

Challenges and Innovative Strategies Adopted by Nigerian Poultry Farmers in Post-COVID-19 Pandemic Era: A Delphi Approach

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Abstract

Despite its vital role in Nigeria's economic growth and food production, the poultry industry continues to struggle, exacerbated by the COVID-19 pandemic. This study provides a consensus expert opinion on the challenges faced by Poultry farmers in Ovia North East Local Government Area of Edo State, Nigeria in the aftermath of the COVID-19 Pandemic and used exploratory techniques to determine the innovative strategies adopted. The population of the study comprised 25 Poultry farmers, out of which 20 were accepted to constitute the expert panel for the study. At the end of round one, a total of 28 items were identified by the panel as challenges they faced in post COVID-19 Pandemic Era. At round two only 25 items met the cut-off mark of 2.50 and at the end of round three, only 18 items reached consensus at 60% criterion. The study showed that high cost of drugs and vaccines, scarcity of feed, increase in the cost of feed, high mortality rate, high cost of transportation among others were identified as the challenges faced by Poultry farmers. The study further found that innovative strategies such as formation of farmer clusters and cooperative society, encouraging partnership among one another, utilizing biosecurity measures, among others were adopted by the respondents to stay in business. It was therefore recommended that Poultry farmers should be motivated to form cluster groups and the Federal Government of Nigeria should be responsive to supporting farmers in input, value addition, and reduction of energy.

Keywords: Post-Covid-19, Pandemic Era, Poultry Farmers, Challenges, Innovative strategies, Delphi Approach,

Introduction

The COVID-19 pandemic had a devastating impact on Nigeria's poultry industry, through disruption of operations and hardship to farmers. It led to a substantial drop in demand, shortages of essential inputs, a sharp increase in feed costs, disease outbreaks, and poultry mortality rates, thus making it difficult for farmers to keep their businesses afloat. The pandemic posed significant challenges to industries worldwide and Nigeria's poultry sector was not spared. The challenges faced by Poultry farmers in COVID-19 pandemic era are difficulties experienced in the purchasing of feeds, drugs and vaccines and the sales of products.

The poultry sector is a vital component of the livestock industry, offering profitable returns on investments due to its short gestation period (Babalola & Babalola, 2020; Hafez & Attia, 2020). Poultry is the most common source of animal protein in Nigeria, consumed by most Nigerians in both rural and urban households (Adeyemo, 2020; Nwagu, 2020; Babalola & Babalola, 2020). Despite its importance, the poultry sector faces significant challenges that hinder the maximization of profits, particularly during and after the COVID-19 pandemic era. Increased awareness of the sustainability of income flow and food security have become a driving influence for studies in the poultry business, which is a vital component of the agricultural sector in many countries, including Nigeria.

The effect of the pandemic on the poultry industry is multifaceted, including disruptions in supplies, reduced consumer demand, and financial losses (Kolluri et al., 2021; Yunita & Hasibuan, 2021; Adeyemo, 2020; Al-Khalaifah et al., 2020; Hafez & Attia, 2020; Nwagu, 2020). The poultry industry in Nigeria, faced unique challenges during the pandemic, as lockdowns and movement restrictions affected the availability of essential inputs, such as feed and healthcare supplies, leading to the destruction of eggs, chicks, and mature birds (Poojitha et al., 2024; Kolluri et al., 2021).

The consequences on the global poultry industry emanated the COVID-19 pandemic and its aftermath worsened because of the disrupting supply chains, altering consumer demand patterns, and posing a range of operational challenges. In Nigeria, the poultry sector crisis was further exacerbated by the growing cost of energy and the insecurity of lives and properties. These situations play a crucial role in the country's food security and the livelihoods of millions of people (Poojitha et al., 2024; Agbidi et al., 2022; Adeyemo, 2020; Nwagu, 2020; Palouj et al., 2021). This departure from the norm has necessitated a concerted effort by poultry farmers to develop adaptive modes for survival (Hafez & Attia, 2020).

Poultry farmers in Edo State, Nigeria have had to navigate these obstacles and develop innovative strategies for the sustainability of their actions in the post-pandemic era (Netherlands Enterprise Agency, 2020). Poultry farmers have adopted various innovative strategies to mitigate post-COVID-19 challenges. These include diversifying products, leveraging digital technologies,

exploring new markets, collaborating with stakeholders, investing in renewable energy, and forming farmers' clusters and cooperatives (Onyeaka et al., 2022). Additionally, technology adoption has been key, with strategies such as automated and closed-house systems, digital market platforms, value addition, biosecurity measures, and sustainable regenerative practices (Hafez & Attia, 2020). These strategies adopted by poultry farmers in different parts of the world have made them remain in business. The dissemination of these strategies to other poultry farmers is imperative for the survival of poultry business in Nigeria.

Objectives of the study

The objectives of the study are to:

- i. identify the challenges faced by Poultry farmers in Ovia North East Local Government Area of Edo State, Nigeria in a post-COVID-19 pandemic era; and
- ii. determine the innovative strategies adopted by Poultry farmers in Ovia North East Local Government Area of Edo State, Nigeria to mitigate these challenges.

Method/Procedures

The study area is Ovia North East Local Government Area of Edo State, situated in South-South Nigeria. It has a geographical area covering 2,301 km² with its headquarters Okada lying within the coordinates of 6.4167°N and 5.0833°E. The study used the Delphi research technique to gather information from Poultry farmers who are regarded as experts in the poultry industry to reach a consensus on the challenges they faced in post COVID-19 pandemic era. The Delphi technique is a commonly acknowledged method for merging opinion concerning real-world knowledge solicited from experts on certain topic areas (Twin 2021; Linstone & Turoff, 2019; Schmidt, 2019).

The Delphi technique is a structured communication process designed to facilitate a thorough and detailed exploration of a topic or problem, culminating in a collective perspective or consensus among the participating group through a process of compromise and discussion (Linstone & Turoff, 2019; Hsu & Sandford, 2007). The Delphi method allows experts to work toward a mutual agreement by simply circulating a series of questionnaires and the subsequent release of related

feedback for further discussion in each round (Twin 2021; Schmidt, 2019). The Delphi technique is appropriate in this study to gather expert insights and achieve a consensus on the challenges faced by poultry farmers in the post-COVID-19 pandemic era, allowing for a comprehensive understanding of the complexities and nuances of this issue.

The study employed purposeful sampling, a qualitative approach, to carefully select experts for the panel. As defined by Creswell and Poth (2017), this method involves deliberately choosing individuals and cases that can provide in-depth insights and a comprehensive understanding of the research topic, ensuring a rich and informative data collection process. For this study, a panel of experts, representing the Poultry farmers in Ovia North East Local Government Area of Edo State was used.

The population of the study comprised experts of 25 panelists who are members of the Poultry Farmers Association of Nigeria (PAN) Edo State Chapter in Ovia North East Local Government Area of Edo State. No sampling was done because the population of the study is a manageable size (Bhattacharjee, 2012). The panelists were interviewed face to face in the field individually using questionnaire techniques and oral communication to explore strategies they are adopting to remain in business after permission was granted by them and the process of administration was explained by the researcher. However, out of the 25 Poultry farmers experts, 5 of them declined due to health reasons (n=20).

The instrument used for data collection was allocated a rating scale in the form 4=Strongly Agree, 3=Agree, 2=Disagree and 1= Strongly Disagree, and a Yes or No responses at various rounds. Collated data for the study were analyzed using descriptive statistics and content analysis through percentages, means (\bar{x}), and Standard Deviation. The instrument was administered to the experts to indicate their level of agreement or disagreement with each of the items and a cut-off mean (\bar{x}) score of 2.50 was set as the basis for agreeing or disagreeing with each of the items. Items with a mean (\bar{x}) score of 2.50 or higher were considered suitable and relevant, and therefore selected for inclusion in the final round (Round 3). A Yes or No was used to select items with high frequency and a 60% criterion was set as the bench for consensus at the final round of the study.

Results

The panel was requested on the first round of the study to brainstorm in response to the task "make a list of challenges faced in post-COVID-19 pandemic era" using an open-ended questionnaire. Responses received from the 20 experts gave a variety of responses which were summarized using frequency counts into 28 items. Table 1 contains a summary of the list of challenges faced by Poultry farmers in post COVID-19 pandemic era. From the items, the most frequent challenges identified by the 20 respondents were items 1 (increase in the cost of drugs and vaccines), 2 (Scarcity of feed), 3 (increase in the cost of feed), 4 (Low patronage), 5 (high cost of transportation), 6 (Restriction of movement), 7 (Reduction in production of eggs), 8 (Difficulties accessing buyers) among others.

Table 1:
Round One: Challenges Faced by Poultry Farmers in Post-COVID-19 Pandemic Era (N=20)

S/N	Challenges	Frequency
1	Increase in the cost of drugs and vaccines	20
2	Scarcity of feed	20
3	Increase in the cost of feed	20
4	Low patronage	20
5	High cost of transportation	20
6	Restriction of movement	20
7	Reduction in the production of eggs	20
8	Difficulties accessing buyers	20
9	Scarcity of quality feeds	19
10	Difficulties in purchasing day-old chick	19
11	Poor access to veterinary service	19
12	Inadequate poultry extension service	19
13	High mortality rate	19
14	Threats to lives and property	19
15	Inaccessibility of market	18
16	Non-accessibility to vaccines-drugs	18
17	Issues of climate change	17
18	High cost of modern poultry equipment	17
19	Decline in egg production	16
20	Scarcity of labourers	16
21	High rate of diseases and pest attack	15
22	Unstable market price for sales of eggs	14
23	Supply of poor-quality chicks	13
24	Reduction in supplies	12
25	High cost of quality ingredients for feed formulation	9
26	Lack of loan and credit procurement	4

27	Excessive feeding of birds after attaining market size	3
28	Lack of manpower	2

Source: Fieldwork (2024)

In round two, Poultry farmers were administered another questionnaire and asked to rate their agreement level with the 28 items from round one. Table 2 presents round two of responses showing that 23 items out of 28 items had mean (\bar{x}) scores ranging from 2.55 – 3.65, signifying that the items are greater than the cut-off point of 2.50, particularly items 5 (high cost of transportation), 1 (increase in the cost of drugs and vaccines), 4 (low patronage), 18 (high cost of modern poultry equipment) among others. However, items 26 (lack of loan and credit procurement), 27 (excessive feeding of birds after attaining market size) 6 (restriction of movement) among others had a mean (\bar{x}) scores less than 2.50 signifying that the items are below the cut-off point. The Standard Deviation of all the items ranged from 0.38 – 1.03, signifying that the responses of the panelists were not far apart but close to one another in mean (\bar{x}) value.

Table 2:

Round Two: Mean (\bar{x}) Scores and Standard Deviations and Ranking of the Challenges Faced by Poultry Farmers in the Post-COVID-19 Pandemic Era (n=20)

S/N	Challenges	Mean (\bar{x})	SD	Remark
1	Increase in the cost of drugs and vaccines	3.55	0.51	Agree
2	Scarcity of feed	2.95	0.38	Agree
3	Increase in the cost of feed	3.35	0.58	Agree
4	Low patronage	3.55	0.60	Agree
5	High cost of transportation	3.65	0.48	Agree
6	Restriction of movement	1.85	0.82	Disagree
7	Reduction in the production of eggs	2.95	0.89	Agree
8	Difficulties accessing buyers	2.95	0.75	Agree
9	Scarcity of quality of feeds	3.00	0.79	Agree
10	Difficulties in purchasing day-old chick	3.15	0.67	Agree
11	Poor access to veterinary service	3.20	0.69	Agree
12	Inadequate poultry extension service	2.30	0.86	Disagree
13	High mortality rate	3.25	0.44	Agree
14	Threats to lives and property	3.30	0.73	Agree
15	Inaccessibility of market	3.35	0.99	Agree
16	Non-accessibility to vaccines-drugs	2.55	1.03	Agree
17	Issues of climate change	3.20	0.76	Agree

18	High cost of modern poultry equipment	3.55	0.51	Agree
19	High cost of renewable power sources to farms	3.10	0.91	Agree
20	Scarcity of labourers	3.00	0.45	Agree
21	High rate of diseases and pest attack	3.15	0.74	Agree
22	Unstable market price for sales of eggs	3.35	0.74	Agree
23	Supply of poor-quality chicks	2.95	0.94	Agree
24	Reduction in supplies	2.95	0.75	Agree
25	High cost of quality ingredients for feed formulation	3.25	0.44	Agree
26	Lack of loan and credit procurement	1.65	0.81	Disagree
27	Excessive feeding of birds after attaining market size	2.10	0.80	Disagree
28	Lack of manpower	2.30	0.86	Disagree

Source: Fieldwork (2024)

In round three, a questionnaire having a Yes and No option was designed using 23 items from round two. In this round, Poultry farmers were asked to go through the same exercise as that of the previous round in an attempt to capture any change in responses and indicate level of agreement with each of the items. Table 3 presents the responses of the experts showing that out of 25 items only 18 items reached the consensus set at 60% criterion. These 18 items are identified as the significant challenges that Poultry farmers are encountering in the post-COVID-19 pandemic period. These items include an increase in the cost of drugs and vaccines, scarcity of feed, increase in the cost of feed, high mortality rate, and high cost of transportation among others.

Table 3

Round Three: Consensus Level of Agreement of the Challenges Faced by Poultry Farmers in the Post-COVID-19 Pandemic Era (n=20)

S/N	Challenges	Yes	Agree (%)
1	Increase in the cost of drugs and vaccines	20	100.00
2	Scarcity of feed	20	100.00
3	Increase in the cost of feed	20	100.00
4	High mortality rate	20	100.00
5	High cost of transportation	20	100.00
6	Threats to lives and property	20	100.00
7	High cost of modern poultry equipment	20	100.00
8	High cost of renewable power sources to farms	20	100.00
9	Unstable market price for sales of eggs	20	100.00
10	High rate of diseases and pest attack	20	100.00
11	Scarcity of labourers	19	95.00

12	High cost of quality ingredients for feed formulation	18	90.00
13	Scarcity of quality of feeds	18	90.00
14	Supply of poor-quality chicks	17	85.00
15	Poor access to veterinary service	16	80.00
16	Issues of climate change	16	80.00
17	Difficulties in purchasing day-old chick	15	75.00
18	Inaccessibility of market	15	75.00
19	Non-accessibility to vaccines-drugs	11	55.00
20	Inadequate poultry extension service	11	55.00
21	Reduction in production of eggs	10	50.00
22	Difficulties accessing buyers	10	50.00
23	Reduction in supplies	9	45.00

Source: Fieldwork (2024)

Table 4 presents the major challenges faced by Poultry farmers in the post-COVID-19 pandemic era that reached the 60% criterion consensus. Eighteen items scored above the 60% consensus benchmark, particularly with items 1 (increase in the cost of drugs and vaccines), 2 (scarcity of feed), 3 (increase in the cost of feed), 4 (high mortality rate), 5 (high cost of transportation) 6. (threats to lives and property), 7 (high cost of modern poultry equipment), 8 (high cost of renewable power source to farms), 9 (unstable market price for sales of eggs), 10 (high rate of diseases and pest attack) scoring the highest consensus of 100%.

Table 4

Round Four: Major Challenges that Reached Consensus at 60% Criterion

S/N	Consensus of Challenges	Agree (%)
1	Increase in the cost of drugs and vaccines	100.00
2	Scarcity of feed	100.00
3	Increase in the cost of feed	100.00
4	High mortality rate	100.00
5	High cost of transportation	100.00
6	Threats to lives and property	100.00
7	High cost of modern poultry equipment	100.00
8	High cost of renewable power sources to farms	100.00
9	Unstable market price for sales of eggs	100.00
10	High rate of diseases and pest attack	100.00
11	Scarcity of labourers	95.00
12	High cost of quality ingredients for feed formulation	90.00
13	Scarcity of quality of feeds	90.00
14	Supply of poor-quality chicks	85.00
15	Poor access to veterinary service	80.00
16	Low patronage	80.00

17	Difficulties in purchasing day-old chick	75.00
18	Inaccessibility of market	75.00

Source: Fieldwork (2024)

After the fourth round, the Poultry experts in Ovia North East Local Government Area of Edo State, Nigeria were asked to mention innovative strategies adopted to mitigate the challenges faced in the post-COVID-19 pandemic era. The responses gave rise to several innovative ideas generated by the Poultry farmers. Table 5 presents Poultry farmers' innovative strategies adopted in mitigating challenges in the post-COVID-19 pandemic era indicating that all the items were innovative strategies Poultry farmers adopted to mitigate the adverse effect of the challenges experienced in the poultry industry scoring 100% each. This shows that the Poultry farmers adopted the same innovative strategies to remain in business in Ovia North East Local Government Area of Edo State, Nigeria.

Table 5

Innovative strategies adopted by Poultry farmers to mitigate challenges (n=20)

S/N	Consensus of Challenges	Agree (%)
1	Farmer clusters-cooperative society	100.00
2	Encouraging partnership among one another	100.00
3	Utilizing biosecurity measures	100.00
4	Digital-on line marketing	100.00
5	Expanding value addition-packaging	100.00
6	Diversification of products and services	100.00
7	Use of renewable sources of energy	100.00
8	Self-learning development through online platforms	100.00
9	Blocking disease-pest transmission pathways	100.00
10	Use of locally sourced herbs in place of drugs-vaccines such as bitter leaf, scent leaf, ginger	
11	Self-compounding of feeds	100.00

Source: Fieldwork (2024)

Discussion of Findings

Challenges Faced by Poultry Farmers in the Post-COVID-19 Pandemic Era

The challenges identified in Ovia Northeast LGA, Edo State Nigeria by the study include among others increase in the cost of drugs and vaccines, scarcity of feed, increase in the cost of feed, and high mortality rate. These challenges identified were in agreement with the report of Bamidele and Amole (2021) who acknowledged that the post-COVID-19 pandemic challenges pose serious

threats to smallholder poultry farming households, particularly impacting on their income. The study's results align with the views of Anosike et al. (2018), who identified key challenges in Nigeria's poultry production, including disease and pest prevalence, knowledge gaps, high mortality rates, costly feed, limited extension services, and inaccessible or expensive veterinary care. In support of the study, Kolluri et al. (2021) asserted that COVID-19 restrictions affected poultry shortage and in some cases excess. This effect is still lingering in the aftermath of the COVID-19 pandemic era. Similarly, Poojitha et al. (2024), Onyeaka et al. (2022), Adeyemo (2020), and Nwagu (2020) identified disease outbreaks and parasites, marketing, lack of professional help and insight, purchase of poorly bred birds, feed related problems, and unavailability of drugs and counterfeit drugs as some of the challenges faced by Poultry farmers. The Netherlands Enterprise Agency (2020) reports on a poultry sector study in Nigeria fingered feed quality and high price of feed, high cost of vaccines and drugs, poor financing, and infrastructure deficiency as the major challenges facing the poultry industry. A more recent report by Palouj et al. (2024) established that the high cost of transport and raw materials for compounding feeds are threatening the poultry industry. These reports by these researchers affirmed that the challenges faced by Poultry farmers in Nigeria are multifaceted and have been lingering before, during, and after the COVID-19 pandemic era.

Innovative Strategies Adopted by Poultry Farmers to Mitigate Challenges

The innovative strategies adopted by Poultry farmers to mitigate challenges in Ovia North East Local Government Area of Edo State, Nigeria include the formation of farmer clusters and cooperative society, encouraging partnership between and among farmers, utilizing biosecurity measures, digital and online marketing, expanding value addition and packaging, diversification of products and services among others. This finding is in line with Hafez and Attia (2020) who stressed that adaptation to present realities in the poultry business is vital for survival, particularly in the area of shared resources, expertise, information, and collaboration among farmers. In line with the findings of the study, Onyeaka et al. (2022) asserted that digital and online markets are key to marketing strategy. Poultry farmers are aligning with digital marketing as it is gradually taking the place of physical markets. The farmers are achieving these through various online social media platforms such as Facebook, Instagram, and WhatsApp among others. Therefore, adopting

these strategies as determined by the study, would enable Poultry farmers to remain in business and thus ensuring food security in Nigeria.

Conclusion

In Edo state, Nigeria, poultry farmers face a range of complex challenges in the post-COVID-19 era, including rising costs of drugs, vaccines, and feed, scarcity of feed, high mortality rates, transportation costs, security threats, expensive equipment and power sources, fluctuating market prices, and disease outbreaks, making it difficult for them to meet the increasing demand for poultry products. The innovative strategies adopted by the Poultry farmers to remain in business include among others farmer clusters and cooperative society formation, encouraging partnership, employing biosecurity measures, and digital and on-line marketing.

Recommendations

Based on these findings the following recommendations were put forward to bridge the gap of the study. They include:

- i. poultry farmers should be motivated to form cluster groups or cooperative societies by the government providing input incentives to these groups;
- ii. Federal ministries of Agriculture and Food security, Trade and Investment should encourage value addition in the poultry value chain;
- iii. the Federal Government of Nigeria should reduce the high of energy by reducing fuel price and subsidizing alternative renewable energy sources;
- iv. high-tech farm industries, distributors, and service providers of modern poultry equipment should make this equipment affordable through a hire-purchase mechanism to mitigate present challenges;
- v. the Federal Government of Nigeria can provide support to poultry farmers by offering accessible loans and training programs to enhance their capacity, enabling them to overcome current challenges and to build resilience against future outbreaks; and
- vi. the government and private sector should invest in infrastructure such as feed mills, poultry processing plants, and cold storage facilities to reduce the cost of production and increase the

efficiency of the poultry value chain, making it easier for farmers to meet the increasing demand for poultry products.

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