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Adaptation Strategies of Small-Scale Farmers to Challenges of COVID-19 Pandemic in Osun State, Nigeria

Abstract. The deadly virus COVID-19 has affected not only the health of people but also the food value chain sector. The experience of the locked down period to curtail the spread of the virus was unexpected. It is therefore important to understand how small-scale farmers survived the period. This study examined the strategies employed by small-scale farmers in Osun State to adapt to the challenges resulting from COVID-19 lock down. Specifically, the study itemized types of crops grown by small-scale farmers, assessed the forms of challenges they faced during the COVID-19 pandemic, examined the perceived effects of these challenges on small-scale farming activities, and investigated the adaptation strategies employed by small-scale farmers during this time. Six communities in the local government were selected at random and a total of one hundred and twenty farmers from the communities were interviewed. A questionnaire was designed to collect the primary data. The data was analysed using descriptive statistics and the chi-square tools. Results showed that COVID-19 lock down period led to poor health status (mean=2.87), less transport available to convey farm produce (mean=2.70), and high cost with little/no access to farm inputs such as fertilizer, chemicals and seeds/seedlings (mean=2.62). The foremost effects of these challenges on small scale farming activities were poor marketing of agricultural produce (mean=4.52), decrease in farmers' income (mean=4.51), and labour shortage (mean=4.39). The leading adaptation strategies employed by the farmers were planting of available grains instead of seeds (mean=2.85), reduced food consumption (mean=2.83), and the use of family labour (mean=2.80). The regression analysis showed that education (β=0.151), marital status (β =1.173), non-farm income (β=-6.790), and years of experience (β=-0.032) were significant (at $p<0.05$) factors influencing the adaptation strategies employed by the farmers. To effectively reduce the adverse effects of unexpected lockdowns on farmers in the future, it is recommended that outlets for necessary agricultural inputs should be made available in all farming communities.

Key words: COVID-19, small scale farmers, food transport, family labour, access to farm inputs, Nigeria

JEL Classification: I118, Q16

Introduction

The whole world is witnessing the outbreak of COVID-19 and the World Health Organization [WHO] has declared it a pandemic (WHO, 2020; Cucinotta and Vanelli, 2020). WHO describes a pandemic as a universal spread of a fresh disease. An influenza pandemic occurs when a new influenza virus emerges and spreads around the entire world, and when the majority of the populace does not have resistance (WHO, 2020). Yan et al. (2020) is

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among many researchers who have stated that COVID-19 is extremely transmittable and infectious, and one infected individual can infect on average, six persons.

In Nigeria, the first case was reported in Lagos on the 27th of February 2020, and the quick spread of the virus led to government directives to close all government and private owned institutions in order to prevent the spread (Obayori, Nchom and Yusuf, 2020). Although farmers were excluded from direct restrictions imposed in the lockdown (Punch News, 2020; Andam et al., 2020), the farmers (most especially small-scale farmers) were indirectly exposed to several challenges due to the connection of agricultural necessities with other affected sectors of the economy.

The COVID-19 pandemic is now threatening the food security of billions of people globally (Rami Zurayk, 2020; FAO, 2020). It has been pointed out that global hunger could double due to food supply disruptions, especially in poor nations across the globe (De Sousa, 2020). The International Labour Organization [ILO] noted that COVID-19 has caused losses in farm labour and such negative effects are anticipated to be far worse than the financial crisis of 2008-2009 (ILO, 2020). In Sub-Saharan countries, COVID-19 has created significant bean production challenges including low access to seed, farm inputs, hired labor, and agricultural finance (Nchanji and Lutomia, 2021).

The FAO (2020) added that COVID-19 impacts will affect both supply and demand channels – from primary supply to processing and trade, as well as national and international logistics systems, to intermediate and final demand. It also affects factor markets, namely labour and capital, and intermediate inputs of production. Schmidhuber, Pound, and Qiao (2020) noted that COVID-19 will exert a shock on final food demand by lowering overall purchasing power, especially for an increasing number of unemployed people. Effects of the pandemic, according to Mehdi and Abdulah (2020), are a decrease in production and logistical problems, as well as a change in production patterns, demand and consumption. Amare et al. (2020) found that impacts differ by economic activities and households. For instance, lockdown measures increased households' experience of food insecurity by 12 percentage points and reduced the probability of participation in non-farm business activities by 13 percentage points.

Studies on COVID-19 in agriculture are largely rooted in the effects of the pandemic during the lockdown period in Nigeria. Some of the effects include: increased cost of production and interruption of loan accessibility (Ojediran et al., 2021); insufficient food supply and decrease in farm-to-market distribution of agricultural products (Omekwe & Obayori, 2020; Obayori et al., 2020); shortage of labor for agricultural production, huge economic losses, travel restrictions on transportation of perishable farm produce to the market (Ilesanmi, Ilesanmi & Afolabi, 2021); and food insecurity (Amare et al. 2020; Egwue, Agbugba & Mukaila, 2020).

However, it is unfortunate that no empirical findings are available in the literature to show how the small scale farmers adapted to the effects of the COVID-19 pandemic during the lockdown period. Therefore, the present study focused on assessing the adaptation strategies of small-scale farmers to challenges of the COVID-19 pandemic in the Egbedore Local Government (LGA) of Osun State, Nigeria. The main significance of this study is to provide empirical data to bridge the existing knowledge gaps in literature on adaptation strategies employed by small-scale farmers during the COVID-19 pandemic in Osun State.

Objectives of the study

The main objective of the study is to examine the adaptation strategies of small-scale farmers to challenges of the COVID-19 pandemic in Egbedore Local Government, Osun State, Nigeria. The specific objectives are to:

i. itemize the types of crops grown among small scale farmers;
ii. assess the forms of challenges faced by small-scale farmers during the COVID-19 pandemic;
iii. examine the perceived effects of the challenges on small-scale farming activities;
iv. investigate the adaptation strategies of small-scale farmers to the challenges faced by farmers during the COVID-19 pandemic; and
v. assess the factors influencing adaptation strategies employed against challenges of COVID-19 lock down among small scale farmers.

Materials and methods

The study was conducted in the Egbedore Local government Area (LGA) of Osun State. The LGA has its headquarters in the town of Awo. It has an area of 270km2 and a population of 74,435. It has a tropical rainforest in the south and savannah in the north. Its vegetation is suitable for agriculture and animal husbandry. The greater populations are predominantly peasant farmers who cultivate maize, yam, cassava, cowpea and vegetables; some other fruits planted in the area are banana, plantain, pineapple and sugar cane (Ogunleye, 2013).

Six communities in the Egbedore Local Government Area of Osun State were randomly selected. The communities are Ido-Osun, Okinni, Ifetedo, Jago, Ara, and Boripe-Rinsayo. Twenty (20) farmers were selected from each community. A total of 120 farmers were interviewed in the six communities. Only 110 of the scheduled interviews were well-completed and analysed for the study.

Adaptation Strategies frequency of use during the COVID 19 lock down on a four-point Likert scale are as follows: 1= Never, 2= Rarely, 3 = Sometimes, 4=Always. Effects of the challenges on small-scale farming activities had a scale of 1=Strongly disagree, 2=Disagree, 3=Undecided, 4=Agree, 5=Strongly agree. Challenges they faced during the COVID-19 pandemic lockdown & protocols had a scale of Severe=3, Less severe=2, Not severe=1. The interviews were analyzed using descriptive statistics such as frequency counts, percentages, mean score, standard deviation. Also, multiple regression analysis (Ordinary Least Square) was performed to identify predictive socioeconomic factors that influenced the adaptation strategies used to mitigate the effects of challenges faced during the COVID-19 pandemic lockdown period. The Ordinary Least Square (OLS) model of regression was specified implicitly thus:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + e_i \ldots\ldots \text{(Equation 1)}$$

Where:
Y= adaptation strategies to mitigate effects of challenges faced during the COVID-19 lockdown period,
X_1 – age (years),
X_2 – educational qualification (years of schooling),
X_3 – farm size (hectares),

X_4 – farming experience (years),
X_5 – marital status (yes =1, no =0),
X_6 – farm income (naira),
X_7 – non-farm income (naira),
β_0 – intercept,
e_i – error term.

Results and discussion

Socio-economic characteristics of the farmers

Results of data presented in Figure 1 show that the average age of respondents was 46 years. This implies that small-scale farmers in the study area were relatively young and they were still within the economically active age to perform farming activity.

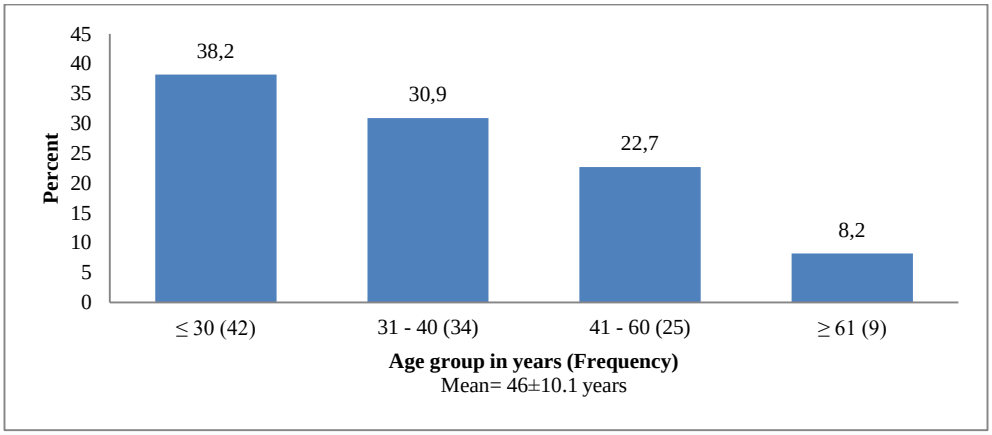

Fig. 1. Age of respondents

Source: Field survey 2021.

The result also showed that most of the respondents were male (87.3%) while others were female. This implies that small scale farmers are predominately male.

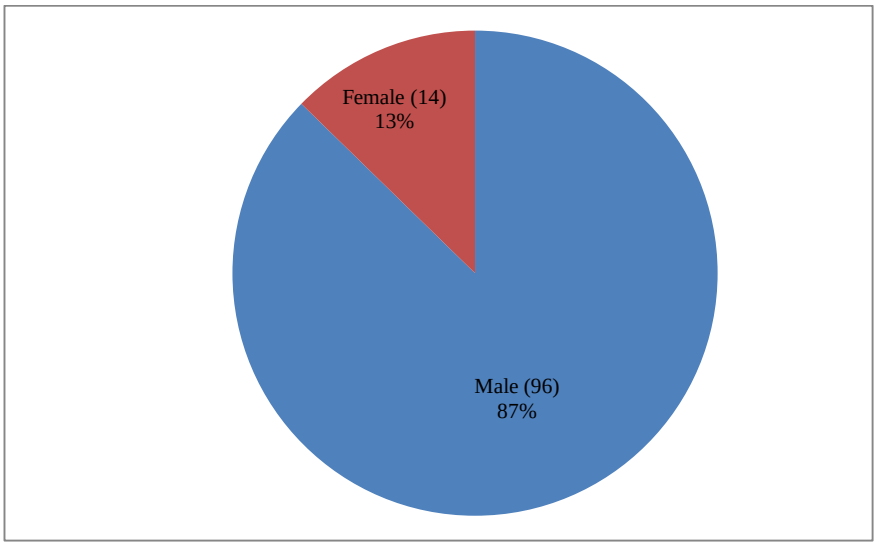

Fig. 2. Gender of respondents

Source: Field survey 2021.

Results of data presented in Table 1 show that marital status of the majority (95.5%) were married, while few (5%) were single. The educational level of the respondents indicates that a little over a quarter (27.3%) had no formal education, implying that the majority are educated with primary education (39.1%), secondary education (7.3%) and tertiary education (26.4%). Slightly below average (44.5%) were member of farmers' associations.

As regards farm size cultivated, most (74.5%) cultivate between 1 to 2 hectares of land, while others cultivate less than 1 hectare (14.5%) and 10.9% cultivated 3 hectares and above. This shows that the respondents were truly small scale farmers. The average years of farming experience was approximately 18 years, meaning that small scale farmers have acquired appreciable years of experience in small scale farming activities.

The average income earned from small scale farming was ₦109,009.09, while average income earned from other means was ₦43,818.18; this shows that farming enterprise for the small scale farmers is more profitable than other ventures through which money is earned in the study area.

Table 1. Socio-economic characteristics of respondents (n=110)

Variables	Categories	Frequency	Percentage
Marital status	Singles	5	4.5
	Married	105	95.5
Level of education	No formal education	30	27.3
	Primary education	43	39.1
	Secondary education	8	7.3
	Tertiary education	29	26.4
Farm size (hectares)	Less than 1	16	14.5
	1 – 2	82	74.6
	3 and above	12	10.9
	Mean = 1.8 ± 1.292		
	Range = 1 – 5		
Farming experience (years)	10 and above	43	39.2
	11 - 20	15	13.6
	21 - 30	49	44.5
	Above 30	3	2.7
	Mean = 17.71 ± 10.739		
	Range = 3 - 32		
Income from farming (Naira)	50,000 and below	59	53.6
	51,000 – 100,000	31	28.2
	101,000 – 200,000	15	13.6
	201,000 and above	5	4.6
	Mean = 109,009.09±200,997.284		
	Mean ≡ 263.68 US Dollars		
	Range = 10,000 – 1000,5000		
Income from non-farm activities (Naira)	Less than 200,000	34	30.9
	201,000 – 400,000	23	20.9
	401,000 – 600,000	29	26.4
	601,000 and above	24	21.8
	Mean = 43,818.18 ± 28,251.226		
	Mean ≡ 105.99 US Dollars		
	Range = 15,000 – 125,000		

Source: Field survey, 2021.

Types of crops grown by small scale farmers

As shown in Table 2, crops cultivated among the majority of small scale farmers were maize (91.8%), yam (79.1%), cassava (77.3%), and cocoyam (69.1%). Other cultivated crops in the study area were vegetables (33.6%), rice (25.5%), millet (24.5%), cocoa and Kolanut (21.8%). This finding implies that maize, yam, cassava and cocoyam were the primary crop cultivated by small scale farmers in Egbedore LGA of Osun State Nigeria. This finding is in line with Adamu (2014) who reported maize and cassava as common crops grown by farmers in Osun State.

Table 2. Types of crops grown by small scale farmers

Crop cultivation	Frequency	Percentages
Maize	101	91.8
Yam	87	79.1
Cassava	85	77.3
Cocoyam	76	69.1
Vegetables	37	33.6
Cowpea	36	32.7
Rice	28	25.5
Millet	27	24.5
Cocoa and Kolanut	24	21.8

Source: Field survey, 2021.

The forms of challenges faced by small-scale farmers during the COVID-19 pandemic

Results of challenges faced by small-scale farmers during the COVID-19 pandemic are presented in Table 3. The table shows that poor health status, less transportation available to transport farm produce, and high cost with little/no access to farm inputs such as fertilizer, chemicals and seeds/seedlings were the foremost 3 challenges faced by small-scale farmers during the COVID-19 pandemic lock down period.

Poor health status (mean=2.87) ranked first among challenges faced by small-scale farmers during the period. This finding is consistent with the WHO declaration of COVID-19 as a pandemic (WHO, 2020). Another author had also noted that COVID-19 is extremely transmittable and infectious from an individual to another, and one infected individual can infect on average, six persons (Yan et al., 2020).

Table 3. Forms of challenges faced by small-scale farmers during the COVID-19 pandemic

Forms of Challenges	Mean	Rank
COVID 19 infection leading to poor health status	2.87	1st
Less transportation available to transport farm produce	2.70	2nd
High cost with little/no access to farm inputs such as fertilizer, chemicals and seeds/seedlings due to restriction of commercial vehicles to distribute.	2.62	3rd
Poor access to healthcare facilities and attitude of medical personnel to treatment of sickness with symptoms related to COVID-19.	2.50	4th
Reduced number/zero of agricultural extension agent visits to farmers	2.48	5th
Restriction on physical meeting of farmer groups/cooperatives	2.47	6th
Scarcity of hire labour	2.45	7th
Harassment, payment of bribes or seized or destroyed farm produce by security personnel.	2.31	8th
No farm market to sell farm produce	2.12	9th
COVID 19 infection leading to death of household member	1.37	10th

Source: Field survey, 2021.

Less transport available to convey farm produce to market (mean=2.70) ranked second in the challenges faced by small-scale farmers during the COVID-19 pandemic lock down period. In Zambia, similar impacts of the pandemic on farm productive capacity were

widespread, where many farmers were reported to experience difficulties in transporting their harvest to the point of sale (Nchanji et al., 2020).

High cost with little/no access to farm inputs such as fertilizer, chemicals and seeds/seedlings (mean=2.62) ranked third in the challenges faced by small-scale farmers during the period. This finding is consistent with Yegbemey et al. (2021), who found that farmers faced challenges in accessing farm inputs during the COVID-19 pandemic lock down period.

The perceived effects of the challenges on small-scale farming activities

The effects of COVID-19 on the farmers in the study area are presented in Table 4. Findings presented in the table show that the principal effects of the challenges COVID-19 posed to small scale farming were poor marketing of agricultural produce, decrease in farmers' income, and labour shortages which caused delay of some agricultural practices such as sowing and harvesting time, fertilizer application, irrigation and weed control.

Poor marketing of agricultural produce (mean=4.52) ranked first. This finding implies that the lockdown to curtail the spread of COVID-19 caused travel restrictions on transportation of perishable farm produce to the market, leading to low demand for produce and huge economic losses to small scale farmers in Nigeria. This finding corroborates reports by previous studies in Nigeria (Ilesanmi et al 2021), and is similar to reports of effects of COVID-19 in other countries. In Somalia, for example, the majority of households reported they faced difficulties in selling their crops because of reductions in demand and prices (FAO, 2021a). In Afghanistan, an appreciable percent of producers reported unusual difficulties in selling their production due to a sharp drop in prices (FAO, 2021b).

Table 4. Perceived effect of the challenges on small-scale farming activities

Effect of challenges	**Mean**	**Rank**
Lockdown caused poor marketing of agricultural produce.	4.52	1st
Decrease in farmers' income.	4.51	2nd
Labour shortage caused delay of some agricultural practices such as sowing and harvesting time, fertilizer application, irrigation and weed control.	4.39	3rd
Increase in poverty of farm households.	4.29	4th
Lockdown and delay of public transportation leads to huge losses of perishable farm produce, economic losses and hired labour shortages.	4.23	5th
Interruptions in local farmers' group meetings reduced access to loan acquisition and other information.	4.21	6th
Scarcity of seeds, chemicals, and fertilizer leads to crop failure and reduced farm produce.	4.18	7th
COVID 19 infection led to incapacitation and reduced days/hours previously devoted to farming activities.	4.12	8th
Decrease in farm produce	4.05	9th
Increase in food insecurity	3.85	10th
Increased cost of production.	3.74	11th
Reduced transfer of knowledge from extension workers to farmers.	3.66	12th
Reduced knowledge gain from other farmers during farmers' group meetings.	3.55	13th
COVID 19 infection or death of household member reduced availability of family labour.	2.95	14th

Source: Field survey, 2021.

Decreases in farmers' income (mean=4.51) ranked second. It is expected that the limited access to marketplaces of agriculture produce, reported earlier in this study, will contribute to economic losses of the farmers in terms of income. Pan, Yang, Zhou, Kong (2020) listed the effects of COVID-19 in China to include farmers' income. Similarly, the majority of farmers in Argentina, Bolivia, Paraguay, Peru and the Dominican Republic reported a lower demand and sale price than expected for their farm products during the COVID-19 lockdown period (Salazar et al., 2020).

Another top effect of COVID lockdown found in this study was labour shortages, causing delay of some agricultural practices such as sowing and harvesting time, fertilizer application, irrigation and weed control (mean=4.39) – ranked third. This finding is consistent with previous studies in Nigeria (Omekwe and Obayori, 2020; Ojediran et al., 2021; Ilesanmi et al 2021). Similar empirical evidence also showed that the implementation of nationwide curfews in Burkina Faso, Mali and Senegal reduced the number of hours of farm work, contributing to job loss rates for informal farm workers (Balde et al., 2020).

Next on the rank of effects of the lockdown was an increase in poverty of farm households (mean=4.29). This finding corroborates similar reports that provided clear evidence that farmers in rural areas, most especially in developing countries, are experiencing substantial economic hardship as a result of the COVID-19 pandemic (Egger et al 2021; Josephson et al. 2020). On the one hand, the world is coping with global Zero hunger efforts, while on the other hand, COVID-19 is provoking poverty of 14 to 22 million people around the world, especially farmers (FAO, 2020).

Adaptation strategies of small-scale farmers to the challenges faced by farmers during the COVID-19 pandemic

The results in Table 5 present the ranking order of adaptation strategies employed by small scale farmers to mitigate the challenges faced during the COVID-19 lock down pandemic. The table shows that planting of available grains instead of seeds, reduced food consumption, and use of family labour where hire labour is not available, were the 3 foremost adaptation strategies employed by small scale farmers to mitigate the challenges faced during the lock down.

Planting available grains instead of seeds (mean=2.85) ranked first of the adaptation strategies of small scale farmers to mitigate the effect of COVID-19 lockdowns. Planting available grains as seed is in response to high costs with little/no access to farm inputs such as fertilizer, chemicals and seeds/seedlings, earlier reported in this study. This finding may also be attributed to low activity of the agricultural extension agents due to lockdown of government institutions, including the Agricultural Development Project (ADP) run by the Osun State government, the institution saddled with the responsibility of disseminating agricultural technologies to farmers in the state. Consequently, this coping strategy is expected to reduce yield and income of farmers in the next harvest season, as well as increase food insecurity.

Reduced food consumption (mean=2.83) ranked second of the adaptation strategies employed by small scale farmers to mitigate the effect of COVID-19. Similar findings of reduced food consumption were reported as coping strategies employed by rural households in Bangladesh during the lockdown period of COVID-19 (Das et al., 2020). Data from the World Bank also indicated reduced consumption of goods as the most commonly adopted

coping strategy by households to cope with the pandemic in 40 countries (World Bank, 2021). Contrarily, reduced consumption is not a common household strategy to cope with the COVID-19 pandemic in Malawi (Hale et al., 2021).

Table 5. Adaptation strategies of small-scale farmers to the challenges faced by farmers

Adaptation strategies	**Mean**	**Rank**
Planting of available grains instead of seeds.	2.85	1st
Reduced food consumption.	2.83	2nd
Use of family labour where hire labour is not available.	2.80	3rd
Sell farm produce at the front of house or the nearest open public space.	2.47	4th
Participation in non-farm activity as alternative sources of income.	2.44	5th
Hocking of farm produce within neighbourhood	2.35	6th
Adoption of organic farming such as manure in place of fertilizer or agro-chemicals.	2.17	7th
Take advantage of internet through social media and other agricultural phone applications to access agricultural extension information.	2.15	8th
Borrow money at interest rate	1.80	9th
Enroll for social assistance from community and rich individuals.	1.46	10th
Distribute children to rich family members	1.44	11th
Use of alternative medicine	1.39	12th
Government palliatives and COVID-19 relief fund	1.25	13th
Sell household assets	1.31	14th

Source: Field survey, 2021.

The use of family labour where hire labour is not available (mean=2.80) ranked third. Similar findings were reported in India by Ceballos et al. (2020), who stated that millions of seasonal and migrant labourers across the country travelled back to their home states, so farm operations became directly dependent on the supply of local labour, equipment, and inputs. Other common adaptation strategies of the farmers in the study area were selling of farm produce at the front of their house or the nearest open public space, participation in non-farm activity as alternative sources of income, and hocking of farm produce within neighbourhoods. These strategies were suggested to be measures to cope with closures of markets, leading to the problem of poor marketing of agricultural produce earlier reported by the farmers in this study.

Factors influencing the adaptation strategies employed against challenges faced during the COVID-19 lock down

Table 6 reveals the Ordinary Least Square regression results of determinants of farmers' adaptation strategies employed against challenges faced during the COVID-19 lock down period. An R value of 0.66 showed that there was a strong correlation between the independent variables and the adaptation strategies employed by respondents. The model predicted about 43 per cent of the adaptation strategies employed by small scale farmers and the F-value was statistically significant ($p<0.01$), showing that the model has a good fit.

It was noted that the educational qualification ($t = 3.06$), marital status ($t = 4.13$) and years of experience in crop farming ($t = -4.28$) were significant at 1 per cent level of significance while their non-farm income ($t = -2.11$) was significant at 5 per cent and 1 per

cent level of significance, implying that these four variables significantly determine the farmers' adaptation strategies employed against challenges faced during the COVID-19 lock down period.

Table 6. Multiple regression results on factors influencing adaptation strategies employed against challenges of COVID-19 lock down

Adaptation strategies	**Coef.**	**Std. Err.**	**t**	**P>|t|**	**[95% Conf.**	**Interval]**
Age	-.0065032	.007694	-0.85	0.400	-.0217661	.0087597
Education	.1513411	.0494435	3.06	0.003*	.0532585	.2494237
Farm size	.095458	.0552006	1.73	0.087	-.0140452	.2049611
Farm income	1.01e-07	4.36e-07	0.23	0.817	-7.64e-07	9.66e-07
Marital status	1.173477	.2842781	4.13	0.000*	.6095453	1.737408
Non-farm income	-6.79e-06	3.22e-06	-2.11	0.037**	-.0000132	-4.03e-07
Gender	-.2152332	.1931722	-1.11	0.268	-.5984349	.1679685
Years of experience	-.0328706	.0076838	-4.28	0.000*	-.0481132	-.0176281
_cons	2.612907	.3801926	6.87	0.000	1.858797	3.36701

F (8, 101) = 9.89
Prob > F = 0.0000
R = 0.661
R-squared = 0.4393
Adj R-squared = 0.3949
Root MSE = 0.57257
*Significant at p≤0.01 level
**Significant at p≤0.05 level

Source: Authors' own calculation, 2021.

Positive coefficients of educational qualification (.1513) and marital status (1.173) imply that educational qualification and marital status had positive influence on farmers' adaptation strategies employed against challenges faced during the COVID-19 lock down period. Negative coefficients of non-farm income (-6.790) and years of experience in crop farming (-.032) imply that non-farm income and years of experience in crop farming had negative influence on farmers' adaptation strategies employed against challenges faced during the COVID-19 lock down period.

Conclusion and recommendations

Based on the findings of this study, it can be inferred that the primary adaptation strategies employed by small scale farmers to mitigate the challenges faced during the COVID-19 lock down pandemic in Nigeria were planting of available grains instead of seeds, reduced food consumption, and use of family labour where hire labour is not available. The following recommendations can be made: (1) COVID-19 lock down leads to poor health status of small scale farmers. This study recommends that farmers ensure they visit hospitals/clinics anytime they feel sick. In this way, symptoms of sickness will be detected and proper medication will be given. (2) Poor marketing of agricultural produce, resulting in

decreases in farm income was reported as one of the foremost effects of the pandemic. This study suggests that farmers could add value to produce through processing – processing and value addition to agricultural produce are proven means of preserving them. (3) Labour shortages which caused delay of some agricultural practices such as sowing and harvesting time, fertilizer application, irrigation and weed control is another effect of the pandemic among the farmers. This study recommends that farmers in their group should secure farm implements such as tractors, either on hire or purchase. This method is better than the use of family labour that may likely not be able help in cultivating large areas of farm land.

Suggestions for Further study

This study assessed the adaptation strategies of small-scale farmers to challenges of the Covid-19 pandemic in the Egbedore Local Government Area of Osun State, Nigeria. Similar studies can be conducted to help understand the corresponding influence of COVID-19 on urban agriculture and adaptation strategies of farmers in urban areas of Nigeria.

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