Perceived Effect of COVID-19 Pandemic on Rural Farming Households in Nigeria

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K E Y W O R D S

Agriculture
COVID-19 Pandemic,
Food security,
Households,
Government,
Rural farming

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A B S T R A C T

The COVID-19 breakout in the world prompted the Nigeria government to enforce a lockdown measure at the end of March which came as a shock to small-scale farmers as movement restrictions were implemented by security operatives across the country which prevented many farmers to gain access to their fields. Some experts opined that the lockdown situation culminated in low food production, enmeshed within other COVID-19 crises like loss of livelihoods, high food prices among other issues.

The study employed descriptive statistics and the result showed that the farmers were aware of the COVID-19 pandemic. This restriction on movement of human and goods resulted to farmers loss of their means of livelihood and also reduced their purchasing power (money) thereby making them more vulnerable to food insecurity. As showed in the result, the monthly farm income, farm produce sold decreased during the pandemic while the cost of farm inputs (labor, fertilizer, herbicide and transportation) increased during the pandemic. From the result above, the COVID-19 pandemic drastically reduced the purchasing power of the farming households and access to nutritious food became difficult.The study therefore recommend that government and relevant organizations should support rural farmers to build their disaster resilient against future disaster. And also, to provide support or grants to rural farmers as to minimize the shock as a result of the COVID-19 pandemic and also to cushion the effect of the virus outbreak on rural farming households.

INTRODUCTION

The COVID-19 breakout in the world and in Africa with the lockdown measures taken by government across the Sub-Saharan Africa (SSA) to curb the spread of the virus interrupted the farming activities across Africa. Already before the COVID-19 pandemic breakout in Africa, Africa continent was faced with numerous challenges that posed a threat to the attainment of the SDG 2 (Zero hunger) by 2030 (Aromolaran *et al*. 2020; Oseni *et al*. 2020). The outbreak of the covid-19 pandemic worsened the situation as it left most of the smallholder farmers without means of livelihood among other losses. Effects of the COVID-19 and the associated measures put in place by government of Nigeria to curb the spread as reported by literatures included: decline in food consumption and income (Aromolaran *et al*. 2020; Oseni *et al*. 2020), increased food insecurity (UNDP, 2020), panic buying and sharp price spikes (Oyekanmi, 2020; PWC, 2020; FAO, 2021a; Obot *et al*. 2022a; Obot *et al*. 2022b), migration, displacement (IOM, 2020) and remittances (Anaeto, 2020; Andam *et al*. 2020a).

For instance, Andam *et al*. (2020b) reported that about 33% of households in Nigeria lost their income during the COVID-19 pandemic. Also, World Food Programme (WFP, 2020b) estimated that 270 million people in 83 countries where it operates faced severely food-insecure at the end of 2020, which represents about 82% increase prior to the emergence of the pandemic. According to FAO (2021b), the COVID-19 pandemic has exacerbated the already severe food security situation in several states in Nigeria.

This had some effects on small-scale farmers as many farmers access to their farms and markets were restricted and since most small-scale farmers do not have storage facilities, they incurred a lot of postharvest losses forcing some to sell their produce at very cheap prices (SWOFON, 2020).

The FAO suggested that support for agricultural production (e.g., seeds distribution) to small-scale farmers was essential to reduce the impact of the post-COVID-19 pandemic on the already vulnerable households in Sub-Saharan Africa (FAO, 2020).

The study contributed to the understanding of the actual extent of the effects of COVID-19 on smallholder farm households and provide useful evidence for better policy decisions.

The specific objectives of the study were to: (1) Describe the socio-economic characteristics of the rural farmers (2) examine the knowledge of rural farmers on COVID-19 pandemic and, (3) determine the effect of the COVI-19 pandemic on the economics of farming households.

METHODOLOGY

Study area

The study area is the Federal Republic of Nigeria. Nigeria has a population of 166.6 million people (UNDESA, 2011) with a total area of 923,800 sq km and occupies about 14 per cent of land area in West Africa. The country lies between 4^{o}N and 14^{o}N, and between 3^{o}E and 15^{o}E. Nigeria is located within the tropics and therefore experiences high temperatures throughout the year. The mean for the country is 27^{o}C. Average maximum temperatures vary from 32^{o}C along the coast to 41^{o}C in the far north, while mean minimum figures range from 21^{o}C in the coast to under 13^{o}C in the north.

The study locations and households were selected from four States in Nigeria (Akwa Ibom, Anambra, Enugu and Delta State).

Data Collection and Analysis

The primary data for the study was obtained through structured questionnaire. A purposive and simple random sampling procedure was used in the selection of the four States and the respondents for the study.

The scientific formula to calculate the sample size for the household survey is proposed by (Rose *et al*., 2014). They assert that to calculate the sample size based on the sample required to estimate a proportion with an 95% confidence level; you can use the following formula:

$$N_r = \frac{4pq}{d^2}$$

Where Nr = required sample size, p = proportion of the population having the characteristic, q = 1-p and d = the degree of precision.

The proportion of the population (p) may be known from prior research or other sources; if it is unknown, use p = 0.5, which assumes maximum heterogeneity (i.e., a 50/50 split).

The degree of precision (d) is the acceptable margin of error. According to (Krejcie and Morgan, 1970 and also cited by Taherdoost, 2017), the general rule for science research is that a 5% margin of error is acceptable for categorical data and 3% is acceptable for continuous data. Setting d = 0.05, which is 5%, is crucial since some high level of categorical data would be collected.

Therefore, the sample size N_r is calculated mathematically as:

$$N_r = \frac{4 \times 0.5 \times (1 - 0.5)}{(0.05)^2}$$

$$N_r = 400$$

The first stage was the selection of four States out of the thirty-six States and the FCT that make up Nigeria which was done purposively. The second stage of sampling was the random selection of one hundred (100) farming households from each of these States to give a total of 400 respondents for the study. This survey was a cross-sectional study conducted using a structured questionnaire. The questions focused on the period before the COVID-19 outbreak and during the pandemic. The questionnaires were administered by trained field officers who visited each of the participants in their respective households.

Descriptive statistics (means, frequency distribution, percentages) was used to analyze the data collected.

RESULTS AND DISCUSSION

Socioeconomic characteristics

Sex: Majority (73.0%) of the farming households were male while the remaining 27.0% were female. The implication is that men were more engaged in farming activities than the female in the study area (Table 1).

Age: Table 1 above showed that majority (82.25%) of the farming household were between the age bracket of 26 – 50 years, while the remaining 13.75% and 4.0% were within the age bracket of 51 – 75 years, and 1 - 25 years respectively. Thus, this implied that the people engaged were actually in their youthful age. The result agreed with Obot *et al*. (2022a) that the people engaged in the farming activities were in their youthful age (Table 1).

Marital status: Majority (90.25%) of the farming households were married, while the remaining 5.25, 3.25% and 1.25% were single, separated/divorced and widow/er respectively.

Level of education: The finding showed that majority (52.5%) of the farming households in the attended secondary school, while the remaining 37.5%, 6.75% and 3.25% attended primary, no formal education and tertiary institution respectively. The implication was that the farming households were literate and as such can easily understand and accept new innovations. This agreed with Obot *et al*. (2022a) that literate farmers can easily adopt new technologies

Farming experience: The study found out that majority (74.5%) of the farming households were in farming for the past $\leq$ 6 years while the remaining 19.75%, 4.75% and 1.0% were in farming for over 7-12years, 13-18years and, 19 years and above respectively. This implied that the farming households were better experienced in agriculture and the risk involved in it.

Household size: Majority (73.5%) of the farming households in the study area had household size within $\leq$ 5 persons, while the remaining 26.5 had household size within the bracket of 6 and above.

Farm size: Majority (56.0%) of the farming households had farm size of $\leq$ 2 hectares, while the remaining 34.0%, and 10.0% had farm size of 3 – 4 hectares and, 5 hectares and above respectively. This agreed with Obot *et al*. (2022a) that farmers in the study area were mostly small holder farmers (Table 1).

Table 1: Distribution of the farming household's socio-economic characteristics

Sn	Variable	Frequency (n = 400)	Percentage (100%)
1	Sex		
	Male	292	73.0
	Female	108	27.0
2	Age (years)		
	1 – 25	16	4.00
	26 – 50	329	82.25
	51 – 75	55	13.75
3	Marital status		
	Single	21	5.25
	Married	361	90.25
	Widow(er)	5	1.25
	Separated/Divorced	13	3.25
4	Level of education		
	No formal education	27	6.75
	Primary	150	37.5
	Secondary	210	52.5
	Tertiary	13	3.25
5	Farming experience (Years)		
	<= 6	298	74.5
	7 – 12	79	19.75
	13 – 18	19	4.75
	19 and above	4	1.0
6	Household size (No)		
	$\leq$ 5	294	73.5
	6 and above	106	26.5
7	Farm size (Ha)		
	$\leq$ 2	224	56.0
	3 – 4	136	34.0
	5 and above	40	10.0

Field survey 2020/2021

Farmers Knowledge and Attitude on COVID-19 Pandemic

Knowledge of the virus: Majority (83.0%) of the small holder farmers were aware of the Covid-19 pandemic while the remaining 17.07% were not aware of the virus. The implication is that majority have knowledge about the existence of the virus.

Where did you first hear about the virus: Majority (75.25%) of the small holder farmers heard about the existence of the virus from relative/friends, while the remaining 17.75%, 4.0% and 3.0% heard about the virus from extension workers, cooperative and social media respectively.

Do you believe the virus exist: The finding shows that majority (85.0%) of the small holder farmers do not believe in the existence of the virus, while the remaining 15.0% believed in the existence of the virus. The result corresponds with Ogubuike *et al*. (2021).

How can one contact the virus: The researcher found out that majority (75.75%) of the small holder farmers did not have idea of ways of contacting the virus, while the remaining 13.25%, and 11.0% had the knowledge that the virus can be contacted by air and coming in contact with infected person. This corresponds with Ogubuike *et al*. (2021) who found that 20% of respondents in their study area were not aware of how COVID-19 spread.

Will those infected die: Majority of the small holder farmers (89.25%) believed that the virus is not deadly while 10.75% believed the virus is deadly.

Do you think you can be infected: Majority (91.3%) believed they cannot be infected while the remaining 8.7% believed they can be infected.

Do you adhere to government measure to prevent the spread of the virus: Majority (67.75%) of the farmers were adherence to government's directive on measure to reduce the spread of the virus while the remaining 32.25% were not adherence to government's directive (Table 2).

Table 2: Knowledge, Attitude and Perception

Sn	Variable	Frequency (n = 400)	Percentage (100%)
1	Knowledge of the virus		
	Aware	332	83.0
	Unaware	68	17.0
2	Where did you first hear about it		
	Extension workers	71	17.75
	Relatives/friends	301	75.25
	Cooperative	108	4.0
	Social media	266	3.0
3	Do not believe the virus exist		
	Yes	60	15.0
	No	340	85.0
4	How can one contact the virus		
	Airborne	53	13.25
	Physical contact with infected person	44	11.0
	No idea	303	75.75
5	Will those infected of the virus die		
	Yes	43	10.75
	No	357	89.25
6	Do you think you can be infected		
	Yes	35	8.7
	No	365	91.3
7	Do you employ any of the measures to prevent contacting the virus		
	Yes	271	67.75
	No	129	32.25

Field survey 2022

Effect of COVID-19 Pandemic on Farming Households

From the result above, there was a drastic drop in the purchasing power of the farmers during the COVID-19 pandemic than before the pandemic. This can be attributed to the fact that government-imposed measures to tackle the spread caused the hike in prices of available farm inputs, loss of farm produce etc.

The monthly farm expenditure decreased from ₦40, 371 before the pandemic to ₦11, 610 during the pandemic. This was in consonance with the SAR *et al*. (2010) that the presence of the pandemic prompted increased in hunger and malnutrition as a result of the restriction of goods in order to curb the spread of the disease.

The monthly health expenditure decreased from ₦17, 926 before the pandemic to ₦3, 079 during the pandemic.

The monthly food expenditure increased from ₦2, 748 before the pandemic to ₦5, 690 during the pandemic as a result of closure of markets and food groceries etc. As such, food became scarce and prices of available food items were hike. This confirmed the FAO (2021) findings that the lockdown limited access to agricultural inputs for major staple crops such as rice, cassava, maize etc.

The cost of farm inputs (farm labor, fertilizer, herbicides and transportation) increased from ₦15, 341. 79, ₦19, 216.05, ₦35, 219.70, ₦1, 688.80 before the pandemic to ₦16, 297.13, ₦48, 569.00, ₦39, 304.28, ₦8, 373.75 during the pandemic. This confirmed the result by Oyetoro *et al*. (2020); Balana *et al*. (2020) that the prices of farm inputs surged as a result of foreign exchange volatility as most of the inputs were imported.

The number of food consumption per day remained almost the same as before the pandemic it stood at 2. 94 and the during the pandemic it reduced a bit to 2.53. This confirmed the result by Zurayk (2020) who observed that the pandemic has a negative impact on all the four fundamental dimensions of food security, as defined by FANTA (2003), which include availability, accessibility, utility, and stability, which will further affect the sustainability of food security in the world.

The quantity of farm produce sold decreased from 49.10 before the pandemic to 48. 93 during the pandemic as a result of restriction of movement of goods, closure of markets and increased in the prices of available goods. This confirmed the result by Egger *et al*. (2021); Miguel *et al*. (2021); that farmers were making a lesser profit due to reduced consumption.

Table 3: Comparison of the effect of COVID-19 on farming households before and during the pandemic

S/N	Well-being indicators	Duration	Mean	Std. Deviation	Std. Error Mean
1	Monthly Farm Income	Before	14881.38	21805.72	1090.29
		During	14427.73	16165.33	808.27
2	Monthly farm expenditure	Before	40371.25	54920.3	2746.02
		During	11610.5	12211.23	610.56
3	Monthly health expenditure	Before	17926.01	45564.67	2278.23
	After	During	3078.97	1844.67	92.23
4	Monthly food expenditure	Before	2748.63	1706.64	85.33
		During	5686.5	5382.38	269.12
5	Cost of farm labor	Before	15341.79	15876.8	793.84
		During	16297.13	21170.78	1058.54
6	Cost of fertilizer	Before	19216.05	34000.07	1700
		During	48569	53238	2661.9
7	Cost of herbicides	Before	35219.7	47791.4	2389.57
		During	39304.28	48470.2	2423.51
8	Number of food consumption per day	Before	2.53	0.7	0.035
		During	2.94	0.66	0.033
9	Cost of transportation per month	Before	1688.8	1445.57	72.28
		During	8373.75	10117.28	505.86
10	Quantity of farm produce sold	Before	49.1	23.23	1.162
		During	48.93	25.82	1.291

Field survey (2022)

CONCLUSION

This study investigated the effect of COVID-19 pandemic on rural farming households in selected states in Nigeria. As it is defined that food security is a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. From the result above, the COVID-19 pandemic drastically reduced the purchasing power of the farming households and access to nutritious food became difficult thereby exposing the farmers to food insecurity. However, there was also increased in farm inputs during the pandemic which made it difficult for farmers to have savings.

The study therefore recommend that government and relevant organizations should support rural farmers to build their disaster resilient against future disaster. And also, to provide support or grants to rural farmers as to minimize the shock as a result of the COVID-19 pandemic and also to cushion the effect of the virus outbreak on rural farming households.

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