



# Effects of Banditry on Agricultural Labour Supply in Danko-Wasagu Local Government Area of Kebbi State, Nigeria

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#### Abstract

This study examines the effects of banditry on agricultural labour supply in Danko-Wasagu Local Government Area of Kebbi State. Multi stage sampling technique was employed to select 384 respondents involved in agricultural production. Data was collected using a well-structured questionnaire and were analysed, using both descriptive statistics and inferential statistics notably ordinal logistics regression technique. Out of the 384-questionnaires administered 100% were filled, returned and valid. Findings of the study reveal that an increase in banditry significantly reduces agricultural production. Also, internally displaced persons, and frequency of attack have significant effect on agricultural labour supply experienced by farmers in the study area. Banditry is also found to reduce the hours of agricultural labour supply of farmers. An increase in frequency of attack and displacement of persons reduces total agricultural labour supply hours of farmers indicating a negative and significant relationship. Therefore, it is recommended that policy makers and stakeholders should suggest some efforts to put an end to banditry in the study area.

**Keywords:** Agricultural Production, Banditry, Kidnapping, Agricultural Labour Supply, Frequency of Attack **JEL Classification:** 

**Contribution to/Originality of Knowledge:** The paper contributes to the existing body of knowledge as most of the previous studies focused on effect of banditry on cattle and crop production. However, this study has added more value by examining the effect of banditry on agricultural labour supply in Danko-Wasagu LGA, Kebbi State.

#### 1.0 Introduction

Agriculture serves a significant role in the advancement of the Nigerian economy and most developing nations. The majorities of the people involved in agricultural practices are predominantly poor and reside in rural areas, relying heavily on income from family labour, thus living below the international poverty threshold of \$1.90 per day (FAO, 2012; World Bank, 2018). The sector provides stable source of livelihood, reduces poverty and hunger, and above all promotes economic growth and development. Additionally, agriculture supplies food for mankind and raw materials to the industrial sectors of the economy, generates employment for a large number of the unemployed, and serves as a means to generate foreign exchange through the export of agricultural products (Agrl et al., 2019). Critically, agriculture in Nigeria is characterized by low production due to several factors ranging from lack of availability of credit facilities, high cost of farm inputs, climate change and so many and



recently insurgency in the northern part of Nigeria due to activities of Boko haram and armed bandits (Kegna et al., 2014). In recent times, the escalation of armed bandits in several states in Nigeria, particularly in the North-western states of the country has caused a lot of devastation on agriculture and therefore affected the livelihood of the rural people. It has also displaced farmers away from their homes causing a shortage in labour supply and low agricultural output considering the sector being labour intensive (Adebayo, 2014; Ojo, 2018, Adelaja & George, 2019).

Though agricultural production in Nigeria has become vulnerable to insurgency, in 2020, over 247,000 farmers were internally displaced (IDPs) from their remote farming communities as reported by the United Nations Humanitarian Commission on Refugees (2020). Also, above 1,600 losses of lives were recorded. Between January and June of the same year, 3,130 people; mostly farmers have been displaced in North-west Nigeria (Council of Foreign Relations, 2020). According to an American security report (2021), over two hundred thousand (200,000) farmers have fled their homes in North-west Nigeria crossing the border in search of safer abode. Nigeria's ambitious effort at increasing agricultural production and achieving food security as contained in the United Nations Sustainable Development Goals (SDGs) Agenda 2030 is however being threatened by growing incidences of insurgency and armed violence.

The unprecedented level of insecurity in the form of banditry and kidnapping as presently experienced in Danko/Wasagu local government area, Kebbi State, and the nation at large is worrisome as seen in recent times, armed bandits have taken control and occupied some farming communities (Mohammed, 2015; Yahaya, 2018; Ladan & Matawalli; 2021). The rural people who are mostly employed and whose source of livelihood comes from crop and livestock production are unable to produce enough to feed and meet the ever-growing demand from both the rural and urban populace. Farmers and pastoralists migrate from their farming communities to protect their lives and move to safe areas where they can farm and produce more without hindrance from bandits that steal their remaining crops, burn down their homes and food stores, and also destroy their farmland. Consequently, the magnitude of such attacks and the effect on means of livelihood have far negative effects on the supply of labour, food, and raw materials and prices of food, and other items in the markets. Also, there is attended negative effect on the rural economy as identified by the following studies: Umar, (2021); Tahir, and Imam, (2021) as long as these farmers keep away from their farms for fear of their lives their means of livelihood remain threatened.

While there are increase literatures focusing on conflict on agricultural production in Africa and several developing countries. There are insufficient empirical studies on the negative consequences of banditry on agricultural production in the study area and Kebbi state at large; Despite study by Senchi, et al (2022) focusing specifically on the effect of banditry on sheep and cattle production in kebbi State. There has not been so much work conducted to investigate the effect of agricultural labour supply disruptions as a result of banditry in Kebbi State, particularly between 2019 and 2022, which is believed to be the peak of banditry in the study area. Despite the relevance of the state in the National Food Security Policy of the



federal government vis-avis several agricultural intervention received, and considering the fact that most of the people in the state depends on agricultural production for livelihood. This research provides a broader perspective in terms of value addition and fills the gap in the literature by incorporating variables such as agricultural labour supply in place of agricultural outcomes such as cattle and crop output that have been studied previously. Thus, filling this gap both theoretically and empirically provides enough justification for study of this nature on the effect of banditry on agricultural production in the study area.

It is against this backdrop that this study intends to investigate the effect of banditry on agricultural production in Danko/Wasagu LGA of Kebbi State. This is to provide empiricalbased evidence to strengthen policies of the government towards achieving sustainable economic growth and development in the study area and the country at large.

2.0 Literature Review

# 2.1 Conceptual Clarification

## 2.1.1 Concept of Banditry

According to Daly (2022), banditry refers to the practice of using violence, coercion, or intimidation to obtain resources often through illicit or illegal means, and often perpetrated by individuals or groups who operate outside the framework of established legal or moral norms. It is characterized by the use of force to seize or control resources, such as money, goods, or people, and is often associated with criminal or rebel groups that challenge the authority of the state or other established institutions.

## 2.1.2 Concept of Agricultural Labour Supply

Agricultural labour supply is seen as the willingness of individuals to supply, mobilize and hire communal labour to work on farms without threat of attack or being killed by bandits. Thus, it is measured based on the number of hours an individual can work on a farm without any threat of attack (Odozi et al. 2021; World Bank; 2021) measured (AGLS) as the total number of hours supplied per day during farming activities in previous agricultural seasons.

## 2.2 Theoretical Framework

There are several theories propounded by scholars attempting to discuss the behaviour of individuals in decision making and mostly are anchored within social philosophy framework. For instance, Karl Marx (1867) postulated that conflict arose in society due to the competition for limited resources by individuals. This further result in the division of society into different classes or groups engaged in conflict against each other. The predominant classes of interest are sub-divided based on individuals' relationship with the means of production. As society becomes categorised, likewise inequality of income, poverty, and the wealth gap increase continuously. Similarly, frustration aggression theory as propounded by Fererabend & Feirauben, (1972) discussed the nexus between frustration and aggression. Frustration involves a person's failure to accomplish their ends (Berkowitz, 1989). Accordingly, all forms of insurgency or armed violence are the product of aggressive behavior which incidentally is caused by poverty and unemployment among other factors.



This study adopts an eclectic theoretical framework wherein more than one theory (Collier's conflict Trap, Marxian conflict and Frustration Aggression) serves the framework. Juxtaposing Collier's conflict theory on the effect of banditry in Nigeria offers an important viewpoint, particularly in the northern states, presents a multifaceted set of problems created by several factors.

Also, Collier's theory pinpoints grievances as a major contributing factor to conflict. In Nigeria, it is evident that unresolved socio-economic and political grievances occur, mostly among marginalised individuals and groups due to various factors ranging from lopsided resource distribution, poverty, unemployment and inequality, and lack of access to resources. These grievances usually metamorphosed to frustration which provides fertile ground for the emergence of criminalities such as banditry.

The above theoretical postulations depict a factual image of the state of affairs in Danko-Wasagu LGA due to frequent conflicts between farmers and pastoralists that metamorphosed into rural banditry. As seen in the intensity of the effect on agricultural labour supply, farmers have since abandoned their farmlands for fear of attack or killed which has far-reaching effects on agricultural production and also. However, it is not all conflict that has negative effects; sometimes conflict leads to more social cohesion among the groups involved (Gilligan & Samil, 2014) and leads to post-conflict resource mobilization efforts by countries.

# 2.3 Empirical Review

There is a general consensus in the findings of the previous studies conducted elsewhere that conflict affects agricultural production. There are increasing empirical literature on the effect of banditry on agricultural labour supply in Nigeria. For instance, Ofoma and Onwe, (2023) examines the effect of banditry on socio-economic development in the North West zone of Nigeria. The study emphasized on several acts of violence perpetuated by bandits such as kidnapping, cattle theft, and village raids, and provide proof of the damaging effect on socioeconomic indices in the region. The results revealed that banditry results to a decline in the average per capita income of the community due to labour hours lost, unemployment and disrupts food security. Other studies on armed banditry and its effects on human security and socio-economic variables in Nigeria, by Tukur, Lawal and Ashemi (2023) the study employed descriptive and inferential statistics for its analysis. The result indicated that rural banditry cause distress, threatens the peace of mind, displacement of people and loss of labour hours. Also, it is responsible for increase in the cost of living, low livelihood among the people in the community. Furthermore, it was found that armed banditry has significant negative effect on levels of poverty, unemployment, food insecurity, poor education, health, low income, and the general standard of living of the people living in the state

Similarly, Odozi and Oyelere (2021) analysed the average effect of conflict on agricultural labour supply of farm households in Nigeria. Panel data was used spanning 2010-2015 including armed conflict data. The findings revealed a significant decrease in total family labour supply hours in agriculture. Furthermore, the decrease in family labour supply is due to a significant reduction in the total household's head number of hours. In line with the



above study, George and Adelaja (2021) investigated the effect of IDPs on important agricultural sector variables in host communities whenever there is an influx of IDPs. Displacements due to insurgency, communal clashes, were estimated on agricultural outputs, and employment. The Findings showed a connection between forced displacements and decrease in agricultural output due to decrease in land and labour efficiency.

However, contrary study by Balogun and Adewumi (2022) highlights the effect of armed banditry on agricultural production in Nigeria specifically on herdsmen attacks spanning 2014 and 2020. The proxies used for independent variable are the actual number of deaths due to pastoralists' attacks, the total number of injured by pastoralists, and the total number of internally displaced persons, while the percentage of GDP was used to proxy agricultural output as the dependent variable. The study used the quantitative research method analysed using the Auto regressive Distributive Lag (ARDL). The results discovered that there exist an insignificant relationship between the number of deaths from herdsmen attacks and the agricultural yield, while the number of injured from herdsmen attacks has no significant effect on the agricultural output. Also, the results further indicated that as persons become displaced, agricultural labour supply and output increases particularly in the host community. In a similar study, Noubissi and Njangang (2020) investigated the effect of insurgency employing panel data of fourty eight (48) countries in Africa spanning 1998–2016. The study used the generalized method of moments. The findings revealed that transnational violence; number of attacks and deaths are associated with agricultural land. While, the indicators of insurgency are negatively related with agricultural productivity and agricultural labour supply in African countries. Therefore, terrorism and terrorist threats have positive linkage with decrease in agricultural production in Africa. Also, George et al. (2021) investigated the effect of conflict on human population displacement and demand for service in host communities' agricultural output, employment, wage and land use. The findings revealed that forced displacements largely result in decreased agricultural production as a result of lower land and labour productivity. Also, whereas insurgency-influenced population movement reduces the agricultural wages of both males and females, it increases the dependence on male and female household labour but has insignificant effect on hired labour.

#### 3.0 Data and Methodology

## 3.1 Description of the Study Area

Danko/Wasagu local government area constitutes one of the twenty-one (21) local government areas within Kebbi State. It encompasses a total land area of four thousand two hundred and eight (4,208 km<sup>2</sup>) square kilometers and has a population of 265,271 residents. (National Population Commission, 2006) and a projected population of 397,005 as at 2023 based on the 2.4% population rate of Nigeria (WDI, 2021). The LGA is bordered to the south by Sakaba Local Government Area, to the west by Zuru Local Government Area, and to the north-east by Bukkuyum, Anka, and Maru Local Government Areas of Zamfara State (Kebbi State Government, 2003). Geographically, this Local Government is situated between the latitudinal coordinates of 11°25'N and the longitudinal coordinates of 50°40'E relative to the equator. The average temperature ranges from 37°C to 38°C. The period from November to



February experiences cooler temperatures due to the dry harmattan winds, while the months of March to April are typically characterized by higher temperatures (Girma, 2008).

The major occupation of the people is crop production and animal rearing. Various types of crops cultivated in the region encompass maize, millets, sorghum, rice, hot pepper, and amaranths. The livestock kept includes cattle, sheep, and goats. This area comprises eight administrative districts: Danko, Wasagu, Ribah, Waje, Kanya, Bena, Kyabu, and Wari. The climatic conditions are characterized by a single rainy season followed by an extended dry season. The average annual rainfall measures approximately 720 mm, with the rainy season occurring from May to October, lasting around five months. November to February is notably chilly as a result of the dry harmattan winds, while the period from March to April typically

experiences elevated temperatures (Girma, 2008).

## 3.2 Instrument for Data Collection

The study employed primary data for its analysis. A well-structured questionnaire with both open-ended and closed-ended questions is the primary tool used to gather data. The respondents were chosen at random from eight (eight) political wards in the study area, representing various communities. Likewise, the questionnaire used in this study was adapted from the study of (Joshua, 2021; Mohammed, et al, 2021).

## 3.3 Method of Data Analysis

Both descriptive and inferential statistics were employed in the investigation. Specifically, the descriptive statistics is



#### Figure 1: Map of Kebbi State Showing Danko Wasagu LGA

employed to describe the socio-demography of household age, gender, education level, marital status and farm size etc. Likewise, ordinal logistic regression analysis is used to achieve the stated objectives of the study.

## 3.4 Sample Size

The sample size for the research is determined using Cochran formula (Cochran, 1977) the formula for infinite population. The formula provides a justification for sampling large population that is unknown and having a known population proportion. Since the study lack a sample frame therefore actual data of farmers in the study area becomes difficult to generate due to continued attacks and further displacement of farmers away from their farming communities.



$$n = \frac{P(1-P)Z^2}{e^2} = \frac{0.5(1-0.5)1.96^2}{0.05^2} = 384.16 = 384.16$$

Where n is the sample size; p  $\neg$ stands for the population proportion of the targeted population; (p = 0.5) and e represents acceptable sampling error (e= 0.05); z stands for value at reliability level or significance level. Suppose the confidence level is 95 % or significance level 0.05; z =1.96. A total of 384 well-structured questionnaires were distributed to the respondents through the random selected sampling technique based on the population of the eight administrative wards in the study area.

#### 3.5 Sampling Technique

The study uses descriptive research design. Respondents included in the study were chosen using a multi-stage sampling process. In the initial phase, purposive sampling by selecting Danko/Wasagu Local Government Area (LGA) due to frequent occurrence of attacks by bandits and being the epicenter of banditry in Kebbi State. Previous researches have equally used same method (Shabu, Kile & Ukulu, 2020; Rabiu, Aliyu & Tidy, 2022). The second stage involved the selection of eighth political wards namely; (Ayu, Bena, Dan Ummaru, Kanya, Kebbo, Ribah, Waje, and Wasagu) out of the eleven existing wards in the study area, which are the most affected. The third stage involved selection of the most affected 3 (three) villages each from the chosen eight political wards given a total of 24 villages. Thereafter, a simple random sampling is conducted among the farmers in each village. To ensure randomization, the number of farmers is written on tiny pieces of paper and put in a box. The box is then shaken repeatedly. Hence, 384 questionnaires were distributed according to the size and population of the wards. Similarly, previous studies on the effect of insurgency on agricultural productivity have relied on multi-stage sampling method. These include the following (Gloria, 2017; Joshua, 2021; Sekumade & Owoeye, 2020; Mohammed et al, 2021).

#### **3.6 Variables Measurements**

This section explained how variables for the study are measured. Thus, Agricultural Labour Supply is measured according to Odozi et al. (2021), while IDP, KR and FQ variables in the study are in line with measurement of armed conflict variables by (Adelaja and George, 2019; Joshua, 2021). And the following are the variables to be measured:

VARIABLES	MEASUREMENT				
DEPENDENT					
Agricultural Labour Supply (AGLS)Total Number of Hours Supplied Per Day					
INDEPENDENT					
Internally Displaced Persons (IDP)	Coded '1' if a member of the family is being displaced in the previous agricultural seasons; otherwise, it is coded '0'not displaced.				

Table 3.1 Variables and Measurement



Kidnapping for	Coded '1' if a member of the family is kidnapped in the previous
$\mathbf{D}_{\text{oncom}}(\mathbf{V}\mathbf{D})$	actional transmission of the marked of the second of the s
Ralisolii (KK)	agricultural seasons, otherwise, it is coded 0 not kidnapped.
Frequency of Attack	No. of attacks experienced by respondents in the previous
$(\mathbf{EO})$	agricultural second of a 1 100
(FQ)	agricultural seasons. e.g. 1 – 100.
Age	No. of years of the Respondent
1150	The spendent
Marital	Single, Married, Divorced or Widowed.
	No. of family members of the respondent e.g Less than 3, 19-35,
	36-45 46-55 Above 56
Household Size	50 15, 10 55, 100 10 50
	Orealification attacks to be a Fernard New Fernard Driver me
	Qualification attended e.g Formal, Non-Formal, Primary,
	Secondary and Post-Secondary.
Educational level	
Condor	Mala or Famala
Uchuch	

Source: Author's computation, 2023

#### 3.7 Model Specification

To investigate the effect of banditry on agricultural labour supply (AGLS) of farmers in the study area. The model specification is as follows:

Where:

 $AGLS_i$  = Agricultural labour supply (AGLS) of farmers.

 $IDP_i$  = Internal Displaced Persons

 $DM_i$  = Vector of Control Variables e.g. Age, Gender and Marital Status

 $KR_i$  = Kidnapping for Ransom

 $FQ_i$  = Frequency of Attack

Similarly, equation 3.5 stipulates the econometric form of equation 3.4 as follows:

 $\beta_1$  represents Parameter of Internally Displaced Persons;  $\beta_2$  represents Parameter of Demographic Variables e.g. Gender, Age, and Household Size etc. While,  $\beta_3$  is Parameter of Kidnapping for Ransom.  $\beta_4$  stands for Parameter of frequency of Attack. Lastly,  $\epsilon_i$  is the error Term.

#### 3.8 Estimation Procedure

Also, ordinal logistic regression estimation technique is used to achieve the objective which is to identify the effect of banditry on agricultural labour supply of farmers in the study area.



However, considering our model equation (3.5) ordinal logistic regression model is the most suitable and used for ordered classification tasks. Since the dependent variable AGLS is categorised in to range of hours. The appropriate test is conducted respectively, pre-estimation test i.e. descriptive statistics and pair-wise correlation test. Similarly, McFadden or pseudo R2 test used to determine the overall significance and goodness of fit of the model and it is expected that the estimated models are reliable, consistent, efficient and capable of producing a robust statistical result. The R- square is used to examine the proportion of variation of the dependent variable as explained by the independent variables.

The ordinal logistic regression model is represented by the following equation:

$$logit P[(Y \le j)] = log \left[\frac{P(Y \le j)}{P(Y \le j)}\right] = \alpha j - \beta X, \quad j \in [1, J - 1]$$
 3.6

Where;  $j \in [1, J - 1]$  = levels of the ordinal outcome variable Y; and  $\beta$  is the slope parameters for the explanatory variables; X represent the explanatory variables and  $\alpha j$  is the intercepts.

 $P(Y \le j)$  = is the cumulative probability of Y less than or equal to a category j = 1, ..., j - 1.  $\frac{P(Y \le j)}{P(Y \le J)}$  = odds of being less than or equal to a particular category

The model for the effect of banditry on agricultural labour supply is represented by the ordinal logistic regression model as represented by the following equation:

$$P(AGLS \le j) = \alpha j + (\beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \dots + \beta_p x_p)$$
 3.8

Where:  $P(AGLS \le j) =$  represents the cumulative probability of less than or equal to a specific category of agricultural labour supply. And  $\alpha$  is the intercept (bias) term;  $\beta_1 \ \beta_2 \ \beta_3 \ and \ \beta_4$  are the coefficients for the independent variables. While  $x_1 \ x_2 \ x_3 \ and \ x_4$  represent the observed values for the independent variables.

However, in order to examine the effect of banditry on agricultural labour supply in the study area, our estimation model can be specified as follows:

Where;  $P(AGLS \le j)$  represents the cumulative probability of less than or equal to a specific category of AGLS. While,  $IDP_i, KR_i, FQ_i, DM_i$  and  $\varepsilon_i$  remained as earlier defined.

#### 4.0 Presentation and Discussion of Result

This section presents result on the demographic data of the respondents based on their responses. A total of 384 questionnaires were distributed and all were retrieved and coded in excel format.

Table 4.1: Descriptive Statistics of Socio-Economic Characteristics of Respondents



Variable	Category	Frequency	Percentage		
Gender	Male (1)	333	13.26		
	Female (0)	51	86.72		
Ago	~ 18	17	1 13		
Age	10 25	17	4.45		
	19-33	131 94	34.11 21.99		
	50-45 46 55	04 82	21.00		
	40-33	02 70	21.55		
	>30	70	18.25		
Marital Status	Single	32	8.33		
	Married	326	84.90		
	Divorced	6	1.56		
	Widowed	20	5.21		
Household Size	< 3	120	31.25		
	4-6	110	28.65		
	7-9	46	11.98		
	>10	108	28.13		
Farming Activity	Crop Farming	309	80.47		
8 7	Cattle Rearing	75	19.53		
	Fishing	0	0		
Education Level	No Education	77	20.05		
	Non Formal	208	54.17		
	Primary	61	15.89		
	Secondary	14	3.65		
	Post –Secondary	24	625		
	Continuous Variables				
Variable	Mean	Std. Dev.	Min Max		
No. of IDPs	7.494792	7.269879	0 50		
No. of Kidnapped	0.5546875	1.132076	0 12		
Frequency Attacks	9.03385	6 90944	0 30		

Source: Author's Computation using STATA

Table 4.1 indicates that majority of the respondents were male, within the age of 19-55 years, mostly married with moderate and large household size. This revealed that the male population is more involved in agricultural production than the female counterparts. Also, the Age of the respondents in Table 4.1 showed that majority of the respondents are in the range of 19-35 years; The age 36-55 years is considered the most productive age bracket and hence could suffer more from banditry than other category.

Marital statuses of the respondents in Table 4.1 also showed that majority of the respondents were single, and married. Similarly, 1.56% were divorced, while 5.21% were widowed, respectively. Majority of the respondents were married and. therefore, could suffer the most due to the family responsibilities associated with marital relationships. Also, Table 4.1 showed that majority of the respondents had a household size of < 3; likewise, 28.65% had a



household size ranging between 4-6. Additionally, 11.98% of the respondents had a household size between 7-9. The respondents who had a household size of more than 10 had 28.13% accordingly. This suggests that families with a larger size are more capable of producing more and, therefore, experiencing greater labour loss.

## 4.1 Inferential Statistics

Inferential statistics enables the researcher to draw conclusions based on the findings of the study. Therefore, this section, deals with the ordinal logistic regression estimate and pairwise correlation test.

	1	2	3	4	5	6	7	8
Hrwork	1.0000							
Idps	-0.5124	1.0000						
Kidnapping	-0.1912	0.3562	1.0000					
FreqAttacks	-0.4110	0.5637	0.1884	1.0000				
Gender	0.1091	-0.1309	0.0177	0.0108	1.0000			
Age	0.1021	0.0070	0.1824	-0.0365	0.1508	1.0000		
Marital	-0.0478	0.1498	0.0769	0.1204	-0.3488	0.0193	1.0000	
Hhsz	-0.0101	0.0515	0.2128	0.0029	0.1858	0.6082	0.1020	1.0000

Table 4.2 Pairwise correlation matrix of variables in the model

Source: Author's computation using STATA

Table 4.2 showed the results of the pairwise correlation matrix between the key variables in the model, the results showed each pair of variables we included in the analysis. Coefficient -0 and 0 means these variables have weak correlation (or weak negative) relationship. The highest neutral correlation value is 0.56 which is between internal displacement of persons and frequency of attack. It means that the relationship is very weak.

#### 4.2 Effect of Banditry on Agricultural Labour Supply in the study area

Table 4.3: Results of the	Ordinal Logistic	Regression for C	Dijective Two (2)
	0	0	

Hour work	<b>ODDS RATIO</b>	STD ERR	Ζ	<b>P-VALUE</b>
IDPs	.1952***	.0674	-4.73	0.000
Kidnaping	.7208	.2142	-1.10	0.271
Freq. Attack	.9187***	.0226	-3.44	0.001
Gender	1.778	.6888	1.49	0.137
Age	1.358**	.1614	2.57	0.010
Marital	1.3760	.3108	1.41	0.158
Hhsz	.8427	.1063	-1.36	0.176
/cut 1	.3163	.6877		
/cut 2	1.3960	.6901		



3.3573	.7225
118.76	
0.0000	
0.1568	
	3.3573 118.76 0.0000 0.1568

Source Author's computation using STATA \*p <0.1 \*\*p <0.05, \*\*\* p <0.01

In Table 4.3; the odds ratio of 0.72 of kidnapping indicated a negative and insignificant effect between the independent variable, kidnapping for ransom on agricultural labour supply in hours. This means that for every person kidnapped agricultural labour supply decreases by 0.72 times. Also, the odds ratio of 0.92 for the "frequency of attack" holding other variable constant indicates a negative and significant effect between the frequency of attack on agricultural labour supply. This means for each unit increase in frequency of attack there is corresponding 0.92 times decrease in agricultural labour supply. And the p-value of 0.001 is statistically significant at 1%. Additionally, the odds ratio of 0.20 showed a negative and significant effect between the "Internally Displaced Persons" and the agricultural labour supply. This means a unit increase in displacement of persons would lead to a decrease in agricultural labour supply by 0.19 times. With a p-value of 0.000, the statistical significance suggests that displacement of persons has a significant effect on agricultural labour supply.

Tests	No. of groups/Patterns	Statistics	df	P-value
Ordinal HL	10	27.690	26	0.3739
PR(chi2)	0	-	-	-
PR(deviance)	0	-	-	-
Lipsitz	10	9.644	9	0.3800

Table 4.4: Result of Goodness of fit tests for ordinal logistics regression

**Source** Author's computation using STATA (HL = Hosmer-Lemeshow; Pulkstenis-Robinson)

Table 4.4 showed the Hosmer-lemeshow goodness of fit test and is used to evaluate the fit of the model to the observed data, particularly considering the ordered categories of the dependent variable. In table 4.15 the HL p-value of 0.37 which is greater than 0.05% level and this suggest that the model fit is adequate and there is no significant lack of poor fit.

## 4.3 Discussion of Findings

This part of the study discusses the effect of banditry on agricultural labor supply in the study area. Variables of interest in this study are kidnapping for ransom, internally displaced persons, and frequency of attack. For kidnapping for ransom, indicated a negative and insignificant effect. This further confirms that the more persons are kidnapped the more the likelihood of a lower agricultural labor supply, thereby resulting in a reduction in agricultural production in the study area. The finding corroborated the study by Odozi and Oyelere (2019) that showed violent conflict forced farmers to reduce their total labor hours worked on farms and hence reduce their agricultural production.



Similarly, the effect of IDPs on the supply of agricultural labour holding other variables constant showed a negative effect on agricultural labour supply. This means that individuals who have been displaced are more likely to experience low agricultural labour supply. This is in line with a study by George and Adelaja (2021), who investigated the effect of conflict on human displacement and demand for labour in host communities on agricultural output. The findings revealed that forced displacements largely result in decreased agricultural production as a result of lower labor productivity. Furthermore, the effect of the frequency of attacks on agricultural labour supply also indicates that individuals who have experienced attacks are more likely to experience low agricultural labour supply due to a decrease in hours of work on farms compared to those who have not encountered attacks. This is in agreement with Odozi and Oyelere (2021) who studied the effect of conflict on the agricultural labour supply of farm households in Nigeria. The findings revealed a significant decrease in total family labour supply hours in agriculture due to a significant reduction in the total household's head number of hours. The overall estimation result indicated that McFadden R2 showed a 15% variation in the effect of banditry on agricultural labor supply (agricultural production) though the lower percentage has little influence in cross-sectional study. The Chi2 value is 0.0000 considering the significant test at less than 1% statistical level. The model has evidence of a strong relationship in explaining the variation in agricultural labor supply due to banditry in the study area.

#### 5.0 Conclusion

There is no doubt that banditry has caused a lot of devastation to the rural economy thereby increasing rural unemployment, poverty, hunger and migration of labour. While, among the ambitious goals of the Nigerian government as contained in the SDGs 2030 agenda is to end hunger, reduce poverty and create employment opportunities through agricultural development. However, this is further affected by the unprecedented level of attacks and displacement of persons due to banditry. Based on the findings of the study, the low agricultural labour supply experienced by farmers is due to the frequency of attacks, kidnappings for ransom, and displacement of farmers associated with banditry which has become a serious menace to agricultural production and the achievement of food security in D/W LGA and Nigeria at large. As seen in the loss of farmlands, loss in labour hours, food insecurity, and low agricultural production. Overall, all, this creates unemployment among the teeming unemployed youth population and which might provide a fertile ground for recruitment by bandits.

#### 5.1 Recommendations

Based on the findings of this study the paper makes the following policy recommendations:

- (i) A Comprehensive economic intervention programs to victims of banditry should be provided and efforts made to strengthen and improve security measures in farming communities
- (ii) Kidnapping for ransom has caused unwillingness to invest in agriculture due to huge ransoms paid to bandits by families of victims. Therefore, the government



should be more proactive in safeguarding farmers to avoid kidnapping and payment of protection levy before or after agricultural season(s).

- (iii) Since IDPs have abandoned their farms and settled in host communities hence, resulted to less time spent on farm. Therefore, resettlement of IDPs back to their farming communities will encourage them to go back to their farm, increase in supply of farm labour and agricultural production.
- (iv) To eliminate the frequency of attacks faced by farmers which prevent them from working on their farms, and hence resulted to decreased agricultural labour supply and production. It is recommended that effective profiling of local vigilante organizations to complement the police and military to protect the farmers and their assets will go a long way in curtaining banditry.

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