

GROWTH ANALYSIS AND THE DETERMINANTS OF ENTREPRENEURIAL ORIENTATION IN THE SMALL-SCALE POULTRY SUBSECTOR IN DELTA STATE, NIGERIA

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Article History

Received: 15 May 2020

Revised: 23 September 2020

Accepted: 27 November 2020

Published: 21 December 2020

Keywords

Challenges

Characteristics

Gross margins

Stock size

Socioeconomic

Trend.

ABSTRACT

Entrepreneurial orientation is vital to growth and development, but lacking in many small-scale enterprises. This study investigated growth and entrepreneurial orientation in the small-scale poultry subsector of Delta State, Nigeria. It also ascertained the drivers of poultry entrepreneurial orientation in the study area. A multistage sampling procedure was used to collect primary data from 180 poultry farmers, through a questionnaire. A four-point Likert scale of five items was used to measure entrepreneurial orientation from innovativeness, proactiveness, and risk-taking. The data were analyzed using descriptive and inferential statistics, including gross margins, an autoregressive lag model, and logistic regression. The majority (57.7%) of the farmers are female. The small-scale poultry entrepreneurs had an orientation that was above average. The autoregressive lag model result indicated an increase in stock size and gross margins of poultry enterprises. It was forecast that the growth trend would increase up to 2022. Furthermore, the ANOVA result was statistically significant at 0.002*** and 0.001*** for stock size and gross margins, respectively. Years of experience and training in poultry farming and noninvolvement of entrepreneurs in other occupations influence their entrepreneurial orientation. Poultry entrepreneurs must be trained while they adopt poultry farming as their principal occupation.

Contribution/Originality: This study is one of very few studies to have investigated transformation in the small-scale poultry subsector. It indicates a trend in poultry development that researchers have not considered in the study area, while stating the likely future transformation in this subsector

DOI: 10.18488/journal.ajard.2020.104.764.772

ISSN(P): 2304-1455/ ISSN(E): 2224-4433



How to cite: Roli Juliet Egbe --- Achoja Roland Onomu --- Pius Chinwuba Ike --- Isiorhovoja Rodney Akpoviri (2020). Growth Analysis and the Determinants of Entrepreneurial Orientation in the Small-Scale Poultry Subsector in Delta State, Nigeria. Asian Journal of Agriculture and Rural Development, 10(4), 764-772. 10.18488/journal.ajard.2020.104.764.772

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1. INTRODUCTION

A growth-oriented entrepreneur is enthusiastic in expanding his/her business(es) while looking for new opportunities when the need arises through innovation (Kahan, 2012). However, entrepreneurial growth will not be possible without the input of entrepreneurial orientation (EO), such as proactiveness (Huang, Wang, Kuo-Hisung, & Yien, 2011). The characteristics of EO components that stimulate entrepreneurial growth include self-assurance, good behavioural traits, results-oriented, risk-taking, good leadership style, originality, and future-oriented (Ajani & Ayelotan, 2011).

Entrepreneurial orientation is a category of decision-making methods, practices, processes, and norms that ensure the enhancement of innovativeness, proactiveness and risk-taking propensity (Patel & Souza, 2009). Entrepreneurial orientation describes why some managers recognize and exploit opportunities and others do not (Shane & Venkataraman, 2000). An organization is entrepreneurially oriented when it is innovative, risk-taking, and proactive (Miller, 1983).

The enterprise's growth entails value addition, generation of more revenue, and expansion in business volume (Greiner, 1972). Many years ago, Greiner (1972) concluded in his book on the theory of enterprise growth that enterprises undergo different stages in growth. These stages are creativity, direction, and collaboration (Geroski, 2002). Schumpeter's theory and the resource-based theory of entrepreneurship are the two theories that explain growth in entrepreneurial orientation (Schumpeter, 1911). Schumpeter's theory pointed out that entrepreneurship is all about innovation and the production of inputs combined by the entrepreneur to increase economic growth. This increase in growth is brought about by the innovative ability and skills possessed by the entrepreneur. Ironically, many businesses and entrepreneurs have struggled to grow in Nigeria (Onogu, 2005).

Poultry farming is the raising of domesticated birds such as chickens, turkeys, and quails for various purposes, including meat, egg, and feather production (FAO, 2005). Poultry production systems in Nigeria are grouped into extensive and intensive systems based on scale, stock, husbandry, and productivity (Adene & Oguntade, 2006). However, the most prevalent poultry system practiced in Nigeria is the intensive system. The poultry industry in Nigeria has assumed greater importance in improving employment opportunities and food production. Thus, this industry has brought about a 15% contribution to the total yearly protein intake, with approximately 1.3 kg increase in poultry products consumed per head per annum (Ologbon & Ambali, 2012). The poultry industry is a diverse industry with various business interests including egg production, hatchery, and equipment manufacture (Amos, 2006). Despite the poultry sector's significance, importation of frozen poultry food is still prevalent in Nigeria and many other African countries (Rakotoarisoa, Iafate, & Paschali, 2011). Statistics reveal that poultry product accounts for the vast proportion of frozen food on which Nigeria spends annually about ₦600 billion (Falaju, 2015). This raises the concern whether the poultry sector in developing countries (e.g. Nigeria) can grow to be self-sufficient; and what is the growing trend for the poultry entrepreneur? Moreover, this also shows the need to study small-scale poultry farmer entrepreneurial orientation. Hence, this study investigates the growth trend in small-scale poultry enterprise, the level of small-scale poultry entrepreneurial orientation, and factors that influence the entrepreneurial orientation of small-scale poultry farmers in the study area.

2. METHODOLOGY

2.1. Area of Study

The study was carried out in Delta State. Delta State is in the south of Nigeria. It has a land area of 17,698 square kilometers and lies roughly between longitude 5° and 6° 45' east and latitude 5° 20' and 6° 30' north of the Equator. The state has a population of about 6,877,968, estimated from the 2006 census by Nigeria Population Commission (NPC, 2010).

Delta State is grouped into three agricultural zones: Delta South, Delta North, and Delta Central. The state enjoys a tropical climate with two distinct seasons: the rainy season (March–November) and the dry season (December–March). Rainfall is highest in July. Annual rainfall is about 256.5–190.0 mm in the North. The temperature varies between 20 and 34°C. The state is richly endowed with fertile agricultural land suitable for agricultural production, and the main occupations of the people are farming and fishing.

2.2. Sampling Procedure and Size Method of Data Collection

A multistage sampling procedure was used for data collection. The first stage involved the random selection of two Local Government Areas (LGAs) from three agricultural zones in the state. Stage two involved the identification and selection of three communities in each of the selected LGAs. This gave a total of 18 communities from six LGAs. Stage three involved a random selection of ten respondents from each of the selected communities to give a total sample size of 180 poultry farmers. Hence data for the study were generated from primary sources. The primary data were collected with the aid of a well-structured questionnaire from poultry entrepreneurs. A total of 168 correctly completed copies of the questionnaire were retrieved and used from the 180 respondents sampled.

2.3. Method of Data Analysis

Descriptive and inferential statistics were used for the analysis. Entrepreneurial orientation was analyzed with a logistic regression model. Gross margin was used to determine poultry enterprise growth over the period 2013–2017. An autoregressive model was also used to analyze stock size growth over those same years. The autoregressive model was also used to forecast growth for poultry entrepreneurs up to 2022. The test of significance of growth in the poultry enterprise was analyzed using ANOVA.

2.4. Measurement of Variables

The variables were measured as shown below.

- i. The age of respondents (years).
- ii. The education level of the respondents was measured categorically. For example, no formal education was assigned 0, primary 1, secondary 2, ND/NCE 3, HND/B.Sc 4, and postgraduate 5. However, the educational variable was later converted to dummy (formal and informal) for inferential statistics analysis.
- iii. Sex was identified as male or female. Male was assigned 0 and female 1.
- iv. Marital status was measured by asking the respondents to indicate whether they were single, married, or single again (divorced or widowed). Single was assigned 0, married 1, and divorced or widowed 2. Also factored in were currently having husband/wife =1, otherwise = 0.
- v. Farming experience was measured as the number of years of participation in poultry production.
- vi. Access to credit was measured by asking farmers to indicate whether they had access to credit: yes = 1, no = 0. They were also asked to state the sources of their credit as applied.
- vii. If have another occupation = 1, otherwise = 0.
- viii. If joined poultry professional organisation/association = 1, otherwise = 0.
- ix. Income and expenditure were measured in naira (₦, which is unit of monetary measurement in Nigeria).
- x. Stock size was measured using numbers of birds reared annually.

2.5. Measurement of Entrepreneurial Orientation of Entrepreneurs

There are various ways to measure entrepreneurial orientation, due to the challenges and decision criteria associated with the entrepreneur’s formative versus reflective aims. However, a researcher is free to determine the measurement approach that best serves the research purpose. Multidimensional entrepreneurial orientation measurement models are consistent with the EO constructs (Covin & Wales, 2012). Al Mamun, Kumar, Ibrahim, & Bin (2017) validated the component of innovativeness, risk-taking, and proactiveness among the significant contributors to entrepreneurial orientation assessment. Hence, poultry entrepreneurs’ entrepreneurial orientation was determined using a four-point Likert scale of five items, each of innovativeness, proactiveness, and risk-taking. The Likert scale scores for respondents’ entrepreneurial orientation were calculated from the average sum points that measure entrepreneurial orientation, as presented in Table 1.

Table 1. Grade of entrepreneurial orientation.

Entrepreneurial orientation value	Entrepreneurial orientation grade
0–2.49	Low EO
2.5–4.0	High EO

2.6. Autoregressive Model Specification

An autoregressive name was derived from the Greek prefix *auto*, meaning self. The term auto indicates a variable that is regressed against itself. An autoregressive (AR) model anticipates future outcomes using past values (Maxwell, Cole, & Mitchell, 2011). It explains the relationship in time series data regarding values that precede and succeed them. The autoregressive model involves linear regression of current series data against one or more past data values but the same (Brockwell, Dahlhaus, & Trindade, 2005). The lag autoregressive model estimates a variable’s stability over time by regressing the later construct measures onto earlier measures of the same construct. This is necessary because the dependency of variable Y on another variable X is hardly instantaneous. Most often, Y responds to X after some time elapse, and such time interval is called the lag (Gujurat & Porter, 2009).

Davtyan (2014) effectively used the autoregressive model to analyze fiscal performance, income inequality, and economic growth in Anglo-Saxon countries. Davtyan (2014) successfully explained economic growth using the autoregressive model; however, the research did not focus on a particular subsector field, which part of this research addresses with the autoregressive model. The model for lag autoregression AR(p) is specified in Equation i below:

$$Z_t = \delta_0 + \delta_1 Z_{t-1} + \delta_2 Z_{t-2} + \delta_3 Z_{t-3} + \delta_n Z_{t-n} + e_t \quad (i)$$

Where:

Z_t = Z seasonality, measure in time t.

B₀ = constant.

Z_{t-1} - Z_{t-n} = past or previous series values (lags).

B₁ - B_n = lag coefficient.

e_t = random shock (white noise).

δ could be expressed as.

$$\delta = \left(1 - \sum_{i=1}^p \phi_i \right) \mu,$$

2.7. Growth Measurement and Model Specifications

The growth and development of an enterprise are explained in various ways, including growth in assets, increased number of employees, growth in profit, and turnover over time (Delmar, Davidsson, & Gartner, 2003; Delmar, 2006). However, Ardishvili (1998) revealed that growth indicators, which are the variables used in

observation of growth, include assets, employment, market share, physical output, sales, profits, and gross margin. Alene et al. (2008) stated that profit in measuring growth and development is essential in the longer run. However, in this study, the gross margin variable was used as an indicator to observe growth because it estimates and subtracts total revenue generated from the fixed and variable cost when compared to using profit as an indicator.

The growth of poultry enterprise was ascertained using poultry entrepreneur written records of gross margin and stock size from 2013 to 2017. The gross margin analysis formula and lag autoregression model are illustrated in Equation ii below:

$$GM = TR - TVC \quad (ii)$$

Where:

GM = gross margin.
TR = total revenue.
TVC = total variable cost.

Total revenue equation is given as:

Pq. $Q(N)$

Where Q = quantity of output .

P.q = unit price of output (₦).

The gross margin equation was substituted into the autoregressive model for the growth trend analysis, as presented in Equations iii and iv. Hence:

$$GM_t = B_0 + B_1G_{m-1} + B_2G_{m-2} + B_3G_{m-3} + B_nG_{m-n} + \dots \text{et} \quad (iii)$$

$$G_t = B_0 + B_1G_{m-1} + B_2G_{m-2} + B_3G_{m-3} + B_4G_{m-4} + B_5G_{m-5} + \text{et} \quad (iv)$$

Where,

GM_t = gross margin in year t
B₀ = constant
B₁-B_n = lag coefficients
G_{m-1} = lagged values of gross margin in year 1
G_{m-2} = lagged values of gross margin in year 2
G_{m-3} = lagged values of gross margin in year 3
G_{m-4} = lagged values of gross margin in year 4
G_{m-5} = lagged values of gross margin in year 5
et = random shock

The same equation specification and analysis procedures used for gross margin were used for stock growth trend analysis. However, the stock size variable was substituted for the gross margin variable alongside all appropriate stock growth trend analysis variables.

3. RESULTS AND DISCUSSION

The test results for the data obtained from small-scale poultry entrepreneurs are presented in this section. It starts by presenting the socioeconomic characteristics of respondents.

3.1. Socioeconomic Characteristics of Poultry Farmers

Table 2 presents a descriptive distribution of respondents using frequency, percentage, mean, and mode. There was no wide variation in small-scale poultry entrepreneurs' age distribution in the study area. However, the majority of poultry farmers are within the age bracket 38–42 years. The majority (57.7%) of the farmers are female. This could be attributed to the fact that poultry farming does not require a lot of physical strength, unlike crop farming. This finding is similar to that of Isiorhovoja, Inoni, & Ogisi (2013). Table 2 reveals that married entrepreneurs dominated the study area. The results for marital status are in line with the findings of Miller (2004). The need to provide for the family upkeep explains why married households dominate farming.

Respondents' education status revealed that most entrepreneurs had completed formal education. It also revealed that 29.8% of respondents had B.Sc./HND, while 26.2% had NCE/ND and 7.0% had a postgraduate degree; hence there is a high literacy level among farmers in the study area. Babalola (2014) reported similar findings. The results showed that 72.6% of farmers do not have access to credit. This could be due to poultry farmers' inability to produce the required collateral and the extensive documentation required. Onogu (2005) identified access to finance as among the constraints facing entrepreneurs.

The study revealed that the majority (60.3%) of respondents had farming experience ranging from 8 years and below. This implies that more entrepreneurs are venturing into the business of poultry enterprise in Delta State.

The majority (67.3%) of respondents have another occupation, while a smaller fraction have more than one other occupation. This finding implies that many small-scale poultry farmers are not fully committed to farm work in the study area. The number of entrepreneurs having other occupations could have resulted from their desire to maintain a white-collar job. Most entrepreneurs do not deem it fit to join a professional poultry farming/related organization/association. Table 2 shows that the majority (74.4%) of respondents had not joined any form of poultry association/organization, while (25.6%) had.

Table 2. Socioeconomic characteristics of poultry farmers.

Variables	Number	Percentage	Mean/mode
Age (years)			
32 and below	10	6.0	43.0
33–37	31	18.5	
38–42	42	25.0	
43–47	39	23.0	
48–52	30	17.9	
53–57	10	6.0	
58 and above	6	3.6	
Gender			
Female	97	57.7	Female
Male	71	42.3	
Marital status			
Single	45	26.8	Married
Married	123	73.2	
Educational qualification			
No formal education	20	11.9	HND/B.Sc.
Primary education	15	9.9	
Secondary education	26	15.2	
NCE/ND	44	26.2	
HND/B.Sc.	50	29.8	
Postgraduate	13	7.0	
Access to credit			
No	122	72.6	No
Yes	46	27.4	
Farming experience (years)			
8 and below	101	60.3	9.0
9–13	41	24.4	
14–18	25	14.8	
19–23	0	0.0	
24 and above	1	0.5	
Have other occupation			
Yes	113	67.3	No
No	55	32.7	
Joined professional association			
Yes	43	25.6	No
No	125	74.4	Yes

3.2. Growth in Stock Size of Poultry Enterprises

The trend in average stock size of poultry enterprises is shown in Figure 1. This steadily increased from 1,942 birds in 2013 to 2,042 in 2014. In 2015 the average stock size was 2,345 birds, rising to a peak of 2,749 in 2017.

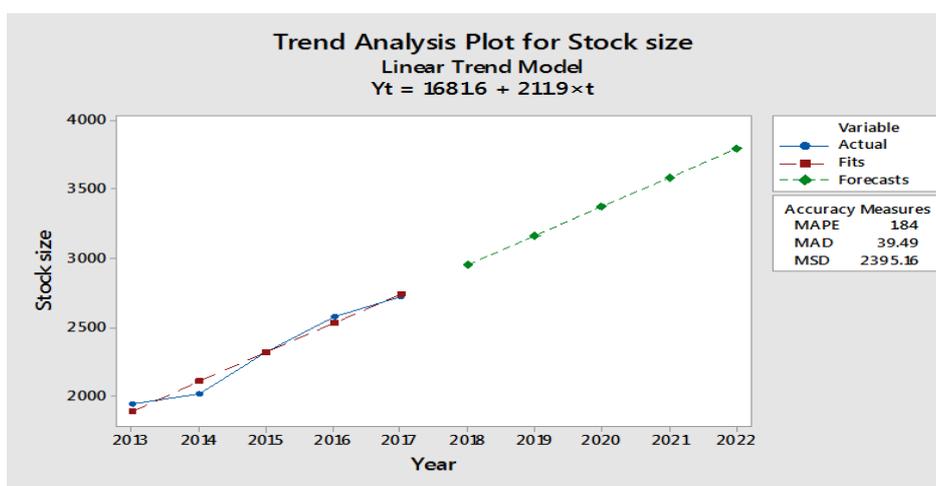


Figure 1. Trend and projection for stock size.

The trend forecast indicates a steady increase in stock size between 2018 and 2022. This increase could be due to the expanding demand for poultry products resulting from population growth and food security improvement in West Africa. The linear trend model is given as $Y_t = 1681.6 + 211.9t$, which indicates that a unit increase over 1 year will lead to a 211.9 increase in stock size. This is in line with USDA (2015) findings, which indicate a rapid expansion of the poultry sector.

3.3. Test of Significance in Stock Size Growth of Poultry Enterprises, 2013–2017

The poultry enterprise’s stock size increase between 2013 and 2017 did not occur by chance in the study area. The ANOVA result in Table 3 indicate an increase in stock size at the 1% significance level.

Table 3. Growth in stock size of poultry enterprises.

ANOVA					
Stock size	Sum of squares	D.f.	Mean square	F-ratio	Sig. (P-value)
Between groups	77,445,729.29	4	19361432.32	4.33	0.002***
Within groups	3,734,547,851	835	4472512.40		
Total	381,1993,580	839			

Note: *** = significant at 1%.

In other words, the growth in the stock size of poultry enterprises has undergone significant transformation.

3.4. Test of Variance in Stock Size Growth, 2013–2017

Table 4 presents the Duncan test results showing the significance level from 2013 to 2017, and comprises two subsets. The results indicate that subset one, which includes 2013 and 2014, recorded a lower stock size than subset two (2015–2017). This implies a significant difference between subsets one and two. This reduction in stock size in 2013 and 2014 resulted from flooding in 2012, where farmers worldwide suffered substantial economic loss. There were challenges in regard to food supply, processing, storage, and marketing. In addition, schools were shut down and commodity prices increased (Famous, 2012).

Table 4. Degree of variance in stock size of poultry enterprises.

Duncan			
		Subset for alpha = 0.05	
Year	N	1	2
2013	168	1944.05	
2014	168	2021.37	
2015	168		2319.35
2016	168		2575.48
2017	168		2726.49
Sig. (P-value)		0.125	0.096

3.5. Trend in Gross Margins

The results from Figure 2 indicate steady growth in the gross margins of poultry enterprise. Gross margins increased from ₦701,012.6 in 2013 to ₦754,495.2 in 2014. The average gross margin steadily rose from ₦884,733.2 in 2015 to a peak of ₦1,107,985.9 in 2017. This implies that there was an increase in gross margins. The linear trend model is given as $Y_t = 583,533 + 971t$, which indicates that a unit increase over the year will lead to a 97,176 increase in gross margin, and the trend forecast shows a steady increase in gross margin between 2018 and 2022.

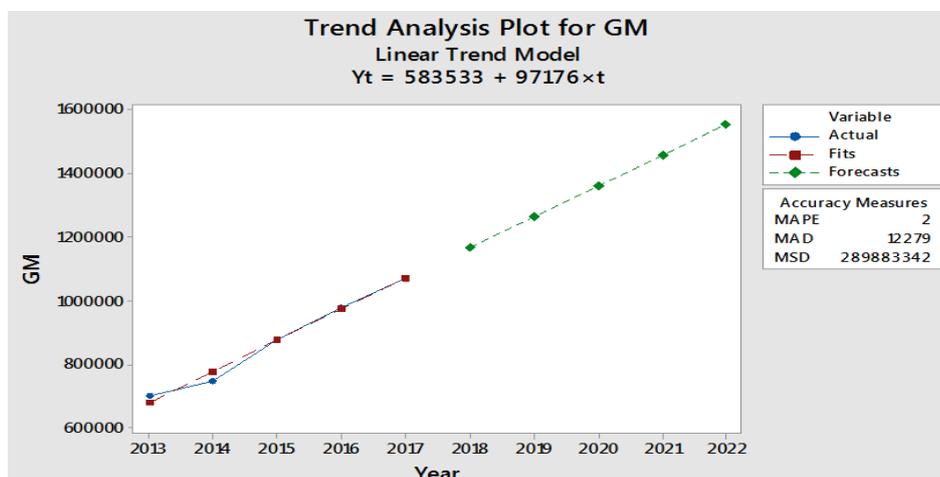


Figure 2. Trend and projection for gross margin.

3.6. Test of Significance in Gross Margin Growth of Poultry Enterprises, 2013–2017

Table 5 shows that poultry enterprises' gross margins underwent a significant increase, recorded at the 1% probability level, from 2013 to 2017.

Table 5. Growth in gross margins of poultry enterprises.

ANOVA					
Gross margin	Sum of squares	D.f.	Mean square	F-ratio	Sig. (P-value)
Between groups	1.611	4	4.027	6.320	0.000***
Within groups	5.321	835	6.372		
Total	5.482	839			

Note: *** = significant at 1%

3.7. Test of Variance in Stock Size Growth, 2013–2017

Table 6 presents the Duncan test result showing the significance levels from 2013 to 2017, and comprises two subsets. The results indicate that subset one, which includes the years 2013 and 2014, recorded a lower gross margin than subset two (2015–2017). This implies a significant difference between subsets one and two, which indicates that the years 2013 and 2014 recorded a reduced gross margin due to the flooding in 2012. Still, in 2015–2017 a higher gross margin was recorded than in previous years because farmers were able to take cognizance of the fact that efficiency in chicken production will increase when there is an improvement in breeding, husbandry, and management, because this will reduce the cost of production (Adene & Oguntade, 2006).

Table 6. Degree of variance in the gross margins of poultry enterprises.

Duncan			
		Subset for alpha = 0.05	
Year	N	1	2
2013	168	701,835.82	
2014	168	747,186.29	
2015	168		875,091.80
2016	168		979,760.30
2017	168		1,071,428.54
Sig. (P-value)		0.060	0.230

3.8. Distribution of Respondents According to Level of Entrepreneurial Orientation

The results in Table 7 show the distribution of respondents according to their level of entrepreneurial orientation. Entrepreneurs scoring from 2.5 to 4.0 points are considered to have high (above average) entrepreneurial orientation. In contrast, those scoring 0–2.49 are considered to have low (below average) entrepreneurial orientation.

Entrepreneurial orientation in the study area has grown. Table 7 shows that 96.4% of poultry farmers in the study area had an above-average orientation.

Table 7. Level of entrepreneurial orientation.

Level of entrepreneurial orientation	N	Percentage
Below average	6	3.6
Above average	162	96.4
Total	168	100

3.9. Determinants of Poultry Enterprise Entrepreneurial Orientation Using the Logistic Model

The logistic results from investigation of factors influencing respondents' entrepreneurial orientation are presented in Table 8. The omnibus test of model coefficient has a Chi-square statistic of 15.522 with significance 0.030, while the Hosmer–Lemeshow test has Chi-square 3.869 with significance of 0.869. These results show that the model is fit for the predictors. There was a significant improvement in growth and transformation for those respondents with entrepreneurial orientation above average compared to those below average. The Nagelkerke R^2 , which should range between 0 and 1, has a value of 0.174. The proportion of variation in entrepreneurial orientation is accounted for by the predictors. Again this shows that predictor variables are able to explain 17% of variation in entrepreneurial orientation.

Experience in poultry farming, receiving poultry farming training, and full-time involvement in poultry farming have a relationship with entrepreneurial orientation. A granted experience in poultry farming is likely to stimulate entrepreneurial orientation such as risk-taking, innovation, and proactiveness. Furthermore, the exponential beta coefficient (odds ratio) result of years of experience in poultry farming showed that the number of years experience increased entrepreneurs' entrepreneurial orientation by 17%. In other words, less experienced poultry farmers are more likely to have less entrepreneurial orientation. This result is similar to the findings of Gelan & Wedajo (2013), which stated that years of experience played a crucial role in the entrepreneurial orientation of small-scale businesswomen in Ethiopia.

Table 8. Factors influencing respondents' entrepreneurial orientation (logistic).

Variable	B	S.E.	Wald	D.f.	Sig.	Exp(B)
Age	-0.023	0.036	0.388	1	0.533	0.978
Gender	0.350	0.549	0.406	1	0.524	1.419
Marital status	0.170	0.572	0.089	1	0.766	1.186
Farming experience	0.165	0.091	3.308	1	0.069*	1.179
Received training	1.313	0.629	4.365	1	0.037**	3.718
Have other occupation	-1.230	0.570	4.648	1	0.031**	0.292
Profession body	-0.956	0.603	2.513	1	0.113	0.384
Constant	1.382	1.691	0.668	1	0.414	3.983

Note: Nagelkerke R^2 is 0.174, d.f. 7, omnibus test of the model coefficient Chi-square statistic is 15.522 with sig. 0.030, Hosmer–Lemeshow test Chi-square is 3.869 with sig. of 0.869.

Receiving training has a relationship with orientation in poultry enterprises. The results show that the small-scale entrepreneur who received training on poultry farming enterprise is likely to have above-average entrepreneurial orientation. The respondents' odds ratio value (3.718) indicates that farmers' entrepreneurial orientation would increase by 3% for those who received training on poultry enterprises.

Having another occupation or taking poultry farming as the only occupation influences entrepreneurial orientation. Table 8 shows that the small-scale poultry entrepreneur who has another occupation is less likely to have high entrepreneurial orientation. In other words, the smallholder poultry farmer who does not have another occupation is more likely to have better entrepreneurial orientation. This result could be attributed to the fact that the small-scale poultry entrepreneur who has another occupation may be distracted from full-time commitment to entrepreneurial orientation training and other poultry enterprise activities that might accelerate its growth and development.

4. CONCLUSION

There is transformation in the small-scale poultry farming subsector in Delta State – growth in both stock size and gross margins. All things being equal, the growth trend may continue till 2021. The majority of small-scale poultry entrepreneurs have above-average entrepreneurial orientation. However, farming experience, poultry farming training, and noninvolvement in other occupations influence entrepreneurial orientation. Age, gender, marital status, and joining poultry-related associations did not significantly influence entrepreneurial orientation in the study area.

5. RECOMMENDATIONS

Based on this study's findings, the following recommendations have been made to improve entrepreneurship in the poultry subsector in Delta State. Poultry entrepreneurs should be trained in the various techniques of poultry farming that will increase their entrepreneurial orientation. Entrepreneurs who are new to poultry farming should continue in the enterprise although they should not expect to make any profits in the early stage; the experience gained over time will influence their entrepreneurial orientation, which will stimulate profitability and growth. Small-scale poultry entrepreneurs should fully engage in the poultry business and not be distracted by involvement in another occupation. More research and effort should be made to investigate why most small-scale poultry entrepreneurs do not have poultry enterprise as their sole occupation. Since there was growth in entrepreneurs' stock size and gross margins, their challenges should be investigated and addressed to sustain growth.

Funding: This study received no specific financial support.

Competing Interests: The authors declare that they have no competing interests.

Contributors/Acknowledgement: All authors participated equally in the design and performance of the current research.

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