www.jard.edu.pl http://dx.doi.org/10.17306/J.JARD.2023.01722

Journal of Agribusiness and Rural Development

pISSN 1899-5241
eISSN 1899-5772

3(69) 2023, 305–313
Accepted for print: 14.09.2023

THE IMPACT OF THE COVID-19 PANDEMIC ON THE FRESH CATFISH TRADE IN LOCAL GOVERNMENT AREAS IN NIGERIA: A CASE STUDY

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Abstract. The outbreak of COVID-19 triggered economic and health crises in Nigeria. This paper evaluates the fresh catfish trade before, during, and after the COVID-19 pandemic in the Uvwie Local Government Area of Delta State, Nigeria. The study focused on the socioeconomic characteristics of fresh catfish traders, profitability, and the challenges of fresh catfish trading in the study area as distinctive objectives. Twenty-five percent (25%) of the registered fresh catfish traders active in the fresh catfish trade before, during, and after COVID-19 were selected from three towns in Uvwie for this study. Eighty-three (83) traders were from Ekpan, 46 from Effurun, and 42 from Ugboroke, which gave a sample size of 171. A structured questionnaire was used to obtain data from the traders. The gathered data were analyzed using descriptive statistics, budgetary models, and a five-point Likert scale. The returns on investment (ROI) were estimated to be 0.092, 0.091, and 0.084 before, during, and after the COVID-19 lockdown, respectively. Inadequate funds, the high cost of transportation, a lack of credit facilities, insufficient storage facilities, a lack of buyers, and price instability were identified as serious constraints. However, the cost of transportation was the most severe of the identified problems. Based on the analysis, it is recommended that fresh catfish traders organize themselves to form cooperatives and buy improved storage facilities which will assist them to adapt more effectively and overcome changing economic conditions or accidental occurrences such as the emergence of COVID-19. To motivate the traders, the government should try to improve bad roads and construct good and accessible roads where needed to reduce the cost of transportation.

Keywords: COVID-19, pandemic, catfish, trade, challenges

INTRODUCTION

Background of the study

COVID-19 was first reported in the city of Wuhan, China, in December 2019 (Abioye et al., 2020). The outbreak of COVID-19 in Nigeria was first announced on February 27, 2020 (Abioye et al., 2020). The outbreak of Coronavirus (COVID-19) in China and its spread to Nigeria has had a devastating effect on health, the economy, infrastructure, human existence, and food. For instance, with the total lockdown of states, producers and sellers of agricultural food have found it very difficult to supply and trade in food (Owenvbiugie, 2021).

Fish marketing refers to all the activities carried out from the point of catching the fish to the place or time it reaches the ultimate consumer (Njoku and Offor, 2016). According to Folayan and Folayan (2017), fish marketing is best described as being in the infant stage when compared to its broader market potential. Catfish is one of the most commercially valuable freshwater fish in Africa and most developing nations (Njoku and Offor, 2016). The catfish trade provides a significant level of foreign exchange to the exporting countries, as well as generating employment for local producers

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and marketers, and helps to curb the food insecurity of the populace (FAO, 2007). In Nigeria, the production and marketing of fish contribute to people's livelihood, and it provides 4.5% of the country's gross domestic product (GDP) (Ridwan et al., 2023). Most Nigerians are unable to meet their basic protein requirements because of the prevailing high poverty level. The protein required for growth, particularly among children, has been in short supply because animal protein is costly. The only alternative cheaper source of protein that can prevent protein deficiency is protein from accessible fish sources (Ebewore, 2013).

Objectives of the study

The general objective of this study was to evaluate the fresh catfish trade before, during, and after the COVID-19 pandemic in the Uvwie local government area, Delta State, Nigeria. The specific objectives were to:

i. describe the socioeconomic characteristics of fresh catfish traders in the study area;
ii. determine the profitability of fresh catfish trading in the study area; and
iii. identify the challenges (constraints) catfish traders face in the study area.

LITERATURE REVIEW

At present, Nigeria is passing through a food security conflict that has been compounded by the COVID-19 pandemic (Esiegwu and Ejike, 2021). The outbreak of COVID-19 triggered economic, and health crises in Nigeria. Due to the COVID-19 pandemic, the government of Nigeria canceled events, flights, inter-state transportation, and social and religious gatherings (Abioye et al., 2020). Nigeria's government finally declared a total lockdown across the entire country (NCDC, 2020). These measures to contain the spread of the coronavirus adversely impacted catfish production and marketing, resulting in production challenges, a shortage of labour, a lack of availability of inputs, the inability to sell products, high input costs, a lack of demand, low supply, and an inability to access markets in Nigeria. The disruption to agricultural productivity and markets due to COVID-19 has had an adverse effect on livelihoods, especially among the most vulnerable households (USDA, 2021).

Fish is supposed to be available and accessible, but the falling output from fisheries worldwide is making it inaccessible and unaffordable, especially for people in developing nations such as Nigeria. Globally, fish and fish products are of tremendous importance to the diet of many people. Demand for fish globally, and particularly in Nigeria, has been on the high side, with supplies failing to meet global and local demand (FAO, 2018). With an average annual fish demand in Nigeria of 1,237,000 tons and a trivial domestic production of 94,465.40 tons, the demand-supply gap stands at 1,142,534.6 tons (Nwokedi et al., 2020).

RESEARCH METHODOLOGY

Area of study

The study area was Uvwie Local Government Area of Delta State, Nigeria. Delta State is one of the nine (9) states in the Niger Delta region of Nigeria (Ugbomeh and Atubi, 2010).

Delta State is made up of twenty-five (25) Local Government Areas, with Asaba as the capital. The state covers a total landmass of 17,698 sq. km with an estimated population of 5,663,400 people (NPC, 2016). Uvwie Local Government Area is one of the twenty-five (25) Local Government Areas of Delta State with its headquarter situated at Effurun. It is located approximately between longitudes 5.40° and 5.50° East and latitudes 5.30° and 5.50° North. The Local Government Area has an estimated gross land area of 100 sq. km and a population of approximately 259,900 (NPC, 2016). Farming, fishing, and commercial work are the principal vocations of the Uvwie people (Akarue and Aregbor, 2015).

Sources of data

Primary and secondary data sources were utilized in this investigation. A structured questionnaire was utilized to elicit primary data. Journals, textbooks, publications, the Internet, and other useful works of literature provided secondary data.

Sampling technique and data collection

A simple random sampling technique was employed to select the sample. Twenty-five percent (25%) of each of the active registered fresh catfish traders (685) from three towns in Uvwie L.G.A was selected. Eighty-three (83) fresh catfish traders were selected from Ekpan, forty-six (46) from Effurun, and forty-two (42) from Ugboroke, which gave a sample size of one hundred and seventy-one (171).

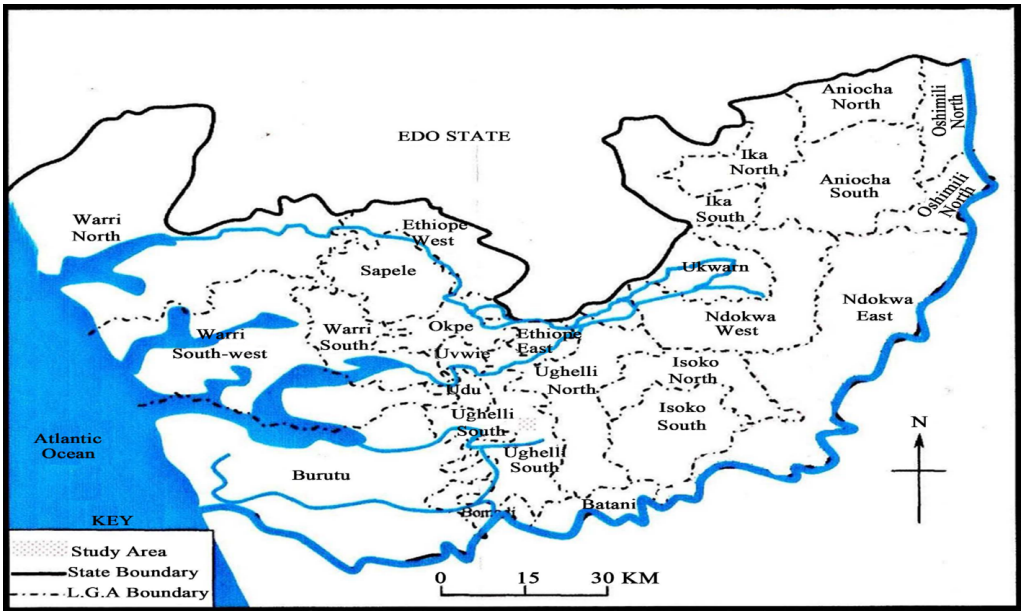

Fig. 1. Delta State map
Source: Esinulo et al., 2016.

Measurement of variables

- The age of catfish traders was measured in years (yrs).
- Sex was measured as a dummy variable (Male = 1 and Female = 0).
- Marital status was measured as follows: single, married, widowed, divorced, or separated.
- The household size of catfish traders was measured as the number of persons living in the same house and eating from the same pot.
- The educational level of catfish traders was measured as no formal education, primary education, secondary education, or tertiary education.
- The marketing experience of catfish traders was measured in years (yrs).
- Amount of money was measured in naira (₦).
- Gross income was measured in naira (₦).
- Quantity of fish was measured in kilograms (kg).

Analytical techniques

Frequency counts, tables, simple percentages, means, budgetary models and a five-point Likert scale were employed in this analysis.

- Objective One: To achieve this objective, frequency counts, tables, percentages, and mean scores were employed.
- Objective Two: To fulfill this objective, farm budgetary models were adopted. The monetary value and performance of the catfish marketers were ascertained using the following equations:
  a. Total Revenue (TR) = Price per kg of catfish (P) × Quantity (in kg) of catfish sold (Q) (1)
  b. Profit (π) = Total Revenue (TR) – Total Cost (TC) (2)
  c. Gross Margin (GM) = Total Revenue – Total Variable Cost (TVC) (3)
  d. Gross Income (GI) = Total Revenue – Cost of fish sold (4)
  e. Return on Investment (ROI) = Net income (NI) / Total Cost of Investment (TCI) (5)
- Objective Three: This objective was realized using a five-point Likert scale: 5 – very high, 4 – high, 3 – medium, 2 – low, 1 – not at all.

Decision rule

$$\text{Mean score} = \frac{5+4+3+2+1}{5} = 3 \quad (6)$$

Mean score ≥ 3 serious
Mean score < 3 not serious

RESULTS AND DISCUSSION

Socioeconomic characteristics of fresh catfish traders in Uvwie L.G.A.

The socioeconomic characteristics of fresh catfish traders in the study area are presented in Table 1.

Sex

The results show that the majority (98.2%) of the respondents (fresh catfish traders) were females while 1.8% were males. This indicates that catfish trading in Uvwie is mainly carried out by women, implying that women are the backbone of the catfish trade (Cheke, 2014). The predominance of females in the fresh catfish trade in Uvwie could be related to the fact that women perform a major role in improving the economic conditions of their families and the nation in general (Njoku and Offor, 2016). The results of this study are in tandem with the findings of Igwe et al. (2021), who were of the opinion that the majority of the catfish traders in Onitsha North and South Local Government Area of Anambra State, Nigeria were females (89%).

Age

Regarding age, the majority 95 (55.6%) of the traders fell between 31 and 40 years of age, with an average age of 40 years. This reveals that the respondents fell between the functional and energetic economic age brackets. As stated by Okeke and Nwoye (2019), people in these age brackets can withstand any stress associated with the fresh catfish trade. This analysis concurs with that of Okeke and Nwoye (2019), who found that the bulk of the fresh catfish traders in Ogbaru Local Government Area of Anambra State were in the age bracket of 25 to 40 years. This is also consistent with the results of Njoku and Offor (2016), who revealed that the majority of the catfish traders in Aba South Local Government Area were between the economic working age of 30–38 years and the age of 38 years.

Marital status

83.6% of the fresh catfish traders surveyed were married, 12% were widowed, 9% were divorced and 7% were single. So, the majority of the fish traders were married. This may not be unconnected with the fact that the economic responsibilities of married people, in caring for those who depend on them for their survival, include the provision of shelter, food, clothing,

Table 1. Socioeconomic characteristics of fresh catfish traders in Uvwie

Socio economic characteristics	Category	Frequency	Percentage	Mean
Age (years)	21–30	10	5.8	40
	31–40	95	55.6	
	41–50	64	37.4	
	51–60	2	1.2	
	Total	171	100	
Sex	Male	3	1.8	
	Female	168	98.2	
	Total	171	100	
Marital status	Single	7	4.1	
	Married	143	83.6	
	Widowed	12	7.0	
	Divorced	9	5.3	
	Total	171	100	
Household size	1–3	54	31.6	4
	4–6	116	67.8	
	≥ 7	1	0.6	
	Total	171	100	
Educational level	No formal education	13	7.6	
	Primary	18	10.5	
	Secondary	138	80.7	
	Tertiary	2	1.2	
	Total	171	100	
Marketing experience	1–5	43	25.1	7
	6–10	122	71.3	
	11–15	4	2.3	
	16–20	1	0.6	
	21–25	1	0.6	
	> 25	0	0.0	
	Total	171	100	
Main occupation	Catfish marketing	87	50.9	
	Civil servant	3	1.8	
	Petty trading	68	39.8	
	Farming	13	7.6	
	Total	171	100	
Source of capital	Personal savings	145	84.8	
	Family	26	15.2	
	Cooperative	0	0	
	Loans from bank	0	0	
	Money lenders	0	0	
	Government	0	0	
	Total	171	100	

Source: field survey, 2022.

and tuition fees. In addition, this outcome validates the point that the institution of marriage is still cultivated or cherished. This result is similar to that of Omoregbee et al. (2019), who found that the majority (85%) of catfish traders in the Egor Local Government Area of Edo State were married. Furthermore, this result is also similar to the findings of Njoku and Offor (2016), who reported that the majority of the catfish traders in Aba South Local Government Area of Abia State were married.

Household size

Most of the fish traders surveyed had household sizes of 4–6, with an average household size of 4 persons. This result is in agreement with the work of Omoregbee et al. (2019), who found that the average household size of catfish fish traders in the Egor Local Government Area of Edo State was 4 persons. However, it is not consistent with the findings of Okeke and Nwoye (2019), who recorded an average household size of 7 persons among catfish traders in Ogbaru Local Government Area of Anambra State. This may indicate that people have refrained from having children due to the prevailing economic hardship. A smaller household size may be recommended in times like these, when poverty and economic hardship have become the order of the day. In the investigation of Omobude-Idiado and Konwea (2008), a high percentage of students in Nigeria's tertiary institutions opined that a household size of 4 persons is desirable. A smaller family would probably reduce the level of spending required to care for the household.

Educational level

Concerning the educational level, the results show that 80.7% of the catfish traders had a secondary education, 10.5% had a primary education, 7.6% had no formal education, and only 1.2% had acquired a tertiary education. This means that the majority of the respondents were educated and as such can better manage their business and be receptive to innovations. This result agrees with the findings of Adibie et al. (2021), which demonstrated that the majority of the fish traders in Port Harcourt City, River State possessed secondary school certificates. However, it contradicts the findings of Umoinyang (2014), who was of the opinion that 76% of the marketers of catfish in Akwa Ibom State didn't go to university.

Trade experience

The results show that the majority 122 (71.3%) of the catfish traders had between 6 and 10 years of trading experience, 43 (25.1%) had 1–5 years of trading experience, 4 (2.3%) had 11–15 years of experience, one (0.6%) had 16–20 years of trading experience and another one had 21–25 years of trading experience. The average trading experience of the fish traders was 7 years. Though the traders had less than 10 years of experience on average, the majority of the catfish traders had some level of trading experience. As such, they may be able to identify possible constraints on their work and possibly proffer useful solutions to the identified problems. This result is not consistent with the findings of Adibie et al. (2021), who established that most of the catfish traders in Port Harcourt City, River State had more than 10 years of trading experience.

Profitability of the catfish trade before, during, and after the COVID-19 lockdown in Uvwie

Table 4.3 outlines the costs and returns of catfish trading before, during, and after the COVID-19 lockdown period. Total costs during these three periods were ₦48,034.92, ₦55,367.15, and ₦68,684.44, respectively. Comparatively, there was about a 15.3% increase in total costs during the lockdown, while after the lockdown, total costs increased by approximately 24%. This could be attributed to the increase in the cost price per kg of fish as well as the high costs associated with the trade brought about by the incidence of COVID-19. However, under variable costs, the cost of food increased more than other costs, including the security levy and labour costs. The reason for this increase could be the high demand for food as a basic necessity. Furthermore, under fixed costs, weighing scales were more expensive than wood, knives, and other items listed in table 4.2. The reason for this upsurge in price could be the fact that in the present-day catfish market, the price of fish is determined by its weight, so the use of a weighing scale is common. This may bring about an increase in the demand for weighing scales, which can in turn push prices upwards.

In the same vein, Table 4.3 shows that the total revenue (TR) obtained by the traders was ₦52,434.92 for 65.3kg, ₦60,367.15 for 56.16kg, and ₦74,484.44 for 45.3kg before, during, and after the lockdown, respectively. It also shows that there was a decline in sales

Table 2. Costs and returns in the fresh catfish trade before, during, and after the COVID-19 lockdown in Uvwie

Items	Before COVID-19		During COVID-19 lockdown		After COVID-19 lockdown	
	mean (N)	percentage (%)	mean (N)	percentage (%)	mean (N)	percentage (%)
Quantity of fish sold (kg)	65.3		56.16		45.3	
Variable costs						
Transportation	218.421	0.45	457.895	0.83	544.854	0.79
Loading/offloading	153.448	0.32	295.862	0.53	313.103	0.46
Security levy	100.00	0.21	100.000	0.18	100.000	0.15
Labour	125.000	0.26	225.000	0.41	237.500	0.35
Feeding	455.556	0.95	952.047	1.72	1165.09	1.70
Ticket	167.251	0.35	335.088	0.61	403.099	0.59
Recharge card	285.054	0.59	329.677	0.60	352.688	0.51
Purchase of catfish	42,961.287	89.44	45,395.556	81.99	57,088.304	83.12
Total variable costs	44,466.02	92.57	48,091.13	86.86	60,204.64	87.65
Fixed costs						
Machete	474.13	0.99	950	1.72	1,121.97	1.63
Wooden table	500	1.04	1,000	1.81	1,170	1.70
Store rent	648.26	1.35	1,300	2.35	1,473.94	2.15
Weighing scale	1,148.26	2.39	2,400	4.33	2,571.97	3.74
Basin	574.13	0.20	1,176.02	2.12	1,349.96	1.97
Knife	174.13	0.36	350	0.63	520	0.76
Wood	50	0.10	100	0.18	271.97	0.40
Total fixed costs	3,568.91	7.43	7,276.02	13.14	8,479.81	12.3
Total cost	48,034.92	100	55,367.15	100	68,684.44	100
Total revenue	52,434.92		60,367.15		74,484.44	
Profit	4,400		5,000		5,800	
Gross margin	7,968.9		12,276.02		14,279.8	
ROI	0.092		0.091		0.084	

Source: field survey, 2022.

volume. The decline in sales volume may be a result of inflation, shortfall in supply and demand, and other associated variables that can negatively affect consumers' purchasing power, which in turn may result in a reduction in sales on the part of the traders. This outcome is consistent with the findings of Owenvbiugie (2020), who stated that small and medium-scale businesses experienced reduced sales volumes during the COVID-19 lockdown in Edo State, Nigeria. Furthermore, the results show that the catfish traders obtained an estimated amount of ₦4,400, ₦5,000, and ₦5,800 as net income before, during, and after the lockdown periods, respectively. This demonstrates that the fresh catfish marketers made a profit during these periods. It agrees with the findings of Adedeji et al. (2016), who calculated catfish producers' profit to be ₦5,900 in the New Bussa Area

of Niger State. However, it is not consistent with the results of Oluwatoyin (2019), who estimated fish marketers' profit to be ₦2,998 in Ondo State.

The Return on Investment (ROI) was estimated to be 0.092, 0.091, and 0.084 before, during, and after the COVID-19 lockdown period, respectively. This means that for every naira invested, a return of ₦9.20, ₦9.10, and ₦8.40 was obtained before, during, and after COVID-19 lockdown periods, respectively. There was, therefore, a decline in ROI during and after the lockdown. Comparatively, total costs during these three periods were ₦48,034.92, ₦55,367.15, and ₦68,684.44 before, during, and after lockdown, respectively. This simply means that before the lockdown, the traders may have been using a lower outlay to obtain greater returns while during and after the COVID-19 lockdown, the fish marketers used a greater outlay to obtain lower returns in terms of total cost incurred. The ROI decreased as the cost of investment increased during and after the lockdown. This shows a negative relationship between high investment cost and returns on investment, which could be a result of reduced sales and high cost per unit. This outcome is in agreement with the findings of Muhammad et al. (2017), who were of the view that inflation and poor company performance reduces returns on investment or value of investment.

Constraints on the catfish trade in Uvwie L.G.A.

The constraints the catfish traders face in the process of marketing are presented in Table 4.3. All the identified problems (inadequate funds, high transportation cost, a lack of credit facilities, insufficient storage facilities, a lack of buyers, and price instability) are serious, because they possess mean values greater than three (>3) according to the specified benchmark or decision rule. The results further reveal that among the identified constraints militating against the catfish trade, the high cost of transportation (with a mean value of 4.83) was the most severe problem. This problem may be attributed to the bumpy roads and upsurge in petrol prices that have been a reccurring issue in Nigeria. These findings are consistent with the work of Igwe et al. (2021), who found that the high cost of transportation was the most serious problem encountered by catfish traders in Onitsha North and South Local Government Area of Anambra State. The least severe problem was inadequate funds, indicating that catfish traders were able to raise considerable funds to finance their businesses through personal savings and family support.

CONCLUSION AND POLICY IMPLICATIONS

This paper evaluated the fresh catfish trade before, during, and after the COVID-19 pandemic in Uvwie L.G.A. of Delta State. The acquired data were analyzed using descriptive statistics, budgetary models, and a five-point Likert scale. It was observed that nearly all the fresh catfish traders were female and their source of finance was personal savings. Fresh catfish trading was profitable, as indicated by ROI values, before, during, and after the COVID-19 lockdown. Inadequate funds, the high cost of transportation, a lack of credit facilities, insufficient storage facilities, a lack of buyers, and price instability were found to be serious constraints faced by the fresh

Table 3. Constraints on the fresh catfish trade in Uvwie

S/N	Constraints	Mean	S.D.	Minimum	Maximum
1	Inadequate fund	4.01176*	0.108144	4.00000	5.00000
2	High cost of transportation	4.83041*	0.376375	4.00000	5.00000
3	Lack of credit facility	3.98246*	0.253764	2.00000	5.00000
4	Insufficient storage facility	3.83041*	0.434416	2.00000	5.00000
5	Lack of buyers	3.05263*	0.653166	2.00000	4.00000
6	Price instability	4.69591*	0.461373	4.00000	5.00000

*Serious (mean ≥ 3).
Source: field survey, 2022.

catfish traders. However, the high cost of transportation was the most severe problem. Therefore, it is suggested that fresh catfish traders should organize themselves to form cooperatives and buy improved storage facilities which will assist them in adapting better and overcoming changing economic conditions or accidental occurrences such as the emergence of COVID-19. To motivate the traders, the government should try to improve bad roads and construct good and accessible roads where needed to reduce the high cost of transportation.

ACKNOWLEDGEMENTS

We are grateful to the catfish traders who found time in their busy schedules to provide the necessary responses. Our heartfelt gratitude also goes to those who have supported this investigation financially and otherwise.

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