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DETERMINANTS OF PARTICIPATION IN CONTRACT FARMING AMONG POULTRY FARMERS IN KOGI STATE, NIGERIA

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Abstract

Factors that determine participation in poultry contract farming in Kogi State were examined in this study. It utilized primary data collected using a structured questionnaire. Multistage sampling technique was employed for a sample of 120 respondents. Data were analysed using Descriptive Statistics, Logistic Regression and t-test of mean difference. The findings showed that majority (64.17%) of the respondents were male, majority (81.67%) had formal education, majority (84.17%) were married, majority (91.67%) do not have access to credit, most (90.83%) did not belong to any co-operative society and majority (92.50%) of the respondents had no access to extension services, mean age was 45 years, household size was 6 persons and mean farming experience was 16 years. Age, marital status and access to extension services were the fundamental factors that determine poultry [redacted] farmers' participation in contract farming. The mean income of contract farmers was ₦346, 044 while that of non-contract farmers was ₦317, 511. The probability value of t (0.0015) being less than 0.05 alpha level showed that there was a significant difference between the incomes of contract and non-contract poultry farmers in the study area. Government should

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ensure that extension personnel visit the poultry farms and provide extension services to the farmers. This will result to expanded farm size, production and management efficiency. Formation of more co-operative societies by the poultry farmers in the study area is recommended. Such informal credit institutions among farmers give them easy access to credits and also enhances circulation of credible information among farmers.

Introduction

The transformation of agricultural sector in Nigeria from subsistence to commercial agriculture requires an intermediary agribusiness sector linking agricultural and manufacturing/industrial sectors. The economic institution that is perhaps the emblem of such an agro-industrial sector is contract farming; a means in modern agriculture whereby a processing/marketing firm contracts the production of 'priority' poultry birds to poultry farmers (Du *et al.,* 2013). It is an agreement between farmers and processing and/or marketing firms for the production and supply of specified produce under forward agreements, mostly at a predetermined price Will (2013). It involves the buyer providing a degree of support, such as supplying of inputs and provision of technical advice. It is also a means of developing markets and bringing transfer of technical skills in a way that is profitable to both the sponsors and producers (Will 2013). Poultry contract farming has potential in Kogi State because of the prevalence of small-scale Poultry farmers. Poultry are domesticated avian species that are raised for eggs, meat and/or feathers. The term 'poultry' covers a wide range of birds, from indigenous and commercial breeds of chickens to Muscovy ducks, mallard ducks, turkeys, guinea fowl, geese, quail, pigeons, ostriches and pheasants. Poultry are raised throughout the world, with chickens by far the leading species everywhere (Food and Agricultural Organization Statistics, FAOSTAT, 2020). poultry industry provides employment to a reasonable number of people in Kogi State. It serves as a source of income to the farmers, protein in diets and the by-products, such as feathers, are used in making household items like decorations while the droppings are used as organic manure for production of crops. Although, numerous studies have been undertaken with respect to contract farming in the poultry industry, poultry farmers in Kogi State still suffer from marketing risks associated with the sale of their produce (particularly meat from broilers and eggs from layers), price volatility which sometimes discourage farmers from production and poor market linkages. These challenges have increased poverty level as well

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as food insecurity among poultry farmers in the study area. Due to this backdrop, this study was meant to analyse the determinants of participation in contract farming among poultry farmers in Kogi State. The broad objective of this study was to analyse the Determinants of Participation in Contract Farming among Poultry Farmers in Kogi State while the specific objectives were to: (i) describe the socio-economic characteristics of poultry farmers in the study area (ii) ascertain factors that determine participation in contract farming among poultry farmers in the study area, and (iii) identify the effect of contract farming on the income of poultry farmers in Kogi State.

MATERIALS AND METHODS

The Study Area

This study was conducted in Kogi State which was created out of Kwara and Benue States in August, 1991. It is located in the North central region of Nigeria with the headquarters at Lokoja. Kogi State is found between latitude 6°30'N and 8°48N, and Longitude 5°231 E and 7°48' E. It shares boundaries with Niger, Nasarawa, Plateau States and the Federal Capital Territory (FCT) to the North and Benue to the East, to the west, it is bounded by Kwara, Ondo and Ekiti States and to the South by Enugu, Anambra and Edo States. It has a total population of about 3,278,487 people (National Population Commission, NPC 2006) and about 2 million hectares of cultivable land (Kogi State Economic Empowerment and Development Strategy, KOSEEDS, 2004). It has a land area of 283,135,359 km (NPC, 2006). The major food crops grown in the state are: yam, cassava, maize, sorghum, rice, millet, cowpea, pigeon pea, groundnut, Bambara nut, cocoyam, sweet potato, beniseed, and melon. Fruits and leafy vegetables such as okra, tomatoes, pepper, fluted pumpkin and spinach are cultivated in the area. Tree crops grown in the state are: cashew, oil palm, cocoa and citrus. Cattle, sheep, goats and poultry are the major animals reared. The three major ethnic groups in Kogi State are; Igala, Okun and Ebira. It comprises of four agricultural zones as delineated by the Kogi State Agricultural Development Project (Kogi ADP). These zones are: Zone A which comprises of Ijumu, Kabba/Bunu, Mopamuro, Yagba-East, Yagba-West Local Government Areas with headquarters in Aiyetoro-gbede. Zone B, comprises of Dekina, Bassa, Ankpa, and Omala Local Government Areas, with zonal headquarters in Anyigba. Zone C, comprises of Adavi, Ajaokuta, Koton-Karfe, Kogi, Okene and Okehi Local Government Areas with zonal headquarters in Koton-Karfe. Zone D, comprises of Idah, Ofu, Ibaji, Olamaboro, and Igala-Mela Local

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Government Areas with zonal headquarters at Aloma. Major crops produced include cassava, rice, cowpea, cashew, sesame, millet, and maize, among others. Multistage sampling technique was adopted for selecting respondents used for this study. The first stage involved purposive selection of three (3) agricultural zones, namely: zones A, B and C from the four (4) zones owing to the prevalence of poultry farmers in those areas. In the second stage, one (1) extension block was randomly selected from each of the zones making a total of three (3) extension blocks. In the third stage, two (2) extension cells were randomly selected from each block to give six (6) cells. Finally, fifteen (20) poultry farmers were randomly selected from each cell, making a sample size of ninety (120) respondents. Primary data were used for the study. Data were collected with the aid of a structured questionnaire administered to the respondents.

Methods of Data Analysis:

Specific objective (i) was analysed using Descriptive Statistics, objective (ii) was analysed using Logistic Regression and specific objective (iii) was analysed using t-test of mean difference.

Models Specification:

Logistic Regression Model:

Logistic regression was used to estimate factors that influence participation in contract farming among poultry farmers owing to its suitability for analysing a dichotomous (binary) dependent variable (dependent variable which takes two values), measured as having a value of 1 or 0. Where 1 = participation in contract farming and 0 = non-participation in contract farming.

Logistic Regression takes the form of:

$$\frac{p}{1-p} = \exp(b0 + b1x) \quad (1)$$

Taking the natural logarithm of both sides, the equation is written in terms of log odds (logit) which is a linear function of the predictors. The coefficient (b_1) is the amount the logit (log odds) changes with a unit change in x:

$$\text{Ln}\left(\frac{p}{1-p}\right) = b0 + b1x \quad (2)$$

Where P is the probability that i^{th} farmer participates in contract farming, denoted by 1, while (1 – P) is the probability that i^{th} farmer does not participate in contract farming, denoted by 0.

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T-test Model:

't' test for measuring the difference between two means of contract and non-contract poultry farmers' incomes. The t test formula for calculating the mean difference of the income of contract and non-contract poultry farmers is specified as follows:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{(s^2\left(\frac{1}{n_1}+\frac{1}{n_2}\right))}} \qquad (3)$$

Where: t = t-value

X_1= mean of contract farmers' income

X_2 = mean of non-contract farmers' income

s = is the standard error of the groups

n_1 = number of observation (contract farmers)

n_2 = number of observations (non-contract farmers)

RESULTS AND DISCUSSION

Socio-economic Characteristics of Poultry Farmers in the Study Area

The description of the socioeconomic characteristics of respondents is presented in Table 1.

Age: the mean age of the respondents was 45 years, implying that most of the poultry farmers in the study area were in their active age which may influence their readiness to participate in contract farming. This agrees with the findings of Uddin and Osasogie (2016) who found that the mean age of livestock farmers in Edo Central Agricultural Zone of Edo State was 40 years.

Sex: Table 1 also shows that majority (64.17%) of the respondents were male. This implies that most of the poultry farmers in the study area were male. This is probably because men are the heads of families and may have gone into poultry farming in order to supplement their income so as to meet financial needs of their families. This is consistent with Panwal and Shaibu (2020) who reported that majority of broiler producers in Gombe State were male.

Education: majority (81.67%) of the respondents had formal education. This implies that majority of the poultry farmers in Kogi State were educated (that is, they can read and write). This makes it easier for poultry farmers to acquire skills, techniques and knowledge needed for improved poultry farming, thereby bringing about efficient utilization of resources and improved farm management practices. This is consistent with Panwal and Shaibu (2020) who found that 94% of

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poultry farmers in Akko Local Government Area of Gombe State had at least secondary education.

Marital status: majority (84.17%) of the respondents were married, implying that majority of the farmers in the study area were married. It follows that poultry farming in the study area is mostly a business of married people, who, by implication utilized family labour for running the business. This agrees with the findings of Chiekezie et al (2022) who found that majority of broiler farmers in South East Nigeria were married.

Household size: The average household size of the respondents was 6 persons. This exceeds the national average of 5 persons in rural Nigeria. A small holder poultry farming does not necessarily require a large household size since it is in small holding capacity but a small household that is technically knowledgeable in the business. This is in tandem with Panwal and Shaibu (2020) who found that majority of poultry farmers in Akko Local Government Area of Gombe State had 1 to 5 people in their households.

Farming experience: the average years of farming experience of the respondents was 16 years. This implies that poultry farmers have had long time experience in poultry farming and are well abreast of the management practices in poultry farming. Panwal and Shaibu (2020) reported that poultry farmers in Akko Local Government Area of Gombe State had between 1 to 5 years of experience in broiler chicken production.

Access to credit: majority (91.67%) of the respondents in the study area have no access to agricultural credits. This agrees with the findings of Abigail et al (2020), who reported that majority of the poultry farmers in Nigeria do not have access to micro-credits.

Co-operatives Membership: majority (90.83%) of the respondents in the study area do not belong to any co-operative society. This is probably because co-operative activities are not functioning optimally among poultry farmers in the study area. This contradicts the findings of Akubo et al (2023) who reported that majority of cassava processors in Adavi Local Government Area of Kogi State were members of cooperative societies.

Access to extension services: majority (92.50%) of the respondents in the study area do not have access to extension services. This means that the poultry farmers in the study area do not have access to the services of extension agents. This dearth of extension services in the study area would negatively impact the level of awareness of innovations and their practicability which enhances production

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efficiency. This result is in contrast with the report by Chiekezie et al (2022) who found that most of the poultry farmers in South East Nigeria were visited by extension personnel.

Table 1: Description of Socio-economic Characteristics of the Respondents

Variables	Frequency	Percentage	Mean
Age			
20-30	13	10.83	
31-40	21	17.50	45 years
41-50	44	36.67	
51-60	31	25.83	
>60	11	9.17	
Total	120	100.0	
Sex			
Male	77	64.17	
Female	43	35.8	
Total	120	100.0	
Education			
Formal education	98	81.67	
Non-formal education	22	18.33	
Total	120	100.0	
Marital status			
Married	101	84.17	
Unmarried	19	15.83	
Total	120	100.0	
Household Size			
1-5	57	47.5	
6-10	36	30.0	6 persons
11 and above	27	22.7	
Total	120	100.0	
Farming Experience			
1-10	18	15.00	
11-20	64	53.33	16 years
21 and above	38	31.67	
Total	120	100.0	
Access to credit			

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Yes	10	8.33	
No	110	91.67	
Total	120	100.0	
Membership of Co-operatives			
Member	11	9.17	
Not a Member	109	90.83	
Total	120	100.0	
Access to extension services			
Yes	111	7.50	
No	9	92.50	
Total	120	100.0	

Source: Field survey, 2022.

Factors Influencing Participation in Contract Farming among Poultry Farmers.

Table 2 shows the estimate of Logistic Regression on factors that influence poultry farmers' Participation in contract farming. The result shows that the probability of poultry farmers participating in contract farming in the study area was principally influenced by sex of the respondents, marital status, household size, membership of co-operative societies and access to extension services. According to Table 2, sex of the respondents was positively signed depicting that one percent increase in the number of male farmers increases the probability of participating in contract farming by 0.061252. Marital status of respondents had odds ratio of 0.1859485 and significant at 10% in influencing participation in contract farming. This means that an additional wife taken by a farmer increases the likelihood of participation in contract farming by 0.1859485. This means that marriage positively influences poultry farmers' involvement in contract farming, and that married farmers are more likely to participate in contract farming relative to the unmarried ones. This may be attributed to the fact that married farmers tend to utilize family labour to accomplish care and maintenance of the poultry birds. This is in contrast to the findings of Akubo and Usman (2023), who reported that marriage negatively influences farmers' participation in tomatoes contract farming in Ankpa Local Government Area of Kogi State. They concluded that married farmers were less likely to participate in contract farming compared to those who were not married. Household size with positive odds ratio of 3.889591 means that a percentage point increase in household size leads to 3.889591 likelihood of participating in contract farming among poultry farmers. This finding does not agree with Akubo and

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Usman (2023) who found that household size was an insignificant factor in determining the tomato farmers involvement in tomato farming in Ankpa Local Government Area of Kogi State Access to extension services, has an odds ratio of 7.388406 and positively signed. The odds ratio being positive and significant at 5% level of significance means that access to extension services has positive influence on participation in contract farming among poultry farmers in the study area. It implies that a percentage point increase in the frequency of contacts with extension agents will bring about 7.388406 probability of participating in contract farming. That is to say deployment of more extension agents to the rural areas will positively affect the likelihood of involvement in contract farming, because extension agents may educate farmers on the benefits of participating in contract farming. This is similar to Ahamefule *et al,* (2018) who reported that the number of supervisory visits is positively related to small holder farmers' ability to repay their loans and that increasing the number of supervisory visits will increases the probability of a farmer been able to repay his/her loan. The odds ratio of cooperative membership is positive and significant at 5% significance level. This means that a percentage increase in the number of cooperative societies to which a farmer belongs will lead to 10.20929 probability of participation in contract farming. This result contradicts the findings of Akubo et al (2022) who concluded that membership of co-operative societies does not affect access to micro credit in Okehi Local Government Area of Kogi State.

Table 2: Estimate of Factors Influencing Participation in Contract Farming among Poultry Farmers

Variables	Odds Ratio	Std. Err.	z	P>|z
Age	1.112717	0.5144418.	0.23	0.817
Sex	0.061252	0.0611364	-2.80	0.005***
Education	0.6248646	0.3453349	-0.85	0.395
Marital status	0.1859485	0.1811613	-1.73	0.084*
Household size	3.889591	3.044626	1.74	0.083*
Farming experience	1.5823	0.8956274	0.81	0.418
Access to credit	2.020401	2.496036	0.57	0.569
Co-operative Membership	10.20929	10.26974	2.31	0.021**
Access to extension services	7.388406	8.510405	1.74	0.083*
_cons	0.0118988	.0191206	-2.76	0.006
LR $chi^2(9)$	19.06			
Prob > chi^2	0.0247			

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Pseudo R^2	0.2592			

Source: Field survey, 2022.

Note: *, ** and *** means significant at 10%, 5% and 1% respectively.

Effect of Contract Farming on Poultry Farmers' Income in the Study Area

Table 3 shows an estimate of the t-test on the mean difference between the incomes of contract and non-contract poultry farmers in the study area. From Table 3, the mean income of contract farmers was ₦346, 044 per annum while the mean income of non-contract farmers was ₦317, 511 per annum. This means that contract farming has more positive effect on the income of contract poultry farmers in relation to the income of non-contract farmers. It also implied that contract farming could bring to farmers some positive income effect such as increased productivity, established market for the commodity and reduced risk. This is consistent with Iro (2017), who reported that "participation in contract farming generated positive income effects on the income of contract farmers which enable them to improve their standards of living. Table 3 also revealed that the probability of t (0.0015) being less than 0.05 alpha level means the null hypothesis that there was no significant difference between the income of contract and non-contract poultry farmers was rejected. Implying that there is significant difference between the income of contract and that of non-contract poultry farmers in the study area. This finding is consistent with that of Gondalia, Zala and Rachana (2017), who found that the net returns of contract farms were significantly higher than non-contract farms, and that the Benefit Cost Ratio was also significantly higher in favour of the contract farms. In nutshell, these results clearly indicated that contract farming in potato was economically more profitable than the traditional non-contract farming (Gondalia, Zala and Rachana, 2017).

Table 3: Estimate of Effect of Contract Farming on the Income of Poultry Farmers

Variables	Obs	Mean	Std. Dev.
Contract poultry farmers' income	60	346044.4	111816.6
Non-contract poultry farmers' income	60	317511.1	98106.53
Difference		28533.33	56446.11

Source: Field survey, 2022.

t = 3.3910

Degrees of freedom = 44

Pr (T < t) = 0.9993 Pr (|T| > |t|) = 0.0015 Pr (T > t) = 0.0007

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CONCLUSION

This study revealed that poultry farmers in Kogi State were predominantly male, active and have acquired formal education. Majority of them were married and had mean household size of 4 persons which can be deployed for doing their poultry farm work. Their long time of farming experience is beneficial to participation in contract farming. Most of them do not have access to credit and do not belong to any co-operative society. Majority of them lack access to extension services. Fundamental factors that influence participation in poultry contract farming poultry farmers in the study area were; age, marital status and access to extension services. Contract farming is by and large profitable based on the evidence from mean income of contract poultry farmers being greater than that of the non-contract poultry farmers. The probability value of 0.0015 being less than 0.05 alpha level had provided evidence that a considerable statistical difference exists between the incomes of contract and non-contract farmers.

RECOMMENDATIONS

The following recommendations were made based on the findings of this study:

1. There is the need for government to intensify extension services through the extension personnel to ensure that they visit the poultry farms and provide extension services to the farmers. This will result to expanded farm size, production and management efficiency.
2. Provision of credit facilities for poultry farmers in the study area is highly imperative. Therefore, policies that will ensure availability of formal credit institutions in the study area are needed to address financial challenges faced by poultry farmers in the study area.
3. Formation of more co-operative societies by the poultry farmers in the study area should be encouraged. Such co-operatives will serve as informal credit institutions for farmers and can give them easy access to credits. It will also enhance circulation of credible information among farmers.

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