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RISK MITIGATION STRATEGIES UTILIZED BY POULTRY FARMERS IN AKWA IBOM STATE, NIGERIA

***Ubom, Etiene E., Okorie, Nelson & Okon, Uwemedimo**
Department of Agricultural Economics and Extension, Akwa Ibom State University, Obio Akpa Campus
***Corresponding author**: etieneise1@gmail.com +2348027535846

Abstract

The poultry industry plays a significant role in food production and contributes to the development of Nigeria's economy. The industry holds huge potential for growth with the participation and influx of new players. However, this potential is constantly challenged by a variety of risk factors. Hence, this study investigated the risk mitigation strategies adopted by poultry farmers in Akwa Ibom State. 246 poultry farmers were selected across three Local Government Areas in Akwa Ibom State using multi-stage sampling procedures. Data was collected with the aid of a questionnaire and analyzed using descriptive statistics and the Likert-type scale rating. The result showed that the 54.88% of the farmers were male, the mean age of the respondents was 42.89 years, the majority of the farmers were educated and the mean farm experience was 6.98 years. High cost of feed, outbreak of diseases among the birds, and acquiring birds from wrong sources were major risks faced by the farmers. The risk mitigation strategy that ranked highest was avoiding overcrowding of birds ($\bar{x}$=2.92) while attending extension workshops on poultry ranked the least ($\bar{x}$=2.46). It is recommended that extension agents should intensify efforts on the training of poultry farmers to combat risks that threaten poultry management and production.

Keywords: Production, Management, Poultry enterprise.

Introduction

Agriculture is an important and critical sector in Nigeria, accounting for 25.58% percent of the GDP and employing more than 70 percent of the labour force (National Bureau of Statistics (NBS), 2023). The livelihood of many rural dwellers depends directly or indirectly on agriculture (NBS, 2023). The agricultural sector provides a livelihood for the bulk of the rural population who accounts for up to 70% of the active labour force, supplies raw materials required by the industrial sector, and generates foreign exchange through export (Abdulrahman, Oladimeji, and Abdulazeez, 2017). According to NBS (2023), crop production is the major driver of the sector, contributing 89.01% to the GDP of the agricultural sector, livestock production contributed 5.4%, with fishing and forestry contributing 4.79% and 0.72% respectively to the sector.

The livestock sub-sector is undoubtedly, a fundamental element of agricultural production (Udoka, Bassey, and Okorie, 2019). Poultry production is the process of rearing domestic birds mainly for the supply of poultry meat and eggs for human consumption (Udo, Okorie, and Udoekpo, 2019). Poultry production is a viable business that contributes to Gross Domestic Product (GDP). For many Nigerians, it is now a full-time engagement, especially in Akwa Ibom State. As the practice in other climes, many poultry farmers are engaged on a moderate basis with minimal prospect for expansion and insurance (Babalola, 2013). According to African Sustainable Livestock (ASL) (2018) poultry production in Nigeria amounts to 454 billion tonnes of meat and 3.8 million eggs per year, with a standing population of 180 million birds. It is an important business in Nigeria's Agricultural sector and is commonly engaged among the citizens in all the regions of Nigeria based on its short-term rate of returns in the forms of cash and nutritional benefits.

Abimbola and Osunbor (2018) noted the impact of poultry production on the livelihood of poor rural households in developing countries, pointing to the nutritional, economic, and industrial importance as well as providing a form of employment to people, especially vulnerable rural households. Abimbola and Osunbor (2018) also pointed out that one in every ten Nigerian households is engaged in small or medium-sized

poultry production. Every enterprise is faced with many forms of risks and uncertainties. Claire (2010) defined risk as the potential deviation between expected and real outcomes, noting that the deviation may be positive or negative, but a negative consequence holds greater significance from a practical point of view and is usually the focus of decision-making.

In agriculture, most farmers convey their risk aversion in diverse ways, some of which include forward pricing, production practices, insurance, diversification, and liability management or their combination (Ajetomobi and Binuomote, 2006). The strategies are mostly resource-dependent and Babalola (2013) noted the small-scale nature of many poultry farmers in Nigeria which gives little room for diversification or insurance. This notwithstanding, farmers' attitude to risk has a significant influence on the rate of diffusion of new technologies and the outcome of rural development programs (Ajetomobi and Binuomote, 2006). Risk mitigation options commonly used by farmers include information collection, risk exposure reduction or avoidance, choosing low-risk technologies, production diversification, cooperative participation, scouring options for farm financing, and insurance schemes (Babalola, 2014).

The risky nature of agricultural production due to uncertainties discourages many investors from investing their capital in agricultural enterprises, as farmers are faced with a variety of risk from various sources that includes price and production risks that can affect input choice decisions and profit (Andres and Allan, 2010). Poor infrastructural facilities and the excesses of middlemen constitute a major impediment to the production, distribution, marketing, and storage of agricultural products in the country (Andres and Allan, 2010). Against these factors, small-scale farmers and ill-equipped against risks and uncertainties (Echebiri and Onu, 2019). The risk mitigation attitude of these farmers often influences their adoption of new technologies and propensity for goal attainment.

The productivity of poultry investment is affected by soaring input costs, poor and sometimes inaccessible veterinary services, pilfering, and market glut leading to profit reduction which increases the riskiness of the enterprise. Abimbola *et al.* (2018) stressed that the inability of many poultry farmers to mitigate risks associated with consumption, income, assets, and health may collapse the industry if there is no intervention by all stakeholders, noting that the top-bottom approach of policy programs implementation does not encourage poultry farmers. Consequently, many poultry farmers are exiting the enterprise and there is a rapid decline of prospective investors that are willing to invest in the enterprise. The resultant effect will be a surge in price that may decrease the consumption of poultry protein (Loghman, 2013). The collapse of the industry is imminent if concerted efforts are not made to tackle the challenges. The failure of the industry will give rise to a reduced intake of protein that may increase the chances of malnutrition and its attendant effects and consequent degradation of the welfare and livelihood of poultry farmers (Baruwa and Adesuyi, 2018).

There have been several literatures on poultry risk mitigation. Studies from Binuyo *et al.* (2019), Obike *et al.* (2017), Iheke *et al.* (2016), and Babalola (2013) found that poultry farmers used a combination of several strategies to manage risk which can be broadly categorized as financial strategies, production strategies, diversification, and management strategies to mitigate the various risks faced in the enterprise.

This circumstance substantiates the need for a thorough assessment of existing risk mitigation strategies of poultry farmers in Akwa Ibom State. An understanding of the effect and responses of poultry farmers to these risks is also beneficial. This will assist, in due course, in the design of improved risk management strategies. The main objective of this research is to assess risk mitigation strategies utilized by poultry farmers in Akwa Ibom State. The research specifically seeks to describe the socioeconomic characteristics of poultry farmers in the study area and identify risk faced by the farmers, and the risk mitigation strategies utilized by the poultry farmers in the study area.

Methodology

Study Area

The study was carried out in Akwa Ibom State, Nigeria. Akwa Ibom State is located in the Niger Delta region of Nigeria. It has an estimated population of 5.451 million (NBS, 2016) and a land area of 6,900 sq. Km. It lies between latitudes 05º00`N and longitudes 07º50`E. It is bordered on the east by Cross River State, west by Rivers State and Abia State, and on the south by the Atlantic Ocean. It is currently the highest oil-producing State in Nigeria. Agriculture is the dominant economic activity of Akwa Ibom State. Agriculture supports 75% of households of the State's population. The various agricultural products include palm oil, cassava, yam, cocoyam, plantain, maize, rice, rubber, seafood such as varieties of fish, shrimps, crayfish, oysters, etc., poultry eggs and meats, pork, and lately snail farming. Akpan *et al.*, (2013) noted that the poultry enterprise is an emerging business in most of the area, with commercial broiler and egg production becoming very popular among the inhabitants of the area.

Sampling Frame

The target population was poultry farmers who are registered with the Directorate of Animal Husbandry, Ministry of Agriculture, Akwa Ibom State. According to the data from the Directorate in 2021, there was an estimated population of 968 poultry farmers in the targeted area (Uyo-425, Abak-242, and Etinan-301).

Sampling Technique and Sample Size

The study was carried out in three (3) Agricultural Zones of Akwa Ibom State which were Uyo, Abak, and Etinan. The three (3) Agricultural Zones were selected because of the relatively high involvement in poultry production. Following the formula for calculating sample size as proposed by Yamane (1967). Based on the population size from the selected Agricultural zones, the sample size was calculated as;

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

n = sample size
N = population size
e = level of precision
Where;
N= 968
e = 0.055 (94.5% confidence interval)

$$n = \frac{968}{1 + 968(0.055)^2}$$

n = 246 poultry farmers in all.
Based on the relatively high concentration of poultry farmers in the selected areas,

Uyo sample size was $\frac{425}{968} \times 246 = 108$

Abak sample size was $\frac{243}{968} \times 246 = 62$

Etinan sample size was $\frac{301}{968} \times 246 = 76$

Table 1: Distribution of Respondents in the Selected Agricultural Zones

Agricultural Zone	Number of Registered Farmers	Number of Sampled Farmers
Uyo	425	108
Abak	243	62
Etinan	301	76
Total	**968**	**246**

Source: Author's computation, 2023

Method of Data Collection

Primary data was used for the study. The primary data was collected using a structured questionnaire that was administered having open-ended and closed questions to the selected poultry farmers by interviewing the respondents.

Analytical Techniques

The socio-economic characteristics of the poultry farmers in the study area were analyzed using descriptive statistics which included the use of means, frequencies, tables, and percentages. The risk mitigation strategies utilized by poultry farmers were analyzed with the use of a three-point Likert-type scale which was rated; 3 =

regularly, 2 = sometimes, and 1 = not at all as a response to risk mitigation strategies that were itemized. A mean score weight was computed for the respondents and the mean values were ranked.

Results and Discussions

Socio-economic Characteristics of Poultry Farmers in the Study Area

The distribution of the respondents according to gender as presented in Table 2, indicates that the majority of the poultry farmers in the study area were male (54.88%). The result implies that poultry farming in the areas considered for this study was male-dominated. Banjoko *et al.* (2014), Iheke *et al.*, (2016), Okon (2017), Udoka *et al.*, (2019), Adeyonu *et al.* (2021), and Okorie *et al.*, (2022) all reported their findings that the poultry industry is male-dominant. Babalola, (2014) pointed out that the predominance of male farmers is an indication that agribusiness is generally labour-intensive and still a strenuous enterprise in Nigeria, and the tedious and time-demanding nature of poultry may discourage most prospective females from engaging in the business.

The age distribution of the respondents showed that a large proportion (55.69%) of the respondents were between the ages of 41 - 60 years old, while about 3.25% of the respondents were above 60 years of age. The mean age of the respondents was 42.89 years. The mean age of the respondents revealed that many of the poultry farmers in the study area are middle-aged and in their prime. This could mean higher productivity and innovation in production techniques to minimize risks or adapt to changing trends to better manage risks that are inherent in poultry production as they are still predisposed to learning, changing, and adapting. The mean age also allows them to adapt to changing trends in risk management as the opportunity to learn and adapt to changes is high. The result also indicated an increase in the emergence of a younger population interested in poultry production as well as a decline in the proportion of older and aged people actively participating in poultry production. Iheke *et al.* (2016), Banjoko *et al.* (2014), Udo *et al.*, (2019), and Adeyonu *et al.* (2021) all reported similar findings.

The findings revealed that a few of the respondents (4.88%) did not have any form of formal education while the majority of about 95% of the respondents had formal education and literacy. As literate individuals have a keenness for the acquisition and use of information, the literacy level of the farmers in the study area could allow them to learn more and fast about the risks associated with poultry production as well as seek out existing, new and innovative measures to mitigate those risks or adapt to them. Iheke *et al.*, (2016) stated that education is pivotal to unlocking the entrepreneurial abilities of farmers. Also, Okon *et al.*, (2016) can enhance the ability of farmers to understand and evaluate new production techniques. This is in line with the findings of Iheke *et al.*, (2016), Udoka *et al.*, (2019), Udo *et al.*, (2019), and Adeyonu *et al.* (2021).

The distribution of the respondents according to the purpose of rearing poultry. The result indicated that more than half (59.76%) of the respondents raised poultry for their meat, 22.76% of the respondents raised poultry birds solely for egg production, while only 17.48% raised poultry for meat and egg production. This result goes to reveal the concentration of poultry meat production in the study area. This could also be because raising poultry for meat takes a shorter period, and brings quicker returns and lesser cost than raising poultry for egg production.

Table 2: Social Characteristics of Poultry Farmers in the Study Area

Characteristics	Frequency	Percentage
Gender		
Male	135	54.88
Female	111	45.12
Total	**246**	**100.00**
Age		
20 – 40	101	41.06
41 – 60	137	55.69
>60	8	3.25
Total	**246**	**100.00**
Mean	**42.89**	
Education		
No Formal	12	4.88
Primary	19	7.72
Secondary	113	45.93
Tertiary	102	41.46
Total	**246**	**100.00**
Member of Social Organization	**Frequency**	**Percentage**
Yes	86	34.96
No	160	65.04
Total	**246**	**100.00**
Farming Experience	**Frequency**	**Percentage**
1 – 10	219	89.02
11 – 20	27	10.98
Total	**246**	**100.00**
Mean	**6.89**	
Farm Income		
1,000 – 600,000	180	73.17
601,000 – 1,200,000	40	16.26
>1,200,000	26	10.57
Total	**246**	**100**
Mean	**452,340.9**	
Flock Size		
<300	98	39.84
300 – 600	127	51.63
601 – 900	15	6.10
901 – 1,200	2	0.81
>1,200	4	1.63
Total	**246**	**100.00**
Mean	**378.51**	

Source: *Field Survey*, 2022

The years of experience in poultry indicated that the majority (89.02%) of the poultry farmers in the study had about 1 to 10 years of experience in poultry production. The mean distribution of the years of experience gained stood at 6.89 years. The result implies that many of the poultry farmers in the study area had a considerable level of experience in poultry enterprise. This experience could allow a high level of awareness of diverse risks factors that are inherent in poultry production and may also have provided them with certain levels of mitigation, coping, and adaptation strategies to the risks and challenges facing poultry production as well as position them to adapt to future mitigation strategies. Nwaru, Iheke, and Onyenweaku (2011) opined that the number of years a farmer has spent in the farming business may indicate the practical knowledge he has acquired on how he can overcome certain inherent farm production problems. This finding is in line with the findings of Banjoko *et al.* (2014) who recorded a mean of 5 years. Okorie *et al.* (2022) reported a mean of 7 years of experience. Adeyonu *et al.* (2016) stated that a high level of experience in poultry farming should assist farmers in managing various risks associated with the enterprise adequately.

The farm size distribution of the respondents showed that the majority (51.63%) of the respondents had a flock size ranging between 300 to 600 birds. About 40% of the respondents had less than 300 birds on their farms. A minimum of less than 2% of the farmers had a flock size greater than 1,200 birds. The mean flock size was 378.51 birds. The mean result showed that many of the farmers have small farms. Low flock size could be attributed to the paucity of funds as a result of poverty and low access to credit. Also, the loss of birds resulting from risk factors will greatly impact the capital investment of the farmers, thus, it could be inferred that most of the farmers will welcome risk mitigation measures to prevent against loss of their enterprise. Akwiwu *et al.* (2013) reported a mean flock size of 280.59 birds and opined that smaller farm managers are expected to be more risk-seeking than managers of large farms and pointed out that this should have a positive significant influence on risk management. Banjoko *et al.* (2014) had a mean flock size of 343 birds.

The distribution of farm income indicated that the majority (73.17%) of the respondents had a farm income between ₦1,000 – 600,000 per production cycle. A small proportion of the farmers (10.57%) earned above ₦1,200,000. The mean farm income of the respondents was ₦452,340.9 per production cycle.

The distribution of the respondents based on their membership or participation in a social organization showed that the majority (65.04%) of the respondents in the study area do not belong to any relevant cooperative organization. This could mean that many of the respondents in the study area may be limited to receiving information and support that comes from the association as most cooperative organizations spread member risks among themselves, thus helping the participating member to shoulder the burden of some risks faced. Banjoko *et al.* (2014) and Adeyonu *et al.* (2021) reported similar findings. Iheke *et al.* (2016) noted that cooperative societies/farmers' associations serve as sources of good quality inputs, labor, credit, information, and organized marketing of products and opined that farmers who participate in cooperative societies have an increased ability to adopt innovations than non-members.

Risks Faced by Poultry Farmers in the Study Area

Table 3 highlighted the risks faced by poultry farmers. Among the items considered very serious risk included the high cost of feed ($\bar{X}$=2.7), the outbreak of diseases among the birds. Udousung *et al.,* (2015) noted that disease outbreak is a major production risk among poultry farmers in the study area. ($\bar{X}$=2.5), acquiring of birds from wrong sources ($\bar{X}$=2.5), while mortality among birds and inexperienced labour had a mean score of 2.1 respectively. Theft and burglary had a mean score of 1.9 which is not considered as a serious risk to the farmers.

Table 3: Risks Faced by the Poultry Farmers in the Study Area

S/N	Risks	Not Serious	Serious	Very Serious	Mean Score	Rank
1	High cost of feed	23	29	194	2.7	1st
2	Outbreak of diseases among the birds	46	39	161	2.5	2nd
3	Acquiring birds from wrong sources	47	39	160	2.5	2nd
4	Lack of storage and processing facilities	39	34	173	2.5	2nd
5	Poor veterinary services	26	64	156	2.5	2nd
6	Lack of quality feed for improved yield	32	60	154	2.5	2nd
7	Stampede among the birds	62	24	160	2.5	2nd
8	Market price fluctuations	38	67	141	2.4	8th
9	Input price fluctuation	42	71	133	2.4	8th
10	Ill health of the farmer	33	39	154	2.4	8th
11	Heat stress	65	42	139	2.3	11th
12	Cost of drugs and medications	52	66	128	2.3	11th
13	Improper record keeping	66	49	131	2.3	11th
14	Unfavourable weather	51	63	132	2.3	11th
15	Incidents of pest and rodents attack	81	33	132	2.2	15th
16	Poor ventilation	70	47	129	2.2	15th
17	Poor sanitary measures	62	63	121	2.2	15th
18	Mortality among birds	88	36	122	2.1	18th
19	Inexperienced labour	75	60	111	2.1	18th
20	Theft and burglary	107	46	93	1.9	20th

Source: *Field Survey, 2022*

It can be inferred from the result that many of the risks considered very serious and high-ranking by the farmers were financial and management risks. this could mean that many of the farmers lack essential technical and managerial skills needed to reduce the incidence of some of the factors they consider as high-risk such as the outbreak of diseases, stampeding, heat stress and sanitation. This shortage of essential managerial information can be bridged by proper and timely information and training. Okorie *et al.,* (2022) noted the need to ensure that agricultural innovations or information reaching farmers is in line with the needs of the farmers and should be capable of contributing to the enhancement of their performance, considering the economic importance of the poultry sector. From the result, it is clear that many of the farmers faced diverse production and financial risks they consider very serious; disease outbreak, mortality, cost of various production input essentials that could make optimal productive capacity difficult to reach, lead to investment loss, and increased cost of production. Iheke and Igbelina (2016) noted that financial risks, production risks, pricing, and market and casualty risk were major risk facing farmers. Binuyo *et al.* (2020) mentioned the rise in costs of inputs, diseases outbreak, inadequate storage facilities, government policy change, and lack of loans to farmers as high-risk sources. The findings are also corroborated by studies from Adeyonu *et al.* (2021) who reported outbreak of diseases, market fluctuations, institutional factors, and financial factors as major sources of risks. Okorie *et al.,* (2022) stated that poultry farmers required information on drug administration, identification of genuine drugs, feed formulation and identification of improved poultry breeds.

Risk Mitigation Strategies Utilized by Poultry Farmers in the Study Area

The farmers' utilization of risk mitigation strategies was organized under 16 variables. Table 4 depicted that avoiding overcrowding of birds ($\bar{X}$=2.92) ranked first. Disinfection of poultry premises ($\bar{X}$=2.83) and acquiring birds from a safe and reliable supplier ($\bar{X}$=2.83)both ranked second, good record keeping ($\bar{X}$=2.82), use of preventive medical treatment ($\bar{X}$=2.81), acquiring feed from reliable sources ($\bar{X}$=2.78), and controlled access of visitors ($\bar{X}$=2.72) had mean values of 2.82, 2.81, 2.78, and 2.72 respectively, while the relaxation of pens and reducing poultry size had mean scores of 2.64 and 2.63 respectively. The least ranked strategy utilized by the farmers was attending extension workshops on poultry ($\bar{X}$=2.46).

Table 4: Risk Mitigation Strategies Utilized by Poultry Farmers in the Study Area

S/N	Mitigation Strategies	Not at all	Sometimes	Regularly	Mean	Rank
1	Avoiding overcrowding of birds	5	10	231	2.92	1st
2	Disinfection of poultry premises	8	27	211	2.83	2nd
3	Acquiring birds from a safe and reliable supplier	10	25	211	2.83	2nd
4	Good record keeping	10	24	212	2.82	4th
5	Use of preventive medical treatment	16	23	207	2.78	5th
6	Acquiring feed from safe and known sources	26	17	203	2.72	6th
7	Controlled access of visitors around the poultry farm	18	34	194	2.72	6th
8	Use control measures for pests, predators, and rodents	17	37	192	2.71	8th
9	Quarantine of sick or diseased birds	23	28	195	2.70	9th
10	Sourcing for future market	6	66	174	2.68	10th
11	Keeping extra cash for emergencies	11	59	176	2.67	11th
12	Use of disease-resistant breeds	12	60	174	2.66	12th
13	Changing shoes when entering the poultry house	6	70	170	2.66	12th
14	Relaxation of pens	20	48	178	2.64	14th
15	Reducing poultry size	20	52	174	2.63	15th
16	Attending extension workshops on poultry	18	97	131	2.46	16th

Mean Score = 2.0

Source: *Field Survey, 2022*

The result implies that the farmers in the study area have employed a wide range of strategies to mitigate and combat the various risks they are faced with. The result indicated that many of the farmers actively practice the avoidance of overcrowding their birds and regularly disinfect their farms. This could be a result of the effects of stampeding among the birds, heat stress, and outbreak of diseases which the farmers had identified as considerable risks. Adeyonu *et al.* (2021) noted that it may not be unconnected with the high level of losses that farmers may experience in terms of mortality as a result of not giving the risks the attention required. It is indicated by the result that many of the farmers are aware of or have been confronted by various risk factors and have responded by adopting various risks risk mitigation measures to ease the effects and impacts of the risks. The result showed that many of the farmers had adopted various sanitary measures such as quarantine of sick birds, controlled access of visitors, changing of shoes when entering the poultry house and regular disinfection to combat risk factors that

rise from poor hygienic practices and to combat the risk of disease outbreaks, consequently attempting to guide against or reduce mortality among the birds, as Adeyonu *et al.* (2021) observed are key factors in minimizing risks linked with high mortality. From the result, it is evident that the farmers also adopted financial measures to mitigate risk such as keeping extra cash for unforeseen risks and sourcing for future markets to reduce the running cost of production and escalate profitability. Obinaju and Ekpo (2017) noted that poultry farmers keep production and financial records because they are to provide such records when applying for loans from financial institutions. The findings in this study are in line with reports from the studies conducted by Iheke *et al.* (2016), Okon (2017), Binuyo *et al.* (2020), and Adeyonu *et al.* (2021).

Conclusion

The study has examined the risk mitigation strategies utilized by poultry farmers in Akwa Ibom State. The study showed that the poultry farmers belong to an active labor force and the majority of them are male. The level of education among the farmers is high, despite this, the level of participation in cooperative organizations was low among the farmers. The average flock size showed that the farmers could at best be described as small-scale farmers. High cost of feed, disease outbreak, acquiring birds from wrong sources were among the major risk faced by the farmers. The result showed that poultry farmers in the study area utilized the avoidance of overcrowding of birds, hygiene and bio-security measures, and record-keeping as strategies for mitigating farm risks.

Recommendations

Based on the findings from this research, the following recommendations were proposed;

- The state Government and policymakers should be focused on programs, policies, and incentives that will increase the participation in and utilization of poultry cooperatives and other social capital formations that will help ameliorate farmers' output.
- Subsidies should be provided by the state Government for poultry inputs such as feed and medications to reduce the financial strain on farmers and enable them to mitigate risks associated with poultry production thereby keeping the industry sustained.
- Extension agents should intensify efforts on the training of poultry farmers to combat risks associated with production and management of their enterprise.
- The government and relevant stakeholders should provide veterinary outposts in various local government areas that will allow poultry farmers quickly access veterinary services.

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