



DETERMINANTS OF THE LEVEL OF PARTICIPATION IN BROILER PRODUCTION AMONG URBAN WOMEN IN KADUNA STATE, NIGERIA

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ABSTRACT

The study evaluates the determinants of the level of participation in broiler production among urban women in Kaduna State, Nigeria. A multistage sampling procedure was used in selecting 253 respondents. Data were collected using structured questionnaire and analyzed using descriptive and inferential statistics. The results revealed that proportion (44%) of the respondents were aged between 40-49 years, with a mean age of 41 years while majority (70% and 68%) were married and each had household size of between 5-8 members and had tertiary education, respectively. The results also revealed that 78.7% of the respondents had experience of 1-7 years' in broiler production. In addition, the findings of the study indicated that majority (63%) of urban women farmers had low level of participation in broiler production that is ranging from 0.10 – 0.30. The results of logit regression revealed that age (-0.0269), marital status (0.1642) and income (-5.14e-06) were significant ($P < 0.10$) in influencing women participation in broiler production. Also, flock size (0.4462) was significant ($P < 0.01$) while number of flocks housing (0.2717), extension contact (0.2320) and amount spent on hired labour (7.19e-06) were significant ($P < 0.05$), ($P < 0.05$) and ($P < 0.01$), respectively. The major constraints impeding women participation in broiler production in the study area were lack of insurance (93%), poor information flow (78%) and frequent disease outbreaks (71%). Based on the findings it is concluded that majority of urban women farmers had low level of participation in broiler production. Also, the determinants of participation in broiler production were age, marital status, income, flock size, number of flock housing unit, extension contact, and amount spent on hired labour. The study recommends provision of financial incentives in a form of soft credit to encourage women to increase their scale of production, stocking density and number of production cycle per year and insurance companies should amplify their operations extensively to cover women interest in broiler production.

Keywords: Determinants, Participation, Women, Broiler, Production.

INTRODUCTION

The current global revolution in livestock production is dominated by intensive poultry rearing (Mingjin *et al.*, 2024). Livestock production is fundamental to sustainable economic development with poultry production being responsible for 80% of its production (Food and Agricultural Organization, 2019). The poultry industry has become a diverse industry with a variety of business interests such as egg and broiler production. According to the report of Food and Agriculture Organization (2019), Nigeria is currently the second largest chicken production in Africa, with about 180 million birds placed annually (30% layers and 70% broiler). Broiler production is just a niche in the poultry farming business. It involves the keeping of chickens of heavy meat breeds for the purpose of getting good quality meat products usually sold live or processed at eight to twelve weeks of age (Baruwa and Fabode, 2019). Apart from the fact that meat consumers' interest is gradually being shifted from red to white meat, broiler production has advantages of fast growth rate and high feed conversion efficiency (Duggan *et al.*, 2023). Additionally, broiler production is unique in that it offers the highest turn-over rate and the quickest returns to investment outlay in the livestock enterprise (Ramukhithi *et al.*, 2023).



Poultry production in Kaduna state provides income and employment opportunities to over 50 percent of the people (Yero and Aminu, 2023). Commercial chicken production can be categorized into small, medium and large-scale enterprises in Kaduna state, but majority of the chicken producers fall within the category of small and medium scale producers, (Yero and Aminu, 2023). Kaduna State also plays a strategic role in Nigeria's National Broilers Project, serving as one of the key implementation states due to its active poultry farming communities, favorable agro-climatic conditions, and existing market infrastructure. Through initiatives such as the Broiler Out-grower Scheme supported by the Central Bank of Nigeria and Federal Ministry of Agriculture and Rural Development, Kaduna has contributed significantly to national broiler meat output and youth employment in the poultry value chain. (Sani *et al.*, 2023). There has been an increasing recognition of women's contributions to agricultural production particularly broiler production today (Gbigbi and E-Okoronkwo (2023). It is estimated that, women produce 40% of the gross domestic product (GDP) and 50% of developing nations' food supply (Armand *et al.*, 2024). According to the Food and Agriculture Organization (2022), women contribute significantly to poultry production worldwide, with estimates of up to 80% of the poultry farming workforce in some regions. However, this figure can vary depending on cultural, social, and economic factors in different countries and regions (Ruerd 2024). In Nigeria, women are actively involved in broiler production, with estimates indicating that they contribute more than 70% of the poultry farming workforce in the country (Sulaiman, 2023). Therefore, participation of women in broiler production is key to solving the livelihood problem both at household level and contributing to gross domestic product both at states and national level, thus, addressing the problem of low income, food insecurity, urban poverty, unemployment, and ensuring the community food security (Ofordu *et al.*, 2022).

Women in Nigeria, especially in Kaduna State are engaged in several broiler enterprise, broiler value chain addition, broiler input supplier, marketing, and processing (Sani *et al.*, 2023). Birhanu *et al.*, (2023) stated that broiler production is the only urban agricultural activity with a positive significant effect on household income status and dietary diversity for the benefit of the majority of poor urban households. In addition, broiler production contributes to poverty alleviation and socio-economic inclusion of vulnerable groups such as the urban poor women, the disabled, orphans and the unemployed to provide them with a means of livelihood, making fresh meat available in the city, thus complementing rural production in the food supply system.

Despite the increasing awareness of the great potentials of women involvement in broiler production, women in Nigeria are still face with various challenges in the broiler sector, such as insecurity challenges, price fluctuations of poultry products, high cost of feed and veterinary services, poor agricultural policies, inadequate credits, land ownership issues, inadequate storage facilities for poultry products, disease problems and rodent's destructions (Amugo, 2022). Several studies; Aderemi and Alabi (2020), Amugo and Odinwa, (2022), Eze and Musa (2022), Birhan *et al.*, (2023)., Mufuutau *et al.*, (2023), Suleiman *et al.*, (2023) have been conducted on urban women participation in broiler production in different social settings in Nigeria. Little seems to have been investigated on factors influencing urban women participation in broiler production and its effects on livelihood status in the study area.

This has created a knowledge gap that needs to be filled and to achieve this, the study aims to determine the following key research objectives:

- i. describe the socio-economic characteristics of urban women participating in broiler production in the study area;
- ii. determine the extent of urban women participation in broiler production;
- iii. determine the factors influencing the level of urban women participation in broiler production;
- iv. identify the constraints associated with urban women participations in broiler production in the study area.



MATERIALS AND METHODS

The Study Area

The study was conducted in Kaduna State, Nigeria, focusing on three local government areas: Kaduna North and Kaduna South in Kaduna Metropolis, and Sabon Gari in Zaria Urban Area. Kaduna Metropolis, the state capital, lies between latitudes 10°25'27" N and 10°35'29" N, and longitudes 7°22'20" E and 7°30'27" E, covering an estimated 3,080 square kilometers. It comprises four LGAs: Kaduna North, Kaduna South, Igabi, and Chikun. The area experiences a tropical savanna climate with distinct wet (May–October) and dry (November–April) seasons, and average temperatures ranging from 18°C to 36°C. The vegetation is mainly Guinea savanna, supporting a mix of urban and peri-urban farming. According to 2022 projections from the National Population Commission, Kaduna North had a population of 538,600, and Kaduna South had 595,000. Major occupations include trading, civil service, artisan work, and small-scale farming.

Zaria Urban Area, the second largest city in the state, is located between latitudes 11°02'00" N and 11°12'00" N, and longitudes 7°36'00" E and 7°46'00" E, at an average elevation of 670 meters above sea level. It spans parts of Zaria and Sabon Gari LGAs, extending 70 km east-west and covering about 8,950 square kilometers. The climate is similarly tropical savanna, with vegetation comprising a mix of Sudan and Guinea savanna. It is drained by River Kubanni, River Saye, and River Galma, which support agricultural activities. The projected population for Sabon Gari LGA in 2022 was 430,500. Residents are primarily engaged in farming, trading, artisanal work, and educational services, with agriculture especially cereal crop cultivation being a key livelihood in the surrounding rural areas.

Sampling Procedure and Sample Size

A multistage sampling procedure was used to generate data for this study. Three (3) urban local government areas of Kaduna State (Kaduna South, Kaduna North and Sabon Gari Zaria) are purposively selected because they are the major metropolitan local government areas in Kaduna State and have the intensity and concentration of commercial poultry producers particularly broiler, Poultry Association of Nigeria Kaduna Chapter (2023). In the next stage, a purposive selection of the two most broiler producing communities from each of the local government areas was selected (PANKAD, 2023). A lists of registered active commercial women broiler producers was obtained from the State's Poultry Association of Nigeria Kaduna Chapter in collaboration with Nutriment Feed Limited Kaduna State Office. The lists have 690 broilers women farmers which were used as sample frame from which a proportion of 37% representing 253 women poultry farmers was purposively selected for the study.

Data Collection

Data for this study were collected through the administration of structured questionnaire to the respondents selected from the study area.

Data Analysis

The study used descriptive statistics such as mean, standard deviation, frequency, percentage to describe the socio-economic characteristics and constraints encountered by the respondents. Index Score model was used to determine the extent of urban women participation in broiler production and inferential statistics such as Logit Regression was used to analyze the factors influencing urban women participation in broiler production.

Logit Regression Model

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} + \beta_{13} X_{13} + \beta_{14} X_{14} + \beta_{15} X_{15} + \beta_{16} X_{16} + \beta_{17} X_{17} + \beta_{18} X_{18} + U_i$$

Where:

Y_i = women participation in broiler production

X_i = the independent variables for $i=1, 2, \dots, 12$.

X_1 = Age (Years)

X_2 = Marital Status (1= Married; 0 = Otherwise)

X_3 = Household size (Number)

X_4 = Level of Education (1= Formal education; 0 = non-Formal)

X_5 = Rearing experience (Years)



X_6 = Income (₦)

X_7 = Source of extension information (Yes = 1, No = 0)

X_8 = Access to Credit (Yes = 1, No = 0)

X_9 = Amount of Credit received (₦)

X_{10} = Land ownership (Yes = 1, No = 0)

X_{11} = Membership of cooperative (Yes = 1, No = 0)

X_{12} = Extension contacts (number of contacts)

X_{13} = Cost of production (₦)

X_{14} = Farm Size (numbers of birds)

X_{15} = Market price of product (₦)

β_0 = Constant term

$\beta_1 - \beta_{10}$ = Slope or coefficients (Marginal effects of the regressors)

U_i = Stochastic error term, which was assumed to be normal, homoscedastic with no serial correlation.

RESULTS AND DISCUSSION

Socio-economic characteristics of Urban Women

The results in Table 1 showed that 44% of the respondents fell between the ages of 40-49 years, while 35% were between the ages of 30 – 39 years with an average age of 41 years. It implies that the majority were still at an active age (40-49), which facilitates the labor supply in broiler production. The study agrees with Oluwole and Paul (2022), whose findings revealed that large number of broiler farmers fell within the productive age range (18 – 50) in Southwest Nigeria.

The results also revealed that the majority (70%) of the respondents were married, while few (17%) were single. This implies that broiler poultry production is mostly a business of married women. The implication is that married women are usually utilized the labour of their children in running the business. This finding is in line with the study by Issa *et al* (2021) who found that the majority (78%) of poultry production in Zaria Local Government Area of Kaduna State were married. The result is also similar to the findings of Mufutau *et al.*, (2023) which revealed that the majority of women poultry farmers were Married in four division of Ogun State, Nigeria.

The results further revealed that the majority (68%) of the respondents had household size of 5-8 persons, while 27% had 1 - 4 persons with an average household size of 6 persons. This implies that most of the women had dependent household members benefiting from the poultry business. This finding agrees with the report of Abushe *et al.* (2023) which showed that most women farmers in Delta State, Nigeria had relatively large household numbers.

In addition, the results in Table 1 showed that majority (68%) of the respondents attained tertiary education while 27%, 10% and 2% had secondary, non-formal and primary education, respectively. This implies that majority of the urban women in the study area are literate having one level of educational qualification or the other, which may be due to the availability of the educational facilities in the area. The high literacy level of the respondents would afford them the opportunity to understand and adopt modern broilers practices thereby enhancing participation. This is in line with the findings of Ifabiyi *et al.* (2024) research revealed that a significant number of the poultry farmers had tertiary education, indicating a high level of formal education among the producers in Ilorin, Kwara State, Nigeria. Similarly, Moji and Adebayo (2024) who reported that majority of the poultry farmers had tertiary education in Ibadan, Oyo and Ogbomosho of Oyo State, Nigeria.

Furthermore, the results in Table 1 result revealed that 78.7% of the respondents had between 1-7 years of experience in broiler production activities, while only 17.7% and 3.1 had 8 - 14 and 15 – 21 years' with a mean of 6 years' experience. This result implies that majority of the urban women participating in broiler production in the study area had an average of 6 years' experience indicating potential for growth and a need for continued support to enhance their expertise and production. This result showed that women who participated in the poultry industry were individuals with adequate experience. This study is in line with the findings of Amugo and Odinwa (2022) which revealed that the average women's experience in poultry farming was 7 years in Ikwerre and Oyigbo local government areas of River State, Nigeria.



Similarly, the results showed that 42.5% of the respondents earned between ₦90, 000 - 120,000 monthly, while 0.4% earned ₦150,000 above with a mean monthly income of ₦94,154. This implies that most of the urban women participating in broiler production in the study area have an average income of ₦94,154 and this could have an effect in the level of their participation in broiler production activities. This observation is in contrast with the report of Aleshinloye (2023) whose finding revealed that women participating in the broiler business were in high-income class bracket capable of meeting the huge capital outlay required by the business in Abeokuta, Ogun State, Nigeria.

Table 1: Distribution of the Socio-economic Characteristics of Urban Women Broiler Producers

Variables	Frequency	Percentage	Mean	SD
Age				
20 – 29	21	8	41	7.58
30 – 39	89	35		
40 – 49	113	44		
50 – 59	26	10s		
60 – 69	5	2		
Marital Status				
Single	43	17		
Married	178	70		
Widow	22	9		
Divorce	11	4		
Household size				
1 – 4	69	27	6	2.02
5 – 8	173	68		
9 – 12	9	4		
13 – 16	3	1		
Educational level				
Non-formal Education	10	4		
Primary Education	4	2		
Secondary Education	68	27		
Tertiary Education	172	68		
Rearing experience (years)				
1 – 7	200	78.7	6	3.5
8 – 14	45	17.7		
15 – 21	8	3.1		
22 – 28	1	0.4		
Monthly Income (₦)				
10000 – 30000	1	0.4	94154	26934
30001 – 60000	26	10.2		
60001 – 90000	79	31.1		
90001 – 120000	108	42.5		
120001 – 150000	39	15.4		
Over 150001	1	0.4		

Field survey, 2024

Extent of Urban Women Participation on Broiler Production

Table 2 indicated that majority (63%) of urban women farmers had low level of participation in broiler production and 35% had medium level of participation while only 4% of the respondent had high level of participation in broiler production. This implies that majority of urban women farmers were small-scale farmers in broiler production in the study area. This is in line with the findings of Amugo and Odinwa (2022) who indicated that participation of women in broiler production was generally low in selected local government areas of Rivers State, Nigeria.

Table 2: Distribution of Urban Women by their Level of Participation in Broiler Production

Participation category	Participation Index	Frequency	Percentage	Mean	SD
Low	0.10 – 0.30	160	63	1.00	1.00
Medium	0.31 – 0.50	90	35		
High	0.51 – 1.00	4	2		
Total	0.00 – 1.00	254	100		

Field survey, 2024

Factors Influencing Level of Urban Women Participation in Poultry Production

In Table 3, The generalized log likelihood ratio statistics was – 198.59. The log likelihood ratio value represents the value that maximizes the joint densities in the estimated model. The prob > chi2 was 93.27 and statistically significant at $p < 0.01$ level of probability. The probability of obtaining this chi – square statistic indicated the influence of the predictor variables on specified alpha level. This implies that at least one of the regression coefficients in the model is not equal to zero. The significant chi – square value of 93.27% showed that the explanatory variables jointly influence the participation in broiler production of women in the study area. Urban women Farmers participation in broiler production was significantly influenced by age, marital status, income, flock size, poultry unit, number of extensions contact, and amount spent on hired labour while household size, educational level, rearing experience, amount of credits received and years in cooperation societies were found not to significantly influence participation in broiler production.

The results revealed that age had a coefficient of (0.0269) and significant ($P < 0.10$) in influencing participation decreases with increase in age and vice-versa. This may be because as the urban women grow old, their strength decreases and may not be able to meet the labor requirements for poultry production. This finding agrees with study by Kosshak *et al.* (2020) who found that factors such as age, significantly influenced women's participation in broiler production in Jos South Local Government Area of Plateau State, Nigeria.

The results also revealed that marital status (0.1642) was positive and significant ($P < 0.10$) in influencing urban women farmers participation in poultry production. This implies that marital status was a supportive and motivative factor in broiler enterprise due to emotional, financial and physical support women received from their spouses. This study agreed with Suleiman *et al.* (2019) who found that factors such as marital status has positive and significant effects on women participating in broiler production in Kaduna State, Nigeria.

The coefficient of income was negative (-5.14e-06) and significant ($P < 0.10$) in influencing urban women farmers participation in poultry production. This implies that most of the urban women participating in broiler production in the study area have an average income, therefore, women with higher incomes may rely less on broiler production suggesting the enterprise is a significant income source for lower income earners. This observation is in contrast with the report of Aleshinloye (2023) who's finding revealed that women participating in the broiler business were in high-income class bracket capable of meeting the huge capital outlay required by the business in Abeokuta, Ogun State, Nigeria.

In addition, flock size (0.4462) was positive and significant ($P < 0.01$) in influencing participation in broiler production. This implies that the larger the flock size the higher they participate in broiler production. Therefore, an increase in the size of the flock makes women see broiler production as a job to fully engage in and this will encourage others to increase their flock size because of the financial return to investment. This finding agreed with Kosshak *et al.* (2020) who found that factors such as Flock Size were positive and significantly influenced women's participation in broiler production in Maiduguri metropolis, Borno State, Nigeria.

The coefficient for number of broiler housing unit (0.2717) was positive and significant ($P < 0.05$) influencing urban women farmers participation in poultry production. This implies that the larger the number of poultry unit women have the more women increase their participation in broiler production and vice-versa. This finding is consistent with Ogba *et al.* (2020) who found that number

of housing units has significant effects in participation in broiler production in Ikuano local government area of Abia State, Nigeria

The estimated coefficient for number of extensions contact (0.2320) was positive and significant ($P < 0.05$) in influencing urban women farmers participation in broiler production. This implies that the more extension contact received by women participating in broiler production from extension agent and veterinary personnel with first-hand information about broiler production, the more likelihood for them to increase their participation in broiler production. This study is in line with Issa *et al.*, (2021) who found that access to extension services has significant influence on women participation in broiler production in Osun State, Nigeria.

Similarly, the coefficient for amount spent on hired labour (7.19e-06) was positive and significant ($P < 0.01$) in influencing urban women farmers participation in poultry production. This implies that the more reliance on the amount spent on hired labour, the more likely increase in participation in broiler production. This result also agreed with the finding of Suleiman *et al.*, (2023) who revealed that hire labour is one of the factors influencing women participation in broiler production in Kano Metropolis, Nigeria.

Table 3: Factors Influencing Level of Urban Women Participation in Poultry Production

Level of participation	Coefficient	Standard Error	t-value
Age	-0.0269*	0.0151	- 1.78
Marital status	0.1642*	0.0978	1.68
Household size	0.0304	0.0408	0.74
Educational level	0.0086	0.1158	0.07
Rearing experience	0.0021	0.0303	0.07
Income	-5.14e-06*	3.01e-06	- 1.71
Flock size	0.4462***	0.1009	4.42
Broiler housing unit stocked	0.2717**	0.1178	2.31
Amount of credit received	3.45e-07	9.88e-07	0.35
Years in cooperative societies	0.0332	0.0319	1.04
Number of extensions contact	0.2320**	0.1110	2.09
Amount spent on hired labour	7.19e-06***	1.22e-06	5.90
Constant	.1615966	0.738117	0.22
Diagnostic variables			
Number of observations	254		
LR Ch ²	93.27		
Prob>Ch ²	0.0000		
Log likelihood	- 198.59		
Pseudo R ²	0.19		

*** significant at 1%, ** significant at 5% and * significant at 10%

Constraints Associated with Urban Women Participation in Broiler Production

The results presented in Table 4 indicates that the major constraint faced by the respondents were lack of insurance (93%), poor information flow to farmers (78%), unexpected diseases outbreak (71%) and low credits facilities for producer (70%), while the least constraints confronting urban women participation in poultry production was a high rate of mortality (51%). This study is in contrast with the findings of Edao and Eskindir (2023) whose study indicates that the most serious constraints hindering poultry production were predator followed by high rate of flock mortality, prevalence of diseases and low production respectively. Also supported by Matilal, (2019) indicated the challenges faced by farmers have divided the constraints into economic problems such as lack of capital, high price feed, price fluctuation of birds, lack of credit institutions. Others, social and natural problems such as problem of theft, outbreak of disease, environmental pollution and predatory animals, and lastly, marketing problems such as lack of competitive market, lower price, lack of proper, lack of insurance agent for loss/theft and technical problems such as housing, lack of training facilities, lower quality of chicks and inadequate and high cost of vaccines.



Table 4: Constraints Associated with Urban Women Participation in Poultry Production

Constraints	Frequency	Percentage	Rank
Lack of insurance	235	93	1 st
Poor information flows to farmers	197	78	2 nd
Unexpected diseases outbreak	180	71	3 rd
Low accessible credits facilities by financial institutions for producer	179	70	4 th
High cost of production in general	170	67	5 th
Weak implementation of poultry policy	156	61	6 th
Unstable market outlet	139	55	7 th
Inadequate technical knowledge	136	54	8 th
Insufficient space for expansion	135	53	9 th
Poor water supply	132	52	10 th
High rate of mortality	130	51	11 st

*Multiple choice allowed

CONCLUSION AND RECOMMENDATION

Base on the findings it is concluded that majority of urban women farmers had low level of participation in broiler production. Also, participation in broiler production in the study area were determined by age, marital status, income, flock size, number of flock housing unit, number of extensions contact, and amount spent on hired labor by urban women. Similarly, broiler production were constrained by lack of insurance, poor information flow to farmers, unexpected diseases outbreak, and low credits facilities for producers in the study area.

Based on the findings of this research, the following recommendations were made: -

- Federal/State Government and Non-Governmental Organizations (Women Farmers Advancement Network, Commercial Banks and Cooperative Society) should provide financial incentives in a form of soft credit to encourage women to increase their scale of production, stocking density and number of production cycle per year.
- Commercial Banks, Microfinance, Cooperatives, Central Bank of Nigeria should develop gender responsive loan schemes and government should provide grants and subsidies to support women in broiler production.
- Ministry of Livestock in collaboration with Federal Ministry of Agriculture and Rural Development should deploy more extension agents and provide regular training programs for women in broiler production in the study area.
- Insurance companies should amplify their operations extensively to cover women interest in broiler production

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