Rural development as a panacea to stimulating rural livelihood in the post-COVID era: is agriculture still the key?

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Abstract
Background: Agriculture represents one of the most important means of rural livelihood in Nigeria. Hence, agricultural development is essential for advancing the rural economy. Due to the benefits of employment creation, food security, and income generation, it is typically regarded as a tool for rural development
Objective: The study aimed to develop a model through which the components of agricultural development can enhance rural livelihood.
Methodology: To create a representative sample of the respondents in the research locations, a multi-stage sampling procedure was used. Afterward, a structured questionnaire was utilised to gather information from the respondents, who were randomly chosenndom from the state's three senatorial districts. Data for the study were analysed using a binary logistic regression model.

Result: The result showed that Mechanical Technology (MET), Innovative crops (ICR), Micro Credit Scheme (MCS), Chemical fertilizer (CFE) and Good Rural Roads (GRR)] exert positive and statistically significant relationships with the dependent variable. This means that a one percent increase in the utilization of MET, ICR, MCS, CFE, and GRR would stimulate the likelihood for rural livelihood to rise by 2.5%, 6.2%, 1.2%, 2.9% and 1.4%, respectively. More so, the odd ratios indicate that the rural populace had 1.3, 1.8, 1.1, 18.1 and 1.2 odds of experiencing improvement in rural livelihood for every unit of increase in the availability and utilisation of MET, ICR, MCS, CFE, and GRR. Moreover, the coefficient of Pest Control Chemicals (PCC) was found to exert negative interaction with the dependent variable. However, at a 5% threshold of significance, the relationship was shown to be statistically insignificant.

Unique Contribution to Knowledge: This study provides a roadmap through which the living condition of the rural population could be enhanced through the mechanism of sustainable rural agricultural development in the study area.

Conclusion: Based on the findings, the study concludes. that rural livelihood can be significantly improved through the development of agriculture.

Recommendations: Greater attention should be paid to agriculture as a deliberate way of promoting rural development through poverty reduction.

Keywords: Rural area, Agricultural development, Rural Livelihood, Logit, Poverty

Introduction

Globally, the development of the rural economy has gained the undivided attention of the government, stakeholders in the agricultural supply-chain, and international communities. This is because the rural economy is critical for the equitable distribution of the principles of sustainable economic growth. So, it serves as a catalyst for development and inclusive economic growth. Also, the growth of the rural economy is dependent on agriculture because the majority of people live in rural areas and depend heavily on the sector for their income and standard of living in many developed nations. Cardno (2017) asserts that as the world's population grows, rural-urban movement takes place, depleting the labor force for agricultural production while increasing the proportion of people who do not produce food.

In essence, agricultural advance is essential for advancing the rural economy. Due to the benefits of employment creation, food security, and income generation, it is typically regarded as a tool for rural development. Therefore, boosting the rural economy may be difficult without sustained agricultural development. Particularly in emerging nations like Nigeria, agriculture plays a significant role in stimulating rural economies. As a result, any effective effort to support the rural economy should contain a component for sustainable agricultural growth. Many rural communities have looked to agriculture as a viable way to modernize their economies and address the issue of underdevelopment (Andriotis, 2005). Consequently, Nwachukwu (2008) maintained that the enhancement of people's physical and social well-being is the primary goal of agricultural growth. It is therefore mostly seen as a coordinated strategy to enhance the environment and wellness of the community's people.

Concerning agricultural development and the rural economy, in India, economic development is equivalent to the development of those who live in rural areas. Therefore, the World Bank Report (2016) found that rural India's agricultural development had a higher impact on improving the social and economic well-being of the rural population than urban and industrial expansion ever did. The improvement of rural people's economies in Korea was achieved through the construction of agricultural infrastructure (OECD, 2009). Incidentally, rural Asia witnessed a steady rise in farm income that was evident before 2000 (IFAD, 2016). Through agricultural market development, rural Asian farmers were well linked to the cities. The rural-urban farmer's linkages translated into the commercialization of farm produce by peasant farmers. This endeavour led to increased sourcing of farm produce directly from the rural farmers by the wholesalers. Thus, the expanded market prices that result from the linkages implied more resources for farmers to invest and rent more machinery due to increased economies of scale.

Consequently, the increased rural wages in Asia since 2000, established two facts; increased economies of scale which led to the attainment of food security, and second, improved standard of living by reducing poverty (IFAD, 2016). In Ethiopia, agricultural development has been classified as the mainstay for driving the rural economy. Consequently, small farm holders in Ethiopia accounted for more than 90 percent of the entire agricultural output (Diriba, 2018). This landmark productivity implied increased productivity which translates to improved return on investment. With the improved return on investment, rural farmers' conditions are enhanced.

In Nigeria therefore, agriculture represents one of the most important means of livelihood for the rural population. Thus, an estimated 65% of the Nigerian population lives in a rural area, with agriculture as the major occupation (Federal Bureau of Statistics, 1999). Furthermore, the Federal Bureau of Statistics estimated that about 70% of the Nigeria rural population is into agriculture. These farmers represent small family farm holders. Interestingly, agriculture was in prominence prior to the discovery of crude oil in Nigeria. Sadly, the succeeding governments did not use the

substantial income generated from crude oil sales to improve the agricultural sector, particularly in rural areas. The result was a quick transition away from farmland and toward urban industrial occupations. The consequence was a complete reliance on the old agricultural technique, which does not provide greater yield and decent income. The demand for food increased significantly along with the expansion of the industrial labor force in urban centers, but the rural population responsible for producing the food is unable to scale up production due to rural-urban migration and poor technology adoption brought on by a lack of agricultural development, which is the foundation of the rural economy in the rural areas.

Poor agricultural output as a result of insufficient agricultural development, therefore, has an impact on rural farmers' economies, which results in a low-income generation and low social conditions. As a result, rural farmers will experience a variety of effects over time, including an increase in poverty, a decline in quality of life, and rural-urban migration. With the purpose of ensuring food security, the Nigerian government has, nevertheless, repeatedly launched reform initiatives throughout the years. The Kaduna State Agricultural Development Project (KADP) was developed by the state government as a consolidation of the federal government agriculture project to finance the development and increased production of agriculture in rural areas. Coincidentally, the condition of the rural population was made worse with the outbreak of the covid-19 pandemic. The epidemic forced the closure of all economic activity, including farming and the agricultural supply chain. Due to farmers' inability to increase production owing to poverty, this has a severe negative impact on the rural economy and contributes to the area's already high degree of poverty. This study aims at evaluating the effect of agricultural development on enhancing rural livelihood.

Empirical Literature Review

Chikezie, Omokore, and Akpoko (2018) examined the effect of the adoption of the AFDB-CBARDP crop production project among beneficiaries in Kaduna, and Bauchi State. The study selected 746 participants and 746 non-participants. The study's analysis showed a 1% likelihood for an increase in agricultural output, crop yield, income, and standard of living for the beneficiaries than the non-beneficiaries. In the same vein, Michael (2021) examined the level of rural dweller's participation in a community-based development project in Gombe State, Nigeria. The study adopted a multivariate sampling technique to draw 71 representative samples from the three selected rural village areas (RVAs). The analyzed primary data collected showed that participants in the program had higher incomes than non-participants.

Workineh, Tayech, and Ehite (2020) examine the impact of agricultural technology adoption on smallholder farmers' welfare in Ethiopia. The study randomly selected 150 households from the Misha district of Ethiopia. Double hurdle and Endogenous Switching Regression models were adopted in the analysis of the primary data. The regression result showed that adoption of improved agricultural technology has a positive and significant effect in enhancing the welfare of the farmers.

Similarly, Muluken, Jemal, Getachew, Chanyalew, Dereje and Debbebe (2021) studied the effect of improved agricultural technology on household income in Eastern Ethiopia, using a propensity score matching estimation. the study sampled 248 rural farmers. Using propensity score matching to analyze the primary data. The regression result showed that households using improved agricultural tools had an increase in income.

Abubakar, Atala, Musa, and Sanni (2021) examined the impact of agricultural technologies on Sorghum farmers' livelihoods in Kaduna State and Kano State. A multi-stage sampling technique was used to draw 237 representative samples for participants and 237 non-participants. Propensity

score matching analysis was adopted in the analysis of the primary data. The study showed that improved technology adoption had no discernible impact on the standard of living.

Methodology

Research Design

The research strategy adopted in this work is an ex-post facto and analytical research approach. The structure of the approach flowed from descriptive characteristics discussion of the study variables, on the effect of agricultural development on the rural economy, using Kaduna Agricultural Development Project (KADP) as a case study. Information for the analysis was sourced with the use of the structured questionnaire. Consequently, both descriptive and inferential statistics were considered, as well as regression analysis through Logit Method. Hence, decisions and opinions were formed based on the outcome of the regression result.

Study Area

The study area was drawn from the three senatorial zones of Kaduna State (Kaduna Central, Kaduna North, and Kaduna South). These senatorial zones are made up of Local Government Areas that engaged in farming of different kinds. Hence, one local government was randomly adopted from each of the three senatorial zone, as shown in the map below

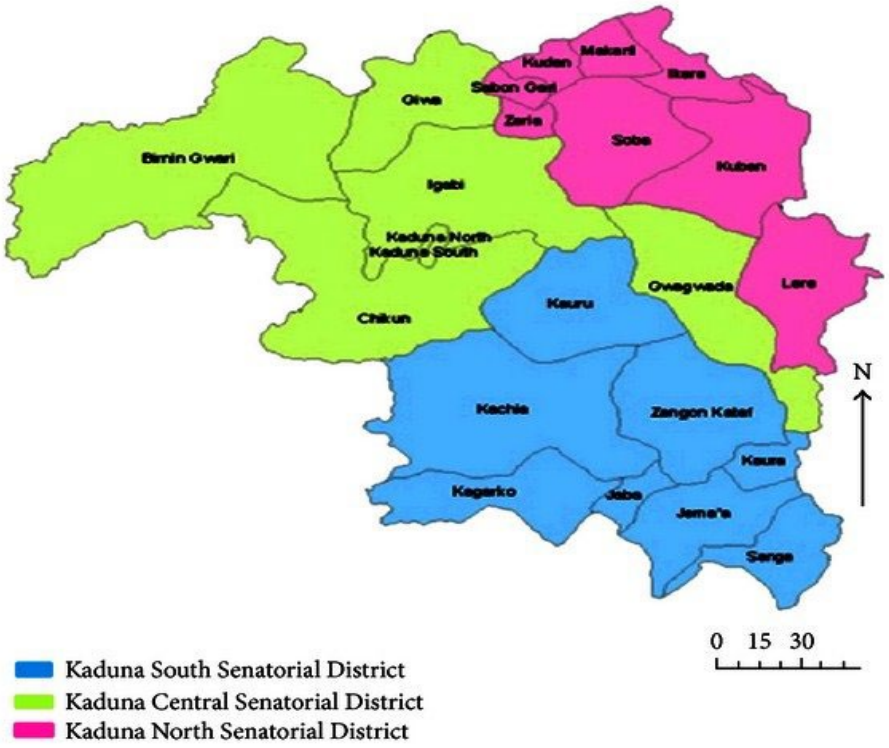

Figure 1: Illustrated map of Kaduna State showing the Three Senatorial Districts
Source: http://www.ncocusa.com/constituencies kaduna.html

The Jaba local government, which is part of the Kaduna South senatorial district, is the subject of the first syndicate study. Jaba has a 640km2 area and is located between the latitudes of 9oN and 8oE. With Zango Kataf Local Government Area in the North, Jema'a Local Government Area in the East, Kachia Local Government Area in the West, and Kagarko Local Government Area and

Nassarawa State in the South, the local government has shared borders. According to the 2006 population census, there are 61,000 people living in the Jaba local government area. The Jaba local government region experiences mostly two seasons: the dry and the wet. The rainy season typically lasts from April to October, whereas the dry season typically lasts from November through to March. Guinea savannah makes up the area's vegetation. The residents' primary line of work is farming. Small-scale agriculture is primarily practiced by the vast majority of farmers. The local government benefits from a wealth of natural resources, including hills, streams, open spaces with grass, dams, and profitable trees. Sorghum, millet, maize, yam, rice, cocoyam, groundnut, acha, beans, ginger, cassava, soya bean, sweet potatoes, beni-seed, and sugar cane are among the crops that are primarily grown there. In the study region, foods including peppers, tomatoes, spinach, and cabbage are particularly grown during the dry season (Folorunso and Adenuga, 2013). There are fifteen (15) districts in the Jaba local government area. Moreover, Jaba is the state's top producer of ginger.

The Kaduna North senatorial district's Kudan local government is another research area. The Kudan Local Government Area of Kaduna State is now one of the most significant rural areas in the state. It is situated between the latitudes of 27.57oN and 34.13oN of the equator and the longitudes of 07o43'53.82"E and 07o43'57.09"E of the Greenwich meridian (Aminu, 2015). The Kudan local government area is about 83 kilometers north of the Kaduna metropolis and is situated in the middle plains of the northern Nigerian highlands, where it averages 670 meters above sea level. Giwa, Sabon-Gari, and Makarfi local governments to the east, Giwa and Sabo local governments to the west, and Sabo local governments to the southeast, all share borders with Kudan. Moreover, Kudan is bordered to the north and northeast, respectively, by portions of Kano and Katsina states (Satellite Imagery, 2014). When it comes to geography, Kudan is mostly made up of gently sloping terrain that is occasionally broken up by river valleys, streams, and a few boulders. Kudan terrain is excellent for highland farming and is mostly higher in the area's northeastern regions. Kudan and the local government region of Jaba have the same climate. Kudan generally has two seasons: a dry season and a wet season. The region has a tropical continental climate with alternating dry and rainy seasons (Aminu, 2015). Farming is the main line of work for the Kudan inhabitants. Cassava, maize, millet, guinea corn, rice, sweet potatoes, yams, tomatoes, lettuce, sugar cane, and ground nuts are among the crops that the locals mostly cultivate. Kudan's population was 138,992 according to the 2006 census, and it was expected to reach 187,600 by 2016. Nonetheless, the Kudan local government, which consists of five districts, ten wards, and several villages, is more rural in nature.

The third study area is the Kaduna Central senatorial district's Chikun local government. With Kachia Local Government Area to the south, Kajuru Local Government Area to the east, Kaduna South and Igabi Local Government Area to the northeast, Birin-Gwari and Niger State to the northwest, respectively, Chikun Local Government Area shares borders with these areas (Premium Time Nigeria, 2017). There are 12 subdivisions in the Chikun local government area. According to the 2006 census, Chikun has a population of 268,250 people living within a 4,645 km2 area. The people's primary activity is farming, and the main crops grown there include cassava, guinea corn, millet, rice, and groundnuts. Hence, Chikun was discovered to have allocative effectiveness in maize growing in Kaduna state in a study done by Ayodele et al (2020).**Sampling Technique and Sample Size**

The multi-stage sampling procedure was utilized to generate a characteristic sample of the respondents in the study areas. Stage one involved cluster sampling of the crop farmers in the selected rural village areas (RVAs). In stage two rural communities were selected from each of the local government areas. While in stage three, respondents were purposively selected in each sampled RVAs. The reason for adopting the purposive technique is anchored on one reason, it will facilitate the effective choice of respondents who have lived long enough between 10 to 15 years in the local government area and have witnessed rural economy oscillations and agricultural development interventions. Additionally, this set of respondents constitutes those who are keen to answer appropriately and quickly to the survey.

Consequently, since the population is known, the sample size for this study was arrived at using Yamane (1967) formula to be 399.

Table 1: Sample Size for the Selected Communities in the Syndicate Local Government Areas

Sampled Communities	2006 Population	2020 Projected Population	Sampled Size
Kudan	21,950	33,202	27
Doka	14,261	21,571	17
Kwoi	11,780	17,818	14
Sabchem	10,162	15,371	12
Kachia	252,568	382,034	307
Sakwai	17,912	27,093	22
6	**328,633**	**497,089**	**399**

Source: Field Survey, 2022

Model Specification

In this study, the aim is rural development, by looking to qualify the likelihood of adopting agricultural development factors inducing the economy of the rural population (in this case income). The effect of the explanatory variables of agricultural development factors on the rural economy is expressed implicitly as;

$Y = f(X_1, X_2, X_3, \dots, X_n)$ ……... (1)

Therefore, equation (1) can be deduced in a mathematical form;

$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6$ …… (2)

Rural economy = f (Mechanical Technology, Innovative crops, Pest Control Chemicals, Micro Credit Scheme, Chemical fertilizer, and Good Rural Roads,)

The econometrics function ca be specified as;

$HHI = \beta_0 + \beta_1MET + \beta_2ICR + \beta_3PCC + \beta_4MCS + \beta_5CFE + \beta_6GRR + e$ ……. (3)

Where;

HHI = household income. This is a dichotomous response variable such that; HHI=1 if a farmer lives within or above the relative poverty threshold of ₦66, 802.20, as published by (NBS,2010), and 0 if they do not. The Relative Poverty line is the line that splits the poor from the non-poor. All persons whose per capita expenditure is less than the relative poverty line is classified as poor and vice versa.

X_1 adoption or no adoption of Mechanical Technology, X_2 adoption or no adoption of Innovative crops, X_3 adoption or no adoption of Pest control chemicals, X_4 adoption or no-adoption of Micro Credit Scheme, X_5 adoption or non-adoption of Chemical Fertilizer, X_6 availability or non-availability of Good Rural Roads, e denotes disturbance term or stochastic error term which is typically designated as zero mean and variance, β_i's are the coefficients of the independent variables.

Consequently, equation (3) is represented in the logit model as;

$$L_i=In\left[\frac{P_i}{1-P_i}\right] = Z_i = \beta_0 + \beta_1 MET + \beta_2 ICR + \beta_3 PCC + \beta_4 MCS + \beta_5 CFE + \beta_6 GRR + ei \ldots\ldots\ldots (4)$$

From equation (4) above, L denotes the log of the odds ratio, not only in X but also in linear parameters. It is therefore referred to as Logit or Logit probability model. This illustrates that the logistic model specified in the equation is rooted in the logits of Z_i. Where Z_i is the stimulus index.

Implicitly, the logit model shall be considered in this study because the dependent variable is dichotomous in nature. Therefore, the utilization or non-utilization of agricultural development projects was directed as a decision involving a dichotomous response variable.

Presentation, and Discussion of Binary Regression Results

Table 2: Distribution of the Respondent Based on their Socio-Economic Characteristics

Variable	Participants	
	Frequency	**Percentage**
Age Bracket		**Mean=34**
20-30	30	7.6
31-40	186	46.9
41 years and above	181	45.6
Total	**399**	**100.0**
Gender		
Male	247	62.2
Female	150	37.8
Marital Status		
Married	354	89.2
widow/widower	43	10.8
Family Size		
3-5	70	17.6
3	283	71.3
6-8	44	11.1
9 and above	70	17.6
Educational Level		

No formal education	58	14.6
Primary education	102	25.7
Secondary education	219	55.2
Tertiary education	18	4.5
Years of Farm Experience		**Mean=34**
6-10 years	3	.8
More than 10 years	394	99.2
Farmland Size		
Less than, <1.00 ha	232	58.4
Greater than, ≥ 1.00 ha	165	41.6
Source of Farm Labour		
Family	256	64.5
Hired Labour	141	35.5

Source: survey,2022

According to the descriptive statistics, the average age of rural farmers is 34 years. More specifically, the majority of them were found to be male (62.2%), while 37.8% were female, likely due to the fact that male offspring are typically the household's breadwinners. As for the respondents' marital status, 89.2% are married, while 10.8% are widows or widowers. Additionally, the descriptive statistics showed that most of the farmers (55.2%) had completed their secondary education. While the labor force (64.5%) used by rural farmers was mostly drawn from family, they had an average of 34 years of farming experience. In addition, the majority of farmers (58.4%) cultivate fewer than 1.00 hectares of farmland, which means that on average, rural farmers farmed 0.42% of the total hectarage available. Considering the amount of cultivable land there is in rural areas, this is minuscule. The outcome of the descriptive data thus points to inadequate agricultural development and the adoption of better farming practices in the rural region, which accounts for the poor cultivation of the large acreage in the rural area. This discovery is an urgent appeal for investment in the agriculture sector to increase rural farmers' productivity and standard of living in the post-covid age.

Table 3: Classification Accuracy of the Generated Logistic Regression Models

Observed			**Over All Percentage**
Model 1	What is the average income of your farm?	Less than ₦66,802.20	90.8
		Greater than ₦66,802.20	
a. The cut value is .500			

Source: Survey 2022, SPSS 25.

The overall performance/classification prediction of the regression model is shown in the table above. The expectation is that, if the anticipated probability of a category is greater than the created cut-off in the model, the expected answer is considered as 1. The cut-off value for this investigation is 0.5. Therefore, model 1 showed 90.8% classification correctness, accurately predicting the influence of the explanatory variables on the dependent variable.

Table 4: Influence of each Generated Logistic Model

Model	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	267.641[a]	.038	.082

Source: Survey 2022, SPSS 25

The table 4 result showed that the binary logistic regression model used, has a greater impact on the dependent variable than the non-included variables, implying that agricultural modernization as a channel for rural development has a greater impact on rural livelihood than the non-included variables.

Table 5: Logistic Regression Output (Variables in the Equation)

Model	Observed Variables	B	S.E.	Wald	df	Sig.	Exp(B)
Model 1[a]	MET	.253	.522	.235	1	.028	1.288
	ICR	.615	.522	1.387	1	.039	1.849
	PCC	-.007	.648	.000	1	.992	.993
	MCS	.118	.346	.117	1	.033	1.126
	CFE	2.897	.774	14.007	1	.000	18.112
	GRR	.148	.377	.154	1	.041	1.159
	Constant	-2.113	.512	1.368	1	.094	.297

Source: Survey 2022, SPSS 25

HHI= -1.213 + .253MET + .615ICR – 0.007PCC + .118MCS + 2.897CFE + .148GRR + ei
(.024) (.028) (.039) (.000) (.033) (.010) (.695)

The binary regression result revealed that the coefficients MET, ICR, MCS, CFE and GRR are statistically significant at 5% level of significance. While the constant term was also found to be statistically insignificant at a 5% level of significance. Shows that; all things being equal, with the development of agriculture, the probability of an increase in income in the study area is about (-2.1%). Therefore, a one percent increase in the utilization of MET, ICR, MCS, and CFE would stimulate the likelihood for rural livelihood to rise by 2.5%, 6.2%, 1.2%, and 2.9% respectively. The results are statistically significant at a 5% level of significance. More so, the availability of good rural roads (GRR) was found to be statistically significant at a 5% level of significance. This implies that good rural roads will increase the likelihood of an increase in rural livelihood by 1.5%. Nevertheless, the coefficient of PCC was found to exert a negative influence on the explained variable. Showing that rural livelihood will diminish by (-0.1%) if PCC utilization is increased by one percent. The result was however found to be statistically insignificant. This finding might mean that innovative crops (ICR) are pest resistant by nature, such that any application of pest control chemicals (PCC) amounts to a waste of economic resources. Moreover, an important part of this binary regression result is the odd ratios of the coefficients. Consequently, the odd rations indicate that the rural populace had 1.3, 1.8, 1.1, 18.1, and 1.2 odd of having improvement in rural livelihood for every unit of increase in MET, ICR, MCS, CFE and GRR.

The odd ratio's positive value indicates that MET ICR, MCS, CFE and GRR utilization and the explained variable have an auspicious relationship. While the odd ratios for the PCC, reveals that the rural populace had 0.9 odds of not having improved rural livelihood if one unit increases PCC utilization. Consequently, the implication of these odd ratios is that 1.3%, 1.8%, 1.1%, 18.1% and

1.2% rate of improvement in rural livelihood is a result of rural development indices (MET, ICR, MCS, CFE and GRR).

Table 6: Hosmer and Lemeshow Test

Model	Chi-square	Df	Sig.
1	13.713	7	.079

Source: Survey 2022, SPSS 25

The Hosmer and Lemeshow test is a measure of goodness of fit. Therefore, the statistic reveals imperative evidence about the model's standardization and correctness. Therefore, the H-L statistic suggests that model (1) is a good fit for the data as p=0.459 *(*>.05*)*. The significance level of the model coefficient specifies approval of the null hypothesis of the model, implying that there is no difference between predicted and observed values.

Table 7: Omnibus Tests of Model Coefficients

Observed		Chi-square	Df	Sig.
Model 1	Step	17.834	6	.007
	Block	17.834	6	.007
	Model	17.834	6	.007

Source: Survey 2022. SPSS 25.

The omnibus test statistic for model 1 is highly significant at a 0.05 percent level of significance. The test showed that (chi-square=17.834, df =6, p<.007). This implies that the model 1 classification correctness and appropriateness for estimating the influence of the explanatory variables on the explained variable is highly correct.

Discussion of Findings

Using a normally representative sample drawn from the KADP zone in Kaduna State, Nigeria, the study examined the implication of utilizing improved agricultural technology on rural livelihood. The empirical literature reviewed showed that utilizing improved agricultural technology increases the propensity to have an increase in income. Hence, the result of this study showed that the coefficients of MET, ICR, MCS, and CFE are statistically significant at a 5% level of significance. This implies that these coefficients are critical in stimulating rural agricultural production that will guarantee increased income. As such, with an increase in income, the standard of living is expected to rise. Therefore, the positive outcome of these coefficients further showed that a one percent increase in the utilization of MET, ICR, MCS, and CFE would stimulate the likelihood for rural livelihood to rise by 2.5%, 6.2%, 1.2%, and 2.9% respectively. The results are statistically significant at a 5% level of significance. This finding is in line with the results of Chikezie, et al (2018), Michael (2021), Workineh, et al (2020), and Muluken, et al (2021). While it differs from the result of Abubakar, et al (2021).

Nevertheless, this study differs from earlier ones in that it utilized agricultural development tools as primary independent variables and uses the relative poverty threshold as determined by the Nigeria Bureau of Statistics as a proxy to evaluate poverty.

Conclusion and Recommendation

In Nigeria, Kaduna State is known for agriculture. Hence, most of the agricultural activities in the state take place in the rural areas, where rich cultivatable lands are in limitless supply. However, like in most less developed countries (LCCs), the rural areas are not well placed in the development plan of the government. Most of the rural areas in the state are in difficult condition; the lack of infrastructural amenities make it difficult for agriculture to thrive. Most of the agricultural development plans of the government are hijacked midway by the political actors. These actions further continue to lower the income-earning capacity of the rural population. The implication of this continues fall in income earning capacity is poor agricultural produce and poor livelihood. Consequently, this study has shown that the dynamics that determine the probability of improvement in rural livelihood in Kaduna State are (MET, ICR, MCS, CFE, and GRR). The study is also indicative that the rural populace had a greater odd ratio to improvement in livelihood if the availability and utilization of MET, ICR, MCS, CFE, and GRR are increased by one percent. Based on this finding, it is correct to conclude that agricultural development is the key to improving rural livelihood in the post-covid era. Therefore, the study recommends that government should come up with rural economic development initiatives. Since the urban renewal initiative of the state government is yielding tremendous investment, the same initiative could likewise yield greater investment in rural areas.

Conflict of Interest:
Authors declared no conflict of interest.

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