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Research Article

COVID-19 Pandemic and Lockdown: Effects on Agricultural Activities and Value Chains in the Six States of South-western Nigeria

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Abstract

COVID 19 pandemic and lockdown have dealt a blow at various spheres of human life. The impact transcends the health to agriculture and many other sectors. A multidisciplinary team of experts in agriculture including crop, livestock, economics and extension drew out a questionnaire with areas of impact, mitigation and constraints imposed by COVID-19 and accompanied lockdown. The survey was administered online to farmers in South-west, Nigeria. A total of 1319 farmers responded 340 from Oyo, 289 from Osun, 231 from Ekiti, 212 from Ogun, 185 from Ondo and only 62 from Lagos State respectively. Obtained data for this study were analyzed using descriptive statistics, including frequency count, percentage, mean and standard deviation. The study revealed that COVID 19 pandemic and lockdown had a devastating impact on Agriculture activities and the value chain. Most of the respondents were at their active and productive age (44 years). The respondents perceived that producer/farmers and marketers (62.93-65.81%) were profoundly affected while agro-processors and input/agrochemical merchants (52%) were moderately affected. Majority of the respondents agreed that the pandemic and lockdown changed agriculture with the threat to life and livelihoods (94.69%), with loom-

ing food/feed crises (92.04), increased cost of production (92.95%), economic loss (\bar{x}=4.37), reduced quality food availability (\bar{x}=4.17), increased income insecurity (\bar{x}=4.18) and social vices (\bar{x}=4.20) as a result of logistical (transportation/movement) restrictions, border closures and interruption of loan accessibility (\bar{x}=4.48). Our study, therefore, suggests that there is a need for a collaborative effort from the government and the stakeholders to strengthen the agricultural sector through finance to increase production and enhance value chain. This will go a long way in achieving self-sufficiency in food and industrial raw materials post-COVID-19 period.

Keywords: COVID-19; Pandemic; Agriculture; Farmers; Self-sufficiency

Introduction

The COVID-19 pandemic far more than a health crisis: it is affecting societies and economies [1]. It is threatening people in every country through devastating lives and livelihoods. Lederer (2020) tagged it as the most challenging crises since world war II, which could bring a recession. It has disrupted public health in an unprecedented manner and thus exposed the agricultural value chain to economic uncertainties [2].

Currently, around 820 million people all over the world are experiencing chronic hunger. Of this, 113 million are coping with acute hunger. These people can ill-afford any further potential disruptions to their livelihoods or access to food that COVID-19 might bring [3]. The International Food Policy Research Institute (IFPRI) revealed that 140 million additional people could fall into extreme poverty this year (2020) due to the virus while a United Nations University study projects worldwide poverty could soar for the first time since 1990. Worrisome is the phenomenal impact on vulnerable groups already threatened by poverty, lack, and hunger in sub - Sahara Africa, home to many of these people [1].

The use of public health measures like physical distancing, household isolation, massive lockdown, and border closures to slow the spread of the new virus is no doubt working, but not without delivering a significant fall in economic activity. The demand and supply of goods had been in shocks [4]. The containment measures had unprecedentedly reduced the transportation of people and products. At the same time, earning were being revised due to reduced investment flows, according to the United Nations Conference on Trade and Development [5]. The International Labour Organization (ILO) had predicted employment crises [6], while the World Trade Organization awaits world trade to plummet by between 13 and 32% in 2020 [7]. The IMF and Organisation for Economic Co-operation and Development (OECD) had confirmed an impending worst economic downturn. The lockdown will directly alter sectors that estimated for one-third of GDP in major economies [8-10].

Restriction of movement owing to COVID-19 has resulted in food chain disruptions from production to consumption, caused declined and delay in timely distribution of agricultural inputs; shortage of informal labour for intensive agriculture; disruption of existing pre-modern social collaboration among smallholder farmers for employment during peak agricultural activities and labour layoff [11]. A similar outbreak of Ebola virus disease led to hunger and malnutrition, labour shortages, produce loss, which was worsened by transport or movement restrictions [3,4,12].

The first index case of COVID-19 in Africa was reported in Egypt. Nigeria had its index case on February 27, 2020, in Lagos State, spread to neighbouring states in the south-western states and other regions before the lockdown was announced on March 29, 2020. Fatalities had been on the increase globally. It is, therefore, essential to evaluate the effect of COVID-19 and lockdown on agricultural activities in south-western Nigeria, and constraints against relief measures.

Materials and Methods

A multidisciplinary team of experts in agriculture, including crop, livestock, economics, and extension, was established to con-

duct expert opinion assessment on the effect of COVID-19 on Agriculture and farmers. The Team has sessions to fashion probable areas of impact, mitigation, and constraints imposed by COVID-19 and draw out a questionnaire which was later made into google form doc format for smooth distribution online to the respondents across various strata of the agriculture value chain. The soft copy of the questionnaire was sent via email and social media platforms to different farmer groups in the Southwest. Hence, without geographic barriers.

Study area

The study was conducted across the Southwest region of Nigeria. The area is made up of 6 states comprising of Lagos, Ogun, Oyo, Osun, Ondo, and Ekiti, covering about 955.5km^2 of the landmass. The population is estimated at 32.5 million people, approximately 21% of the national population [13]. This region is bounded northward by a middle belt state known Kwara, in the west by the Republic of Benin, in the East by the South-south region of Edo and Delta states, and in the south by the Atlantic ocean. All states have various forms of agriculture activities.

Sampling procedure and sample size

The respondents selected for this study included people in the agriculture value chain, the farmers involved in crop production, livestock farming, and their allied ventures such as producers, intermediaries, processors, agricultural economists, and extension agents. The respondents were 1,319 in total, corresponding to 340 respondents from Oyo, 289 from Osun, 231 from Ekiti, 212 from Ogun, 185 from Ondo, and 62 from Lagos states, respectively. The data collection lasted for five weeks

Data analysis

The data obtained were analyzed using descriptive statistics, including frequency count, percentage, mean, standard deviation.

Results and Discussion

The observed respondent's size could be attributed to the method of questionnaire administration, agrarian nature of some states, landmass available for agriculture, and education status of farmers. Lagos state is the commercial capital of Nigeria being the former capital territory is densely populated and may have accounted for the low number of respondents. The barrier in Ondo state was that most farmers were not accustomed to social media usage. Ogun state being next to Lagos in location has more industries than other states.

Farmer's demographic characteristics

Table 1 indicates the demographic characteristics of the respondents. The respondent's ages ranged from 21 - 69 years. The highest age range concentration of the respondents was found to be at 50 - 59 years of age, representing 32.45%, closely followed by the age range between 41 - 50 years representing 31.01%, while 20.47% fell within 31 - 40 years. Those respondents within the age range of 21 - 29 years accounted for 13.80%, while those above 60 years of age represent 2.27%. The average age of the respondents was 44years. This confirms the report of Adebo (2014) and Adeola and Adetunbi (2015) that most farmers in south-west Nigeria were still in their active and productive age [14,15].

Furthermore, 63.38% of the respondents were males, while 36.62% were female. This shows the dominance of the male in the farming profession. These findings probably indicated that farming activities are an energy-demanding work; hence men are more involved in production while the women are more engaged with food processing and marketing in agriculture [16].

The result on marital status showed that 69.60% of the respondents were married, 17.29% were widowed, 12.59% were single, and 0.53% were divorced. The cultural inclinations on married people, according to Ahmed., *et al*. (2016), confers responsibility of providing for the wellbeing of their household, which may thus make such individuals settle for agricultural activities either as a primary or secondary occupation [17]. It also denotes that the household members were needed in most agricultural operations [18]. The observation concerning household size indicated that 42.23% of the respondents had up to 5 persons, while 57.77% had between 6 - 10 persons in their household. On average, a family had six persons. This implied that the household size of the respondents was relatively large. Thus, this may positively influence farming activities. This agrees with the earlier findings of Omoare., *et al*. (2014) that large family size is an indicator of labour availability for various farming activities [19].

The respondents attained various forms of education. Although 2.27% had no formal education, 1.36% had a primary school, 14.78% had secondary education, 1.82% had NCE qualification, 1.82% had vocational training, 0.45% had adult education, while 77.48% had higher diploma or degree. It was observed that 97.73% of the respondents had formal education. The means of data collection may have accounted for the top form of educated respondents because filling google forms needed a certain level of education. The high level of education among the respondents, according to

Oyediran., *et al*. (2015), may encourage acceptance of innovation [16].

The result on farming experience indicates that 20.09% of the respondents had up to 5 years of farming experience while 74.91% had been farming for between 6 - 10 years, unlike 4.99% who had more than ten years of farming experience. The mean farming experience was observed to be seven years. Experience is an asset that inspires the farmer's decision-making process and rationalizes the farmers' stand. This study contradicts the report of Adeola and Adetunbi (2015) and Ojo., *et al*. (2020) [15,20]. Most (57.16%) of the respondents had an income of about 200,000 during the last farming season, 12.36% made about 400,000, 6.97% made about 600,000, 11.14% made about 800,000, 3.13% made about 1million while 9.17% made more than 1miilion. The average income of the respondents from the last farming season was 1.22million. This is unlike the report of Awotide., *et al*. (2019) and Ogunsumi, (2005) [18,21]. This may be attributed to the fact that this research was not limited to smallholder farmers alone.

Characteristics	Frequency	Percentage	Mean	SD
Age (years)				
21 - 30	182	13.80	44	10.03
31 - 40	270	20.47		
41 - 50	409	31.01		
50 - 59	428	32.45		
Above 60	30	2.27		
Gender				
Male	836	63.38		
Female	483	36.62		
Marital Status				
Single	166	12.59		
Married	918	69.60		
Divorce	7	0.53		
Widow	228	17.29		
Household size (number)				
1- 5	557	42.23	6	3.17
6 - 10	762	57.77		
Educational qualification				
None	30	2.27		
Primary	18	1.36		
Secondary	195	14.78		
NCE	24	1.82		
Vocational	24	1.82		
Adult Education	6	0.45		
HND/Degree	1,022	77.48		
Farming Experience				
1-5	265	20.09	7	3.30
6-10	988	74.91		
11-15	18	1.36		
16-20	30	2.27		
Above 20	18	1.36		
Income from last farming season (₦)				
≤200,000	754	57.16	1,220,575	753,927
200,001-400,000	163	12.36		
400,001-600,000	92	6.97		
600,001-800,000	147	11.14		
800,001-1m	42	3.18		
Above 1,000,000	121	9.17		

Table 1: Respondent's demographic characteristics.

Source: Field Survey, 2020. SD - standard deviation

Primary and secondary occupation of the respondents

Figure 1 shows the primary and secondary occupation of the respondents. The majority of the farmers (31.17%) were livestock farmers, while 22.94% were crop farmers. Other primary occupations engaged by the respondents include agricultural extension agents (15.39%), agricultural economic researcher (11.90%), civil servant (9.98%), and students (8.99%) indicated as their specific primary occupation. The respondents who had crop farming as their secondary occupation were 39.95%. Similarly, 48.07% of the respondents were livestock farmers. Only 11.98% of the respondents were students. This shows that most of the respondents were livestock and crop farmers. A host of the respondents were students and, at the same time, practising farmers. This is not unexpected since farmers were the target respondents [22].

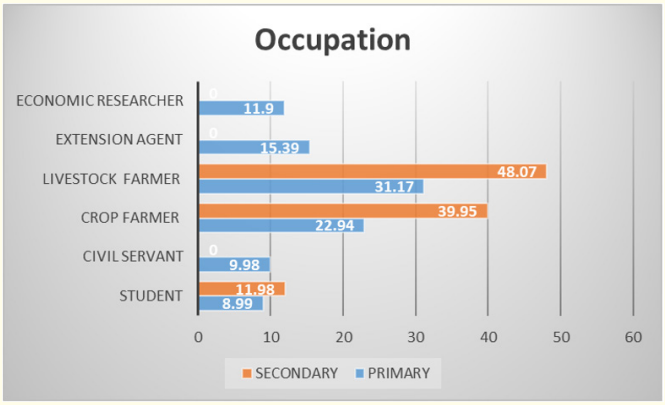

Figure 1: Occupation of the respondents.

Perceived effect of COVID-19 and lockdown on agriculture

Perceived effect of COVID-19 and lockdown on agricultural sub-sections and value chain

The Perceived effect of COVID-19 and lockdown on agricultural sub-sections and value chain is shown in Table 2. The respondents perceived that producers/farmers (62.93%) were profoundly affected; 32.15% believed that they were moderately affected, while 4.93% perceived that the effect on farmers was low. 51.18% observed that agro-processors were moderately affected. However, 42.68% were perceived to be profoundly affected, while 6.14% were influenced minimally. 52.46% perceived that input/agrochemical/drug sellers were moderately affected, 39.42% were perceived to be highly affected, while 8.11% were lowly controlled. The respondents perceived that 65.81% of the market/producer sellers were highly affected, 27.98% believed that they were moderately affected, while 6.22% recognized that the farmers were lowly affected. WFO (2020) reported that this pandemic of coronavirus, lockdown, and borders closure had impacted the entire food supply chain by actively changing farmers' access to input like seeds, fertilizers, feed, drugs, and agrochemicals because they are inter-related [23]. Food/feed distributors, wholesalers, and retailers in the middle of the supply chain had been reported to be hit because the closure of shops, markets places, restaurants, schools, worship centres, and tourism had significantly reduced the market space and demand for agricultural products with significant impact on the sector. This report showed that the farmers and produce sellers are highly impacted, while the agro-processors and input/agrochemical/drug sellers were moderately affected. This may be attributed to the perishable nature of farmer produce like vegetables and lowered demand occasioned by the lockdown [11].

Agricultural subsections	High		Moderate		Low	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Producers/farmers	830	62.93	424	32.15	65	4.93
Agro-processors	563	42.68	675	51.18	81	6.14
Input/agro-chemical/drug sellers	320	39.42	692	52.46	107	8.11
Market/producer sellers	868	65.81	369	27.98	82	6.22

Table 2: Perceived effect of COVID-19 and lockdown on agricultural sub-sections and value chain.

General perception statements on the effect of COVID 19 and lockdown on agriculture and farmers

Figure 2 shows the general perception statements on the effect of COVID 19 and lockdown on agriculture and farmers. Between 75-95% of the respondents believed that COVID-19 had brought a threat to lives and livelihood; COVID-19 disrupted farming and discourage farmers because of indiscriminate lockdown; there could be a risk of looming food crises and nutritional insecurity; COVID-19 affected food production because of indiscriminate lockdown; COVID-19 changed feed production because of indiscriminate lockdown and COVID-19 may cause a drastic shift towards arable crop production while 35.94% perceived that only low-income earners are vulnerable or at risk and 56.10% observed that COVID-19 impacted labour migration from farm to cities. FAO (2020a) reported that COVID-19 and lockdown had brought a threat to lives and livelihood, disrupt farmers, agricultural activities including inputs, transportation and processing thus affect food/feed production [3]. This could predispose the populace the risk of looming food crises, nutritional insecurity mainly rural population, and low-income earners are at risk [24,25] unlike in FAO, IFAD, UNICEF, WFP and WHO (2019) [26]. There was reduced market demand for eggs in the south-west as this may prompt farmers to shift to crop production. COVID-19 lockdown and border closure have impact labour migration needed for farming activities [23].

Perceived effect of COVID-19 lockdown on crop production, processing and marketing

The result presented in Table 3 shows the perceived effect of COVID-19 lockdown on crop production and processing. From the table, the respondents agreed that the COVID-19 lockdown affected the cost of production; this has the highest weighted mean score of 4.54. The perishability nature of crops influence the decision of most of the respondents that lockdown as a result of the novel pandemic COVID-19 caused harvest losses, especially for vegetable farmers (=4.37), and that it affected sales of farm inputs, and scarcity of seeds, chemicals, and fertilizer looms this cropping season (=4.35). The restriction on movement and global agricultural trade affected the commodity price of farming inputs, and the low rate of processing of agricultural produce also affected commodity prices (=4.34). Agricultural production in Nigeria is mainly rain-fed, and productivity declines whenever farmers planting time is disrupted [27].

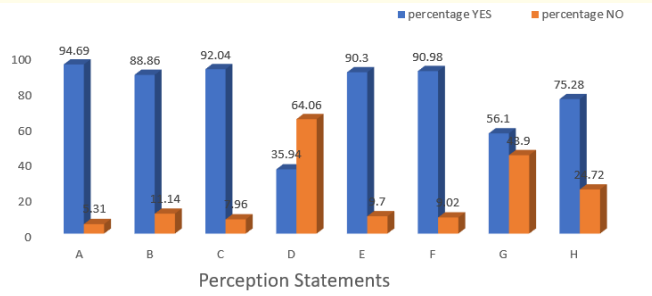

Figure 2: General perception statements on the effect of COVID 19 and lockdown on Agriculture.

Legend

Perception statements

A: COVID-19 has brought a threat to lives and livelihood

B: COVID-19 may disrupt farming and discourage farmers because of indiscriminate lockdown

C: There could be a risk of looming food crises and nutritional insecurity

D: Only low-income earners are vulnerable or at risk

E: COVID-19 will affect food production because of indiscriminate lockdown

F: COVID-19 will affect feed production because of indiscriminate lockdown

G: COVID-19 will impact labour migration from farm to cities

H: COVID-19 may cause a drastic shift towards arable crop production

Percentage Yes: Percentage of people who agreed to the statement

Percentage No: Percentage of people who disagreed to the statement.

Food demand is increasing due to the increasing population. Lack of useful modern farming techniques, high diseases and pest insurgence, simple ways of farming, insurgence, farmer-herder

conflict, and weather variability affected food production before COVID 19 pandemic. This invariably affects the supply of food, and the supply fall short of demand [11]. This is evident as Nigeria remains a net importer of food (Olomola, 2015) in Africa [36]. Thus the price of food hiked because of lockdown, transport, and import restrictions occasioned by COVID 19. The production of seeds, seedlings, and sawmilling was also affected (=4.32), and farming activities as a whole was affected (=4.32). This had been observed to affect the quality of produce for sale further and thus impacted human health (=4.17), and thus affected the availability of labour for land preparation (=4.06). These results correspond with the report FAO [3,12], that movement restriction imposes on people during Ebola epidemics led to a shortage of labour, especially during the harvesting period, which eventually amounts to increased agricultural wastes. On the contrary, most of the respondents disagree on the improvement of farmers' income (=2.90), the welfare of the farmers (=2.90), quality of living (=2.88) and improvement in production (=2.66). This agrees with FAO data, that human and economic toll will be severe, especially with low-income and middle-income countries [3].

Statements	SA	A	U	D	SD	WMS	Rank
COVID-19 will improve crop productivity	130 (9.86)	260 (19.71)	310 (23.50)	275 (20.8)	344 (26.0)	2.66	12
COVID-19 will affect the availability of labour for land preparation	576 (43.67)	429 (32.52)	185 (14.03)	71 (5.38)	58 (4.40)	4.06	8
COVID-19 may affect cost of production	867 (65.73)	359 (27.22)	50 (3.79)	25 (1.90)	18 (1.36)	4.54	1
COVID-19 may improve farmers' welfare	212 (16.07)	254 (19.26)	305 (23.12)	285 (21.6)	263 (19.9)	2.90	10
COVID-19 may cause harvest losses eg for vegetable farmers because of lock down	796 (60.35)	331 (25.09)	121 (9.17)	30 (2.27)	41 (3.11)	4.37	2
COVID-19 will affect the quality of produce for sale and thus impact human health	643 (48.75)	446 (33.81)	134 (10.16)	49 (3.71)	47 (3.56)	4.17	7
COVID-19 will affect farming activities negatively because of lockdown	765 (58.00)	339 (25.70)	137 (10.39)	32 (2.43)	46 (3.49)	4.32	5
COVID-19 may improve farmers' income	233 (17.66)	255 (19.33)	291 (22.06)	231 (17.51)	309 (23.43)	2.90	9
COVID-19 will affect sales of farm inputs, and scarcity of seeds, chemicals, and fertilizer looms this cropping season because of indiscriminate lockdown	733 (55.57)	399 (30.25)	128 (9.70)	30 (2.27)	29 (2.20)	4.35	3
Low rate of processing will affect commodity prices	664 (50.34)	528 (40.03)	73 (5.53)	25 (1.90)	29 (2.20)	4.34	4
Seedling production and sawmilling will be affected	676 (51.25)	481 (36.47)	98 (7.43)	41 (3.11)	23 (1.74)	4.32	5
COVID-19 may improve the quality of living	241 (18.27)	208 (15.77)	346 (26.23)	202 (15.31)	322 (24.41)	2.88	11

Table 3: Perceived effect of COVID-19 pandemic and lockdown on crop production/processing.

SA: Strongly Agreed; A: Agreed; U: Undecided; D: Disagreed; SD: Strongly Disagreed.

Perceived effect of COVID-19 lockdown on livestock production, processing, and marketing

The perceived effect of COVID-19 lockdown on livestock production, processing, and marketing was shown in Table 4. With compulsory lockdown, quarantine, and disruption and hike of transportation, the country's economic activities had been on a standstill. This influenced the decision of most of the respondents that COVID-19 lockdown increased the cost of animal feed (=4.55) and also caused an upsurge in economic losses (=3.94), in consonance with the finding of Martin (2020) and FAO (2020a) [3,27]. The result further revealed that the lockdown impose on people due to the novel COVID-19 pandemic caused reduced market availability (=4.44) [28], as it also affected the production of chicks' (=4.39) and lead to the loss of livestock products (=4.34). This is similar to the report of AFSN (2020) [29].

Also, from the table, the respondents agreed that COVID-19 lockdown had impacted the importation of drugs (=4.34). Most of the livestock farmers consider a reduction in livestock production (=4.15) as part of the effect of the lockdown which there was increased mortality of the animals (=4.12). The lockdown affected disease control (=4.34), and most of the respondents disagree that COVID-19 lockdown will increase animal protein consumption (=2.81). The effects of lockdown were significant in the production processing and marketing of livestock in the study. The result corresponds with the observation of Forsido., *et al*. (2020) [11], where they accurately identify the dairy and fishery products as the most affected by lockdown. Nevertheless, an egg glut was observed among the south-west poultry farmers. The absence of market outlets for these animal products deter increased production and processing, which invariably resulted in economic loss. This was also reported by AFSN (2020); Poudel., *et al*. (2020), and WEF (2020) [29-31].

Statements	SA	A	U	D	SD	WMS	Rank
COVID-19 lockdown will increase cost of feed	918 (69.60)	309 (23.43)	38 (2.88)	12 (0.91)	42 (3.18)	4.55	1
COVID-19 lockdown will negatively impact disease control	480 (36.39)	485 (36.77)	204 (15.47)	90 (6.82)	60 (4.55)	3.94	9
COVID-19 lockdown may reduce livestock productivity	620 (47.01)	458 (34.72)	124 (9.40)	59 (4.47)	58 (4.40)	4.15	7
COVID-19 lockdown will increase animal protein consumption	244 (18.50)	268 (20.32)	191 (14.48)	227 (17.21)	389 (29.49)	2.81	10
COVID-19 lockdown will cause economic losses	869 (65.88)	338 (25.63)	64 (4.85)	12 (0.91)	36 (2.73)	4.51	2
COVID-19 lockdown will cause poor market availability	786 (59.59)	409 (31.01)	60 (4.55)	42 (3.18)	22 (1.67)	4.44	3
COVID-19 lockdown has impact on the importation of drugs	754 (57.16)	360 (27.29)	112 (8.49)	52 (3.94)	41 (3.11)	4.31	6
COVID-19 lockdown will cause livestock mortality	556 (42.15)	502 (38.06)	168 (12.74)	53 (4.02)	40 (3.03)	4.12	8
COVID-19 lockdown will cause product loss	710 (53.83)	455 (34.50)	77 (5.84)	42 (3.18)	35 (2.65)	4.34	5
COVID-19 lockdown will affect day old chicks' production	712 (53.98)	501 (37.98)	39 (2.95)	41 (3.11)	26 (1.97)	4.39	4

Table 4: Perceived effect of COVID-19 pandemic and lockdown on livestock production/processing.

SA: Strongly Agreed; A: Agreed; U: Undecided; D: Disagreed; SD: Strongly Disagreed; WMS: Weighed mean Score.

Perceived effect of COVID-19 lockdown on agricultural economics and extension services

Table 5 revealed the perceived effect of COVID-19 pandemic lockdown on economics and extension services. Most of the respondents agreed that COVID-19 lockdown led to natural resources depletion and farmer-herdsmen conflict (=5.85). Markets were integrated; supply shock was imminent in all agricultural production, processing, and marketing sector; this was a result of logistical restriction and shortfall in demand (Forsido., *et al*. 2020). So, the respondents agreed that there was an increased economic loss due to delay in transportation of perishable good (=4.64) [11]. The nature of most agricultural products are seasonal and perishable, the lockdown curfew of COVID-19 lead to farm input scarcity and price increase (=4.54) [29], the lockdown cause interruption in local co-operatives meetings, and this affected loan access and acquisition (=4.48). Furthermore, COVID-19 lockdown reduced transfer of knowledge from extension worker to farmers (=4.36). Most of the smallholder farmers in Nigeria's technological adoption rate is low, who are the primary food producers in the country and Africa [28]. Extension services are essential in increasing productivity, especially with peasant farmers, which brings technical knowledge to their doorstep. The devaluation of the currency is also imminent concerning US dollars [3], which poses more difficulty in food accessibility, affordability, and sovereignty. As a result of this, it is evidence that there was an increased risk of malnutrition and food insecurity (=4.36), pilfering (=4.20), income insecurity (=4.18), and the quality of food consumption (=3.70) in the study area.

Statements	SA	A	U	D	SD	WMS	Rank
COVID-19 lockdown and delay in transportation of perishable good will lead to economic losses	956 (72.48)	281 (21.30)	65 (4.93)	6 (0.45)	11 (0.83)	4.64	2
COVID-19 lockdown will cause interruption in local co-operatives meetings and this will affect loan access and acquisition	756 (57.32)	486 (36.85)	48 (3.64)	18 (1.36)	11 (0.83)	4.48	4
COVID-19 lockdown may lead to natural resources depletion and conflict (between farmers and herdsmen)	625 (47.38)	469 (35.56)	155 (11.75)	45 (3.41)	25 (1.90)	5.85	1
COVID-19 lockdown will reduce transfer of knowledge from extension worker to farmers	708 (53.68)	477 (36.16)	81 (6.14)	29 (2.20)	24 (1.82)	4.36	6
COVID-19 will lead to farm input scarcity and price increase	825 (62.55)	420 (31.84)	51 (3.87)	12 (0.91)	11 (0.83)	4.54	3
COVID-19 lockdown will increase the risk of malnutrition and food insecurity	693 (52.54)	473 (35.86)	106 (8.04)	24 (1.82)	23 (1.74)	4.36	7
COVID-19 will impact quality food consumption	478 (36.24)	389 (29.49)	173 (13.12)	130 (9.86)	149 (11.3)	3.70	12
COVID-19 lockdown will cause poor marketing of agricultural produce	746 (56.56)	466 (35.33)	78 (5.91)	18 (1.36)	11 (0.83)	4.45	5
COVID-19 lockdown will increase income inequality	560 (42.46)	464 (38.18)	146 (11.07)	76 (5.76)	73 (5.53)	4.03	11
COVID-19 lockdown will increase income insecurity	637 (48.29)	422 (31.99)	148 (11.22)	82 (6.22)	30 (2.27)	4.18	9
COVID-19 lockdown may increase social vices on-farm	620 (47.01)	439 (33.28)	143 (10.84)	70 (5.31)	47 (3.56)	4.15	10
COVID-19 lockdown may encourage pilfering	612 (46.40)	464 (35.18)	178 (13.50)	24 (1.82)	41 (3.11)	4.20	8

Table 5: Effect of COVID-19 pandemic and lockdown on extension services.

SA: Strongly Agreed; A: Agreed; U: Undecided; D: Disagreed; SD: Strongly Disagreed.

Expected measures from the government

Table 6 shows the standard measures of the government. 96.97% of the respondents supported the fact that farming must be seen as an essential service for a pass during the lockdown, Financial intervention for farming households (92.95%), Establishments of food banks (96.06%), Executive pass for farmers during the cropping season to avoid famine (94.62%), Food donations by notable individuals and companies to farmers (84.23%), Creation of transparent nutritional support (91.28%), Food and financial aid should be demand-driven (80.59%), food and financial support should be community-based (80.36%), Food and financial support should be for everyone (88.25%), Commercial and mechanized farming needs to be encouraged (94.26%), farmworkers should be given support (96.97%), but 63.23% agreed that food and financial aid should not be gender-based. Food and financial support should not be aged based (52.77%), and food and financial assistance should not be based on the earning of individuals (50.87%). FAO (2020a) suggested that governments should meet their vulnerable populations' immediate food needs, boost their social protection programmes, and adjust their cost to trade and tax policies [3]. FAO (2020f) advice that availability of and stabilizing access to food for the most acute food-insecure populations while Buchler (2020) proposed that governments across sub-Saharan Africa minimize disruptions in food supply chains [28,32], while AFSN (2020) suggested increased health efforts to protect the workforce along the whole food supply chain [29]. Martin (2020) reported that China government supported farmers with information on planting, incentives, and mechanization to eliminate labour shortages, resumption of operation of feed, slaughtering, and meat processing enterprises were made essential services [27].

Statement	Yes		No	
	Freq	Percent	Freq	Percent
Farming must be seen as an essential service for a pass during the lockdown	1,279	96.97	40	3.03
Financial intervention for farming households	1,226	92.95	93	7.05
Establishments of food banks	1,267	96.06	52	3.94
Executive pass for farmers during the cropping season to avoid famine	1,248	94.62	71	5.38
Food donations by notable individuals and companies to farmers	1,111	84.23	208	15.77
Creation of transparent nutritional support	1,204	91.28	115	8.72
Food and financial support should be demand-driven	1,063	80.59	256	19.41
Food and financial support should be community-based	1,060	80.36	259	19.64
Food and financial support should be gender-based	485	36.77	834	63.23
Food and financial support should be aged based	623	47.23	696	52.77
Food and financial support should be based on the earning of individuals	648	49.13	671	50.87
Food and financial support should be for everyone	1,164	88.25	155	11.75
Commercial and mechanized farming needs to be encouraged	1,248	94.62	71	5.38
Farmworkers should be given support	1,279	96.97	40	3.03

Table 6: Expected measures from the government.

Constraints to expected measures from the government

Constraints to expected measures from the government are shown in Table 7. The respondent's result showed that poor record was a minor constraint (45.64%), 43.12% agreed that it's a significant constraint, while 11.14% believed that it is not a constraint. Corruption among government officials, insincerity among the farmers, deception among government officials and diversion of support were agreed as a significant constraint at 89.39%, 63.00%, 80.44% and 62.24%, respectively, unlike 2.81%, 8.19%, 7.73%,

and 26.38% as minor obstacles. In comparison, 7.81%, 28.82%, 11.83%, and 11.37% agreed that those factors were not a constraint to the government's expected measures. Commodity port (2019) reported inadequate record keeping as one of the five major problems facing agriculture in Nigeria [33]. Ladele and Oyelami (2015) had earlier reported sharp practices across implementation levels of agriculture intervention programs in the past, which was admitted by FMARD (2014) from government officials, accreditation/redemption centres, and even farmers [34,35].

Statement	Major Constraints		Minor Constraints		Not a Constraints	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Inadequate records	570	43.21	602	45.64	147	11.14
Corruption among government officials	1,179	89.39	37	2.81	103	7.81
Insincerity among farmers	831	63.00	108	8.19	380	28.81
Insincerity among government officials	1,061	80.44	102	7.73	156	11.83
Diversion of support	821	62.24	348	26.38	150	11.37

Table 7: Constraints to expected measures from the government.

Conclusion

The study revealed that COVID 19 pandemic and lockdown had a devastating impact on Agriculture/Farmers and the value chain. Most of the respondents were at their active and productive stage. The respondents perceived that producer/farmers and market or produce sellers were profoundly affected while agro-processors and input/agrochemical/ drug sellers were moderately affected. The majority of the respondent agreed that the pandemic and lockdown affected agriculture with a threat to life and livelihoods, with looming food/feed crises, increased cost of production, increased economic losses, poor quality food availability, increased income insecurity, and social vices because of delayed transportation, interruption of loan access. Therefore, the government must see agriculture and its value chain as an essential service, establish food banks with demand or community based financial support devoid of corruption and insincerity from government officials and farmers without diversion to cope with the post-pandemic effect of COVID-19 infection.

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