucrative. This will help in limiting the level of agricultural activities in the state and increase agricultural output. Furthermore, Policymakers should focus on reducing gender disparities in access to credit facilities by implementing gender-sensitive financial policies, providing financial education to women, and encouraging financial institutions to adopt non-discriminatory lending practices.
- ii. Enhancing employment opportunities can improve access to credit by increasing individuals' financial stability and creditworthiness. Employment programs and policies that create jobs and support stable income generation are essential
- iii. Supporting Older Individuals: Tailored financial products and programs that cater to the needs of older individuals can help mitigate the inverse relationship between age and credit access. Financial institutions should consider developing age-specific credit offerings and risk mitigation strategies.

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