

Covid-19 Pandemic and Fish Farming Venture in Nigeria: Some Aspects of The Challenges and Opportunities

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Abstract

This study investigated the challenges and opportunities that surfaced as a result of COVID-19 pandemic on the fish farming venture in Nigeria. The study adopted a cross-sectional research design and 50 fish farmers were randomly selected from two fish farmers' association groups on WhatsApp social media. Data were generated through interview technique on the WhatsApp application which was subsequently followed by phone call based. The data were subjected to quantitative and qualitative methods. Challenges experienced by the fish farmers were ranked using Garrett's ranking technique.

Findings of the study revealed the major challenges faced by fish farmers in the country during COVID-19 lockdown period centred on transportation, poor market, reduced profit margins, sourcing for quality fish seeds etc. Also, opportunities presented by the pandemic to fish farming business include direct household patronage, digital marketing of fish and fish products amongst others. It was therefore concluded that while the participant of the study is not nationally representative of fish farmers in the country based on the mode of study recruitment, the study provides a reference point to some of the challenges as well as opportunities the lockdown presents to fish farming ventures in the country.

Keywords: Aquaculture, Challenges, COVID-19 Pandemic, Nigeria, Opportunities

Introduction

The ability to guarantee food availability is one of the major challenges facing the world and this is more complicated with the fast-growing population (HLPE, 2014). Ensuring a sustainable food production remains a cardinal area that needs action alongside food consumption, nutrition and food security. Though local and global efforts are geared towards ensuring safe and healthy food production aimed at achieving food security through sustainable agricultural development, a lot needs to be done to match up with existing gaps in food production. It is estimated that by the next three decades, the world population will rise to 9.1 billion representing 34% per cent higher than the current population (EUFIC,

2015). To meet up with this astronomic increase in population in terms of food provision, there must be a means to increase food production by 70% to ensure that not only food security, but to also ensure that food produced are nutrient-dense to give room for a balanced and adequate combination of energy and nutrients to support healthy living (EUFIC, 2015). The need for nutritious food to feed a growing global population, causes the growing demand for fish, which puts pressure on natural resources and challenges the sustainability of marine and inland fisheries. The development of aquaculture is targeted at meeting these growing needs. Aquaculture became inevitable when the long-term mismanagement of the world's

fisheries led to the over-exploitation of wild fish resources, reducing available stocks and creating dependence on aquaculture to meet demand. Over the last two decades, the annual growth rate of aquaculture has reached as much as 8 per cent. With captured fisheries unlikely to meet future demand, it will be a challenge for the sector to maintain current growth rates without significant structural and governance reform.

Aquaculture (also known as fish farming) refers to the “controlled process of cultivating aquatic organisms for human consumption” (GAP, 2019). Aquaculture remains one of the fastest-growing forms of food production in the world and its contribution to overall food supply, contributing one-third of global food fish production cannot be overemphasised (HLPE, 2014).

Aside for being best available option for fish production to feed the growing population, aquaculture provides an alternative source of livelihood and serves as a means of foreign exchange earnings (The Ocean Foundation, 2020). Aquaculture is seen not only as a sustainable option for consumers but also as a solution to providing future generations with access to healthy and environmentally friendly protein options (GAP, 2019).

The first case of Coronavirus disease 2019 (COVID-19) was reported in November 2019 in Wuhan (capital of China's Hubei province) leading to the city's lockdown on 23rd January 2020. The disease was declared a global pandemic by World Health Organisation (WHO) on the 11th of March, 2020. The virus spreads between

people at a very vast rate affecting lives and indirectly businesses (Cucinotta and Vanelli, 2020). To curb the spread of the virus countries-imposed lockdown restricting movements and this resulted in the disruption in supply chains, causing several businesses to lose revenue. This made unemployment to grow and instigated an economic downturn which is unprecedented in world history since the great depression (World Economic Forum, 2020).

With the emergence of COVID-19 and lockdown imposed to curb the spread of the virus, aquaculture activities like many other activities in the world were significantly affected. For example, the lockdown affected fish farmers' access to farm inputs like feed and other necessary required materials (WFO, 2020). Specifically, it was observed that due to restrictions and closures of global markets, fish and fish products that rely on international trade were negatively affected and also, local fish supply chains were severely affected by the food-service sector closure just in the same way fish processing sector closed down due to low demand from consumers. (FAO, 2020).

Despite the documented fluctuations in the aquaculture industry as a result of the COVID-19 pandemic (FAO,2020), there are many uncertainties ahead and a need to for empirical evidence on challenges and potential opportunities COVID-19 pandemic poses to fish farming venture in Nigeria. This study is therefore was guided with the following research questions: In what ways has COVID-19 pandemic affected fish farming venture in Nigeria? What are the challenges facing fish farming

ventures in this era of COVID-19 pandemic; What are the opportunities opened to fish farming ventures as a result of the COVID-19 pandemic; What are the coping strategies adopted to mitigate the effect of the pandemic on the fish farming venture; What could have been done to make fish farming venture situation during the pandemic better.

Therefore, the objectives of this study were to investigate challenges and opportunities encountered by fish farming venture (aquaculture) in Nigeria as a result of COVID-19 pandemic and the lock down imposed to curb the spread of the disease amongst people.

Materials and Methods

Selection of Respondents

The population of the study consisted of fish farmers in Nigeria and the participants of the study were randomly selected from two fish farmers' association virtual groups on WhatsApp. The virtual groups were created for fish farmers to learn and share their experiences in fish farming from all over Nigeria. A private text message was sent to 70 members randomly selected from a total of 113 members in the two fish farmers' association WhatsApp groups. A total of 50 responses was received. The responses were subsequently followed by phone calls through which a structured questionnaire was administered. Data was collected between April and May, 2020.

Research design and analyses

The study adopted a qualitative and quantitative research design based on the need to have an in-depth understanding of the impact of COVID-19 on the fish farming venture in Nigeria. The data

collected were subjected to descriptive statistics such as frequency counts and percentages. Merriam, (2009) demonstrated that qualitative interviewing can be used appropriately when studying how people understand the meaning of their lived world, and to find out those things we cannot directly observe such as, feelings, thoughts, and intentions.

Analysis of data was inductive and interpretive (Forman *et al.*, 2008). Due to the travel restrictions caused by the Covid 19 pandemic, face-to face interview was not possible which limited the number of respondents that could be interviewed, hence the use of social media.

Challenges experienced by the fish farmers were ranked using Garrett's ranking technique. These challenges experienced by the fish farmers during the covid 19 lockdown were prioritized by using Garrett's ranking technique as follows (Kumar and Kumar, 2008):

$$\text{Percentage position} = \frac{100(R_{ij} - 0.50)}{N_j}$$

where, R_{ij} = Rank given for the i th item by the j th individual, and
 N_j = Number of items ranked by the j th individual.

The percentage position of each rank was converted into scores using Garrett table. For each challenge, scores of individual respondents were added together and were divided by total number of respondents for whom scores were added. Thus, mean score for each constraint was ranked by arranging them in the descending order. The factors having highest mean value is considered to be the most important to the respondents.

Table 1 shows the calculated Garrets value used for this study.

Table 1: Percentage Positions of the ranks and their corresponding Garrett's Table values

Rank	Percentage position	Garret's value
1	5	82
2	15	70
3	25	63
4	35	58
5	45	52
6	55	48
7	65	42
8	75	36
9	85	29
10	95	18

Results

Location of respondents

Individuals in the WhatsApp groups were from different parts of the country; however, it was observed that most of the respondents were based in the western part of Nigeria, namely, Lagos, Ogun, Ondo, Oyo and Osun states (70%), particularly, Lagos state (30%). Figure 1 displays all the respondents, and states represented in the study. Respondents from the Northern part of Nigeria were from Yola, Niger, Nasarawa, Kano states and Abuja (16%), Eastern Nigeria was represented by Anambra, Enugu and Imo states (10%), and the Southern Nigeria was represented by Rivers and Edo (4%).

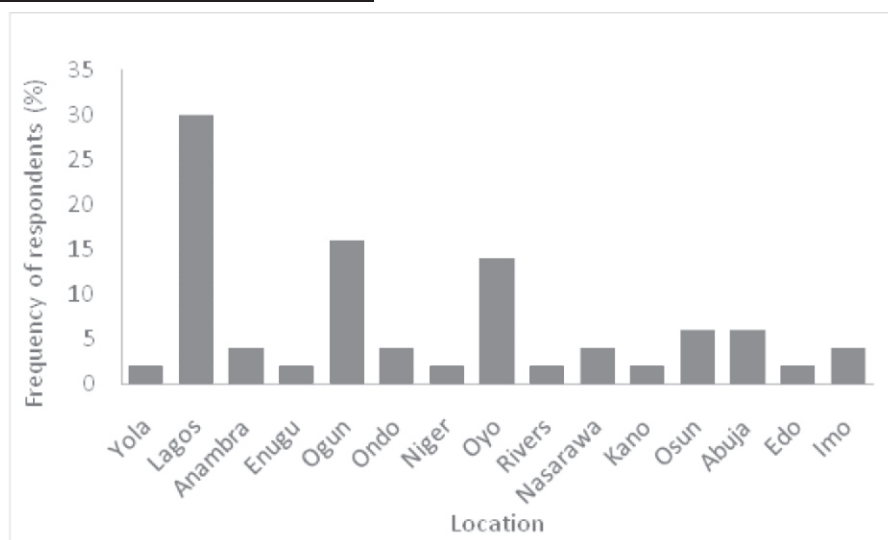


Figure 1: Percentage Frequency of respondents sampled across Nigeria (n=50)

Challenges facing fish farming ventures in the era of COVID-19 pandemic

The subject matters that emerged in response to the research questions, can be grouped into the following; demand, production cost particularly cost of feeding fish and transportation.

Table 2: Ranking of challenges experienced by fish farmers during the pandemic lockdown

Code	Challenge	Score	Rank
F4	Increase in the cost of Fish feed	69.8	1
F1	Low fish demand	64.9	2
F2	High cost of transportation	64.6	3
F5	Fish price drop	56.7	4
F3	Fish seedlings not available	53.1	5
F6	Uncertainty of what the future holds	47.8	6
F8	Government did not give special consideration for fish farmers like other sectors of Agriculture	39.9	7
F10	Scarcity of farm hands	38.7	8
F7	Lack of access to medication to treat fish infection	32.0	9
F9	Middlemen issues	30.5	10

Table 2 shows ranked and prioritized list of constraints experienced by fish farmers. The study revealed that, the major challenges experienced by fish farmers in Nigeria as a result of the emergence and spread of COVID-19 in Nigeria are; increase in an already high cost of feed, which scored highest at 69.8 and was ranked 1st position, followed by low fish demand which ranked 2nd scoring 64.9. High cost of transportation, drop in the price of fish due to glut, and availability of fish fingerlings ranked 3rd, 4th and 5th respectively. Uncertainty about what the future hold scored 47.8, ranking 6th. The respondents indicated that government did not give special consideration for fish farmers like other sectors of agriculture, and this criterion scored 39.9 and ranked 7th. During the lockdown, the respondents indicated there was scarcity of farm hands, particularly casual labour and this criterion scored 38.7 and ranked 8th. Lack of access to medication to treat infected fishes scored 32.0 and ranked 9th; the Middlemen issues ranked as 10th with a score of 30.5.

Coping strategies adopted to mitigate the effect of the COVID- 19 pandemic on fish farming ventures

Figure 2 reveals the prominent coping strategies adopted by respondents. Fish farmers adopted several strategies to help in coping with the effects of the lock down that ensued in order to curtail the pandemic.

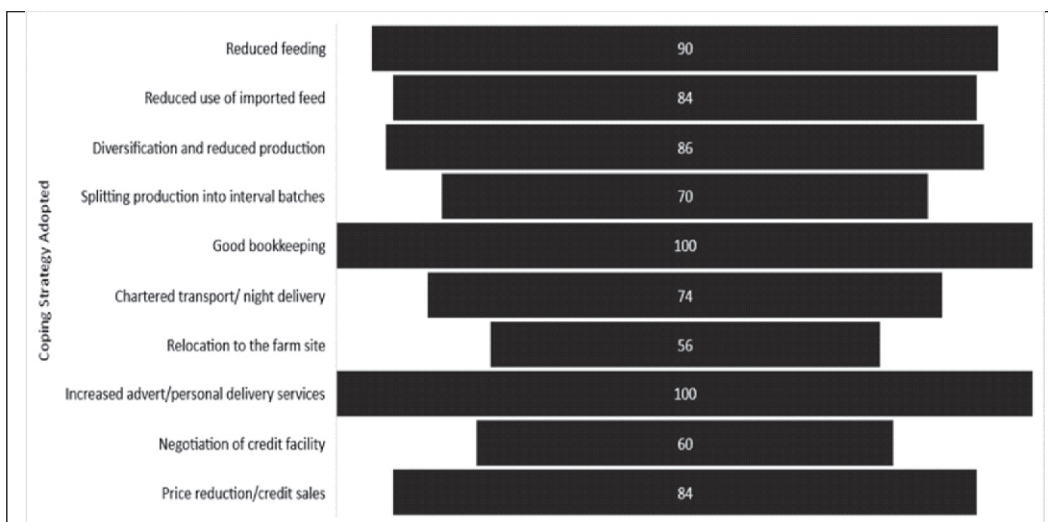


Figure 2: Coping strategies adopted by fish farming respondents during the lockdown (n=50)

Ninety percent of the respondents indicated that they engaged in reduced feeding, 84% switched to more use of locally produced feeds, 85% engaged in product diversification and reduced rate of production, with 70% indicating that they started the practice of splitting production into interval batches. All respondents (100%) indicated they improved on their book keeping habit, and to cope with the moving produce to consumers, 74% indicated that they chartered transport for night delivery. Fifty six percent of the farmers indicated relocation to farm site, and all the respondents (100%) signified that they engaged in aggressive online marketing and personal delivery services, 60% revealed that they negotiated credit facility from feed suppliers and 84% indicated that they reduced price and gave customers opportunities to buy on credit among many other strategies adopted to mitigate the effect of the pandemic on fish their farming businesses.

Opportunities opened to fish farming ventures as a result of the COVID-19 pandemic

Despite the challenges encountered in aquaculture in the country due to COVID-19 epidemic, the study revealed that the pandemic presented some opportunities to fish farming businesses.

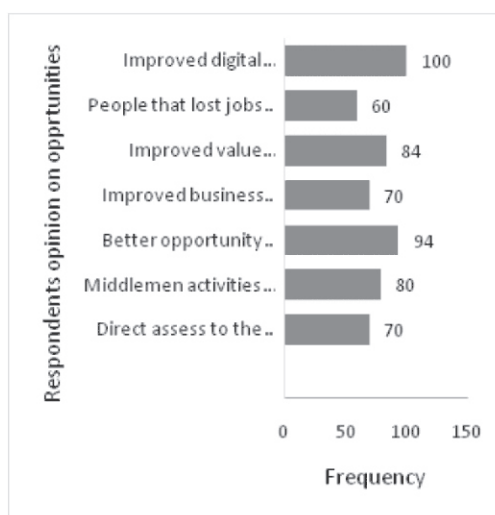


Figure 3: Respondents opinions on opportunities enhanced in fish farming ventures from COVID-19 pandemic (n=50)

Figure 3 shows some of these opportunities as identified by the respondents. Seventy percent of the fish farmers identified increase in direct household patronage, while 80% indicated that the benefits usually taken from their business by the use of middle men were reduced, 94% said they had opportunity to better supervise their business especially with hatchery management. About 70% agreed they experienced improved business opportunity by venturing into fish processing, for better storage and 84% revealed that value addition improved during that period. Respondents (60%) also indicated that people that lost jobs during the period ventured into fish farming. All respondent (100%) signified that digital marketing became more prominent and improved during the lock down.

Discussion

The fish farmers opined that they encountered a significant challenge with transporting their fish products to markets due to lockdown and restriction of movement. The restriction of movement had a consequential effect on the fish distribution channels partly due to substantial increase in the cost of transportation. No special consideration or arrangement was available to help alleviate this particular challenge and the challenge extended to all aspects of the fish value chain.

The demand for fish and its sales dropped due to the essential lockdown which made people unable to leave their homes to go to

the farms to buy fish. Particularly, through middlemen who buy these fishes for resale and distribution and the restriction of social gatherings, through which large volume sales are made to restaurants, bars, hotels and served as a delicacy at celebrations. Hence, reduced patronage by clients and an increase in the cost of production.

The respondents indicated that government did not give special consideration to fish farmers like other sectors of agriculture especially crop farmers that were given improved seedlings of sorghum, pearl millet, cowpea, and rice as part of an initiative to cushion the pandemic's impact on food systems (CGIAR. 2020). However, some respondents from Lagos indicated that they received cash incentives from the Lagos State Government which helped with their businesses.

The respondents expressed that middleman were not available to buy their fishes as wholesale and in instances where the middlemen were available, they under-priced their fishes. The results/observation from this study corroborates the report by Wordfish, (2020), that observed a disruption in fish and aquatic foods supply chains as a result of the restrictions in movement, trade and labour occasioned by the COVID-19 pandemic. It was further noted that a continuous fall in production, delayed stocking of production ponds, low consumer patronage, increased transaction costs all have a devastating effect on access to supplies, consumption of fish and fish products (Wordfish, 2020).

The respondents highlighted the various coping strategies they adopted to mitigate the effect of the challenges, confronted in

their businesses because of COVID pandemic lock down and the opportunities presented thereof. Although, high cost of fish feed has been noted as a major constraint in fish farming (Adedeji and Okocha, (2011), Olaoye et. Al. (2013), reduced use of imported feeds adopted during the pandemic lockdown should promote the development and use of locally sourced/produced fish feed, which would invariably reduce fish feed cost.

Home delivery or personal delivery services to customers, increased awareness of the use of social media to advertise, particularly digital advertising through social media platforms like Instagram, Facebook and WhatsApp, opens up greater opportunities to reach consumers more effectively and efficiently promoting feedback and would invariably reduce the role of intermediaries, these corroborates the findings of Ismail and Khalid (2015).

Access to credit facility is one of the constraints being experience in the Nigerian aquaculture industry (Sanusi, et.al. 2016), developing new approaches to credit schemes such as obtaining fish feed through suppliers would help ease some of this challenge.

The opportunities presented to fish farming ventures in the country, COVID-19 pandemic may catalyze/spur aquaculture investments in Nigeria, enabling the country to reduce dependence on fish imports (CGIAR, 2020).

Limitations of the study

The respondents of the study may not be adequate for a national representation of fish farmers in the country based on the

mode of recruitment to the study, however, the study attempts to provide a reference point to some of the challenges as well as opportunities COVID-19 pandemic lock down presented to fish farming ventures in the country.

Conclusion and Recommendations

The findings of the study revealed that fish farming businesses in the country were severely affected notably in the areas of low patronage for fish and fish products, increase in feed cost and transportation, as well as low production by hatchers because of the uncertainties in fish markets and the nation in general. The respondents adopted various coping strategies such as reducing the rates at which they fed their fishes, adopted digital marketing on social media platforms. Also, opportunities presented by the pandemic to fish farming business include direct household patronage, the opportunity to venture into other areas of fish farming such as fish processing, storage and other value-adding services, digital marketing of fish and fish products amongst others.

Suggestion on what could have been done to make the fish farming situation better during this COVID-19 pandemic, include the following;

1)Place fish feed and fish as an essential commodity with appointed fish market allowed to open if not all days at least days in a week;

2)The Governments could support/encourage easy transportation of fish to the markets; and fish farmers should have been given passes to transport their fish without being stopped and harassed by lockdown enforcement agents

3) There should be a mechanism put in place to ensure price stability of feeds and fish;

4) The government could provide grants or loans (monetary value or giving out fish ponds/tanks) to hatchers and upcoming farmers;

5) As other agricultural produce was given as palliative by government to support producers and augment the food needs of people during the lock down, fish should also have been given as a palliative to support protein needs of people and the earnings of business owners.

Based on the findings of the study, the following are also recommended:

1) More emphasis should be placed on value addition to fish farming such as fish processing and associated activities to discourage importation of fish products and widen the local market for fish farmers to explore

2) The digital marketing strategy should be greatly explored in fish marketing and fish farmers should be encouraged to key into it as a means of showcasing their products and boosting their sales.

3) Access to funds should be made easier to fish farmers and there should be an extension to the payback time for the loans already granted to some fish farmers to encourage them to remain in business especially now that their businesses are going through a tough time due to the pandemic

4) There is a need for further investigation on challenges and opportunities that

surfaced as a result of the COVID-19 pandemic on the fish farming venture to enable managers to take better and informed decisions regarding the sector

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