Publishing Real Time

Journal Of Agriculture & Ecosystem Management

Journal homepage: www.jonages.com

JOURNAL OF AGRICULTURE AND ECOSYSTEM MANAGEMENT

Evaluation of Perceived Effect of Covid-19 Shock on Cassava Output in Enugu State.

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ARTICLE INFO

Article history: Received April 5, 2023
Received in revised form April 24, 2023
Accepted May 11, 2023
Available online July 18, 2023

Keywords:

COVID-19

Cassava

Shock

Enugu state

Farmers

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https://doi.org/10.36265/jonages.2023.020208
ISSN– Online **2736-1411**
Print **2736-142X**

ABSTRACT

The study 'Evaluation Effect of the perceived effect of Covid-19 Shock on Cassava output Enugu State, Nigeria' investigates the repercussions of the COVID-19 pandemic and associated lockdown measures on cassava production in Enugu State, Nigeria. It offers a comprehensive analysis that encompasses the socioeconomic profiles of cassava farmers and processors, the assessment of determinants influencing cassava output and the effect of the COVID on the output of the staple crop. Enugu State, strategically located in southeastern Nigeria, was deliberately selected for this study due to its substantial contribution to cassava production and its perceived susceptibility to the disruptive effects of COVID-19 and lockdown measures. To gather empirical data, a multi-stage random sampling technique was meticulously employed. Initially, three agricultural zones were purposively chosen to ensure equitable representation of the state's senatorial zones. Subsequently, six local government areas were randomly selected from these zones, and the sample size (n = 312) was determined proportionately. The study employed descriptive statistics, including mean values and percentages, to characterize respondents and evaluate the extent of the shocks' impact on Cassava output. The study highlights significant gender disparity, with 59.30% of respondents being female. Additionally, the majority (39.10%) fall within the middle-aged category, indicating experienced engagement in cassava production. Income distribution reveals disparities, as 50.00% of respondents earn between 101,000-200,000 Naira monthly, impacting the sector's economic sustainability. Moreover, land ownership predominantly falls within the 0.1-1hectare range (67.30%), underscoring its pivotal role in cassava production capacity. Evaluated on a 5-point Likert scale, critical aspects such as input material availability, pest control, post-harvest handling, and market access amidst the pandemic was carried out. Higher mean scores (3.44 for input materials) indicated significant disruptions, leading to an acceptance decision rule. Based on these findings, recommendations are made for cassava farmers to diversify their markets by exploring new products, thereby reducing over-dependence on specific markets and enhancing resilience against future market disruptions. Furthermore, the adoption of sustainable farming practices, such as organic farming, is encouraged among cassava producers

1.0 Introduction

The agricultural sector in Nigeria, particularly in Enugu State, plays a crucial role in the country's economic diversification, contributing significantly to GDP, exports, and employment. However, it faces various challenges such as adverse weather conditions, conflicts, low mechanization, and inadequate research and development (Prince water house Coopers {PWC}, 2020).

The outbreak of the coronavirus disease 2019 (Covid-19) has emerged as a severe threat to global food security and agriculture. Governments around the world imposed lockdowns and movement restrictions to control the spread of the virus, resulting in immediate and far-reaching effects on economies, including those in sub-Saharan Africa (PWC, 2020). As a result, the agricultural sector in Nigeria, particularly in Enugu State, was significantly impacted by the Covid-19 shocks.

The Covid-19 pandemic had particularly devastating effects on food security in Southeast Nigeria, including Enugu State. The lockdown and border closures disrupted food supply chains, leading to intense food scarcity and hunger (Uche, U. O., Uwaezuoke, O., Victor, O. U., Joy, N. U., Ejikeme, G. O., and Ambrose, O. S., 2021).

Cassava production, a major staple crop in the region, also experienced challenges due to the pandemic's impact on agricultural activities and trade (Hershey et al., 2001). Despite cassava's importance as a food source for millions of Nigerians, the pandemic's shocks amplified food insecurity and scarcity in Enugu State (Food and Agriculture Organization {FAO}, 2018).

The pandemic's effects on cassava production in Enugu State were compounded by existing challenges in the sector, such as limited mechanization and soil nutrient depletion (Abass et al., 2014; Mgbakor, 2017). As a result, the region faced a significant food supply-demand gap, leading to chronic starvation, malnutrition, and persistent poverty (Adebowale et al., 2021; Uchechukwu et al., 2022).

2.0 Materials and Methods

2.1 Study Area

This study was conducted in Enugu state. Enugu state was purposely selected because it is a key producer of cassava and contributor to cassava Industry in Nigeria and is perceived to have been highly affected by the covid-19 and lockdown measures. So since Nigeria is a major exporter of cassava globally, and Southeast Nigeria is the major producer of cassava according to Mgbakor (2017), hence the choice of Enugu state as the study area.

Enugu is the capital of Enugu State in Nigeria and is located in the southeastern part of the country. It is believed to have gotten its name from the two Igbo words, Énú Ụgwụ́, which translates to "hilltop". The 2006 Nigerian census reported that the city had a population of 722,664. It is bordered by Abia, Anambra, Benue, Ebonyi State, and Kogi States and occupies an area of 8,022.95 km2. According to the National Population Commission (NPC), the state has a population of 4,411,119 people and a growth rate of 3.0%. It is divided into 6 agricultural zones and is made up of 17 local government areas.

Enugu in the tropics has high radiation & 1200-1800mm average annual rainfall. Temperatures 27-32°C, humidity 50-80%, pressure 985.5 hpa. Western plains formed from Imo-Clay-Shale, mean elevation 65m, drained by Do, Obima & Ishe rivers. Central cuesta mean elevation 482m, formed by Maastrichtian-Santonian Orogenic Cycle. Uplifted materials in N section soft sandstone layers, S portion massive fractured sandstone blocks, tilted 3-5° from horizontal plane.

Table 1 Six Agricultural Zones and L.G.A.s under them

S/No	Agricultural Zone	Local Government Areas
1	Agbani	Nkanu East, Nkanu West and Enugu South
2	Awgu	Awgu, Orji River and Aninri
3.	Enugu	Enugu East, Enugu North and Isi-Uzo
4.	Enugu Ezike	Igboeze-North, Igboeze South and Udenu
5.	Nsukka	Nsukka, Igbo.Etiti and Uzo-Uwani
6.	Udi	Udi and Ezeagu

Source: ENADEP, 2023

2.2 Sampling Procedures

The sample frame was drawn from cassava farmers in Enugu State, Nigeria that are registered with Enugu State Agricultural Development Program (ENADEP).

In the first stage, three (3) Agricultural zones were selected purposively from the six agricultural zones such that all the zones in the state are represented.

In the Second stage, multi-stage random sampling was applied in selecting two (2) L.G.A.s each from the three selected Agricultural zones making it a total of six (6) L.G.A.s for the study.

The sample size was determined by using the formula used in selecting sample size (n) proportionate to the population of registered cassava producers and processors in the sampled local governments under the selected Agricultural zones in Enugu State; as given by Yamane (1967) as follows:

$$\mathbf{n = N/(1+N(e)^2)}$$

n = sample size

N= Population size

e = limit of tolerable error or level of precision, 5= unity

2.3 Data Collection

2.3.1 Sources of Data

The study adopted both Primary and Secondary data.

The primary data was sourced through structured questionnaire and physical interview

2.4 Data analysis

Data collected was analyzed using relevant statistical and econometric tools. Descriptive statistics such as Mean and percentages was used. Likert scale was also adopted in scaling and analyzing the response of respondents.

3.0 Results and Discussions.

3.1 Socio-economic characteristics of the respondents

The Socio-economic characteristics of farmers in the study area was analyzed and presented in table 2 below using the following parameters; Gender, Educational qualification, Marital status, Household size, Farming experience and level of income.

Table 2 Distribution of respondents according to Socio-economic characteristics (n= 312)

VARIABLE	FREQUENCY	PERCENTAGE (%)
Gender		
Male	127	40.70
Female	185	59.30
Age		
18-27	12	3.84
28-37	45	14.42
38-47	77	24.67
48-57	122	39.10
58-67	56	17.94
Educational Qualification		
No Formal Education	17	5.44
Primary School	113	36.21
O'level	157	50.32
Tertiary	25	8.01
Marital Status		
Single	47	15.06
Married	168	53.84
Divorced	Nil	0.00
Widowed	97	31.08
Household size		
≤5	125	40.06
6-10	170	54.48
11-15	17	5.48
Farming experience (years)		
≤5	79	25.32
6-10	163	52.24
≥11	70	22.43
Level of income (Naira per Month)		
33,000 -100,000	102	32.69
101,000 – 200,000	156	50.00
201,000 and above	54	17.30
Size of land (Hectares)		
0.1 – 1	210	67.30
1.1 – 2	85	27.24
≥ 2.1	17	5.44

Source: Field Survey, 2023

Table 2 shows the socio-economic characteristics of 312 respondents. The gender distribution in this study indicates that 59.30% of the respondents were female, while 40.70% were male. This distribution reflects the significant participation of women in cassava farming and processing in Nigeria. Previous studies in Nigeria have highlighted the crucial role of women in agriculture, particularly in cassava production (e.g., Akintoye et al., 2018). It is important to consider gender-specific challenges and opportunities in the cassava value chain, as they can influence decision-making, access to resources, and productivity.

The age distribution shows a diverse range of respondents, with the majority falling between 38 and 57 years (39.10%). This suggests that middle-aged and older individuals are actively engaged in cassava-related activities. Previous research in Nigeria has emphasized the importance of intergenerational knowledge transfer in agriculture (e.g., Olayemi et al., 2020). The involvement of older farmers with years of experience can contribute to the sustainability of cassava production.

Educational qualifications are diverse among respondents, with 50.32% having O'level education and 36.21% completing primary school. This aligns with findings from studies in Nigeria indicating that a substantial proportion of farmers have limited formal education (e.g., Oni, 2017). Improving access to agricultural training and extension services is crucial for enhancing the capacity of farmers, especially those with lower educational levels.

The marital status distribution indicates that the majority of respondents were married (53.84%), followed by widowed individuals (31.08%). The role of marital status in agricultural decision-making and resource allocation has been explored in Nigerian research (e.g., Ajewole et al., 2019). Understanding the dynamics of married and widowed farmers can inform targeted support and interventions.

A substantial proportion of respondents had household sizes between 6 and 10 members (54.48%). Larger household sizes may have implications for labor availability and resource allocation within households. Studies in Nigeria have discussed the importance of family labor in cassava cultivation (e.g., Alabi et al., 2018). It is essential to consider the dynamics of labor availability and distribution within households.

The data show that a significant number of respondents had 6-10 years of farming experience (52.24%). Longitudinal studies on farming experience in Nigeria have shown that experienced farmers tend to adopt improved practices and technologies (e.g., Adesina & Zinnah, 1993). This suggests

that farmers with intermediate levels of experience could be targeted for capacity-building interventions.

Income levels vary among respondents, with 50.00% earning between 101,000 and 200,000 Naira per month. The income distribution is critical for understanding the economic well-being of cassava farmers and their capacity to invest in their enterprises. Studies have examined income levels and poverty among smallholder farmers in Nigeria (e.g., Ogunniyi & Enete, 2019). Addressing income disparities is essential for achieving economic sustainability in cassava production.

The majority of respondents owned land between 0.1 and 1 hectare (67.30%). Land size is a crucial determinant of cassava production capacity. Research in Nigeria has emphasized land constraints faced by smallholder farmers (e.g., Akande et al., 2015). Strategies to optimize land use and access to land for cassava cultivation are important considerations.

3.2 Evaluation of the perceived effect of Covid-19 and lockdown on the determinants of Cassava output

Table 3 presents an evaluation of the effect of the Covid-19 pandemic and subsequent lockdown measures on the output of cassava production and processing in Enugu State using a 5-point Likert scale. It outlines the various factors that influence the output of Cassava production and determines the effect of the shock those factors.

Table 3 The perceived effect of Covid-19 and lockdown on the determinants of Cassava output (n=312)

Questions.	**(S.A)**	**(A)**	**(IN)**	**(D)**	**(SD)**	**Total score**	**Mean score**	**Decision Rule**
(COVID-19 Affects)	**5**	**4**	**3**	**2**	**1**			
Availability of input materials negatively	93	87	48	35	49	1076	3.44	Accept
Pest and disease control negatively	113	92	30	27	50	1127	3.61	Accept
Post-harvest handling positively	71	66	52	53	70	951	3.04	Accept
Market access negatively	111	78	43	20	60	1096	3.5	Accept
Quality of output negatively	66	54	63	43	86	907	2.9	Reject
Market Value negatively	20	41	68	104	79	755	2.41	Reject
Soil fertility (Fertilizer) negatively	25	53	82	80	72	815	2.6	Reject
Value chain Positively	19	40	88	68	97	752	2.41	Reject

Source: Field Survey, 2023

Key: S.A = Strongly Agree (5), A= Agree (4), IN=Indifferent (1), D= Disagree (3), S.D= Strongly Disagree(2)

5+4+3+2+1 = 15

15/5 = 3.0

The data presented in Table 3 indicates the perceived effect of Covid-19 and lockdown on the determinants of Cassava output according to 312 respondents. The results show that availability of planting materials, pest and disease control, post-harvest handling, market access, quality of output, market value, soil fertility (fertilizer), and value chain all had a negative effect on cassava output.

The respondents were asked to rate each factor from Strongly Agree (5) to Strongly Disagree (2) on a scale of 5. The mean score for each factor was calculated by adding the total score and dividing it by 5. A mean score of 3.0 or higher was considered to be "Acceptable", while a mean score of less than 3.0 was considered to be "Rejectable".

The results suggest that the Covid-19 pandemic and the subsequent lockdown had a negative impact on the availability of planting materials, pest and disease control, market access, quality of output, market value, soil fertility, and value chain. This suggests that the pandemic and the subsequent lockdown had a significant impact on the production of cassava.

The results also suggest that the pandemic and the subsequent lockdown had a positive effect on post-harvest handling. This suggests that the pandemic and the subsequent lockdown may have had a beneficial effect on the quality of the cassava output, as post-harvest handling is an important factor in determining the quality of the cassava output.

Overall, the results suggest that the Covid-19 pandemic and the subsequent lockdown had a significant impact on the determinants of cassava output. The results indicate that the availability of planting materials, pest and disease control, market access, quality of output, market value, soil fertility, and value chain were all negatively affected by the pandemic and the subsequent lockdown. However, the results also suggest that post-harvest handling may have been positively affected by the pandemic and the subsequent lockdown, which may have had a beneficial effect on the quality of the cassava output.

4.0 Conclusion and Recommendations

4.1 Conclusion

In conclusion, this study sheds light on the challenges and

opportunities in cassava production and processing in Enugu State, especially during tough times like the COVID-19 pandemic and lockdowns. Our analysis of the data reveals a story of resilience, adaptation, and innovation within the cassava sector.

The cassava industry is vital in Enugu State, and the dedication of the 312 respondents is commendable. Factors like age, education, marital status, household size, and farming experience all shape the cassava landscape, providing valuable insights into its dynamics.

Respondents' views on the impacts of the shocks, like limited input materials, higher production costs, and negative effects on cassava production, highlight the sector's challenges. However, it's also important to note that the shocks have spurred cassava processing and increased market value to some extent.

4.2 Recommendations

Based on the findings of the study on the economic effects of shocks like the COVID-19 pandemic and lockdown on cassava production and processing (garri) in Enugu State, a set of comprehensive recommendations is proposed to support cassava producers and processors during times of economic upheaval:

Promote Technology Adoption: Encourage cassava farmers to embrace modern technologies in their farming operations. This includes providing training and facilitating access to digital tools that can enhance market access and traceability. Technology adoption can significantly increase resilience during crises.

Market Diversification: Encourage cassava farmers to explore new markets and diversify their product range. Overdependency on specific markets and products can increase vulnerability. By diversifying, farmers can spread risks and reduce the impact of market disruptions.

Financial Support: Facilitate easier access to government and donor funding for cassava farmers. This support should encompass inputs, training, and access to credit. Improved access to financial services can help farmers invest in their operations and withstand economic shocks.

Knowledge Sharing: Promote participation in online agricultural forums and farmer-to-farmer networks. These platforms facilitate knowledge exchange, helping cassava producers and processors stay informed about best practices and market trends, ultimately increasing their resilience.

Sustainable Practices: Encourage the adoption of sustainable farming practices, such as organic farming, among cassava producers. These practices not only reduce the environmental impact but also enhance the long-term resilience of farming operations, especially in the face of climate change.

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