ANALYSIS OF VALUE ADDITION IN BROILER PRODUCTION IN KATSINA METROPOLIS, KATSINA STATE

E.A. Ojoko, S. Bashir and A.C. Clementina
Department of Agric Economics, Federal University Dutsin-Ma

ABSTRACT

The study analysed value addition in broiler production in Katsina Metropolis of Katsina State. A multi-stage sampling technique was used to select a sample size of 100 respondents (40 broiler farmers, 20 marketers, 20 processors and 20 consumers). The data collected were analysed using descriptive statistics and gross margin analysis. The findings of the result showed that the broiler farmers' mean age was 34 years, 60% of the broiler farmers are male, majority (67.50%) of the respondents are married and 67.5% obtained tertiary education, while 75% of the broiler farmers have no access to credit. The cost and return results also showed that the farmers incurred a total variable cost of ₦1,437.20 per bird, sold the bird at ₦1,808.09 and earn a gross margin of ₦370.88 per bird. Also, the results from this study revealed that the value additions in naira at producer's, marketer's, and processor's levels are ₦370.89, ₦354.91, and ₦44.00, respectively. It was concluded that the broiler farmers are making profit in broiler production and there was value addition at all the levels among the actors in the broiler value chain. Due to the high cost of production of broilers by the farmers as seen in the gross margin analysis, it is recommended that Policy Makers should provide subsidy for production inputs for broiler farmers in order to reduces cost of production and increase their profit

Keywords: Value addition, broiler farmers, broiler value chain, profit, and actors.

INTRODUCTION

According to World Bank, the growth rate of the livestock sub-sector in Nigeria was higher (12.7%) than that of the agricultural sector (6.8%) in 2017. The higher growth rate in the livestock sub sector was a result of increase in consumer demand orchestrated by growing populations, a shift toward urban living, and increasing incomes (World Bank, 2017). The socio-economic development and nutritional security of the country hinge on the sub-sector as it provides about 37% of the total protein intake of Nigerians (World Bank, 2017). Protein products such as poultry and fish are increasingly capturing market share from red meat driven by fast food expansion, consumer preference, competitiveness and health concerns over the safety of red meat.

Animal protein market trends are rising globally, and the sector is expected to be one of the fastest growing agricultural sectors in the coming decades. Consumers in emerging economies are moving away from spending on basic foodstuffs in favour of higher-value items including dairy, eggs, and meat (Organization for Economic Cooperation and Development, 2016). The poultry industry is growing rapidly across sub-Saharan Africa and offers a multitude of potential economic and health benefits to these economies and their populations (Shaw, Nielson, & Rose, 2019). The poultry enterprise with about 180 million birds is the most dynamic and fastest growing of the livestock sub-sector in Nigeria (FAOSTAT, 2017). In 2016, poultry meat in Nigeria from about 180 million birds stood at 45,000 metric tons. The improvement was largely due to increase in the number of broilers which produced more meat per bird. The growth in the industry can remain inclusive and create opportunities for small-scale and emerging producers in the value chain. However, the enterprise contributes between 30 and 50% to total household income and its potential to improve household income can be enhanced. The consumption of poultry meat was predicted to increase by 200% between 2010 and 2020 in Nigeria and this is expected to grow between 6 and 10% year-on-year between 2020 and 2025 (Heise, 2015).

Garcia-Winder, *et al*. (2009) defined agricultural value chain as a 'system of production, processing and marketing that brings individual and collective actors together to participate in coordinated activities to add value to a particular good or service, from its production until it reaches the consumer'. Generally, the key actors in poultry value chain are input suppliers, farmers, marketers, processors, and final consumers. Both vertical and horizontal integration exist among the actors in the value chain for the aim of ensuring

effective flow of goods to satisfy their clients, create healthy competition, and enhance productivity that results in profit maximization for the value chain actors and overall development of the chain. The activities of the key actors in a given value chain can be categorized into three stages such as production, marketing, and processing, with each of the stages adding value to the produce (Nguyen, 2010). Therefore, value addition, which is a measure for the value created in the economy, is equivalent to the total value generated by the operators in the chain. The value added per unit of product is the difference between the price obtained by a value chain operator and the price that the operator has paid for the inputs delivered by operators of the preceding stage of the value chain and the intermediate goods bought in from suppliers of inputs and services who are not regarded as part of the value chain, that is, the worth that is added to a good or service at each stage of its production or distribution (German Technical Cooperation, 2007).

In spite of the great importance of poultry to economy and food security, there is scarcity of information on broiler value chain analysis in Katsina Metropolis. Therefore, it is imperative to conduct this studies that can cover the value chain analysis of broiler to bring to light the benefit of value addition.

METHODOLOGY

Study Area: The study was carried out in Katsina Metrpolis, Katsina State. Katsina is the capital and the largest city of the state, it has boarders with Mashi local government from the east, Jibia local government from the west, Kaita local government from the North and Batagarawa local government from the south. Katsina local government has the size of 142km^2 and is populated with about half million people 429,400 with the city having largely Hausa and Fulani ethnics group. The local government is located along latitude of **12.98**, and longitude **7.61with GPS coordinate of** 12° 59' 7.9116" N and 7° 37' 1.7184" E. The average annual rainfall in the local government ranges from 600mm to 700mm, the temperature of Katsina is usually high, with warmest month being April having the warmest average high temperature of 40.8 °C, while December having the lowest average high temperature of 31.4 °C, January is usually the coldest month of the year in Katsina having the lowest average low temperatures of 14.7 °C. The crops grown in the State include, millets, guinea corn, cowpea, groundnut, cotton, tomatoes, onions, and cabbage, while poultry farming is also a common practice in the study area.

Method of Data Collection: The data used for this research were collected from the various actors involved in value addition process, which include, the broiler farmers, marketers, and processors with the aid of different structured questionnaires for each actor. Data on socio-economic characteristics of broiler farmers, cost and return of the broiler farmers, and the amount of value addition across the various actors in the value chain in the study area were collected.

Sampling Procedure and Sample Size: Multi-stage sampling procedure was adopted in this research. Stage one involves purposive sampling of Katsina Metropolis, where all the actors in the value chain for broiler are fully represented. The Second stage involved the sampling of three (3) actors along the broiler value chain for broiler production, which include, broiler farmers (producers), marketers, and processors. In the Third stage, snowballing sampling procedure was used to select the respondents among the selected actors in the study area. The sample size for this study include 40 producers, and 20 each of marketers, and processors (vendors, suya joint, hotel and restaurants), making a total of 80 sample size.

Analytical Techniques

Descriptive statistics was employed in examining the socio-economic characteristics of the farmers, amount of value addition across the value chain for various actors, while gross margin analysis was employed to determine the cost and return of the broiler farmers. The gross margin is expressed as:

GM = TR – TVC
Where:
GM = gross margin (₦); TR = total revenue (₦) and TVC = total variable costs (₦)

The total variables costs include Cost of day old chick per bird (₦); Cost of feed (₦); Cost of medication (₦); and Cost of labour (₦).

RESULTS AND DISCUSSION

The result from Table 1 showed the socioeconomic characteristics of the broiler farmers. The results revealed that majority (42.5%) of the respondents were between the ages of 25-32 years, with a mean age of 34years. This suggested that majority of the broiler farmers were in their youthful age. About 60% of the broiler farmers were male, while 40% were female, which showed that both sex are engaged in broiler production in the study area. Also, 67.5% of the respondents are married, while 32.5% were single. Majority of the respondents (60%) have a household size ranging from 1- 4 persons, with the mean household size of 4 persons.

The result showed that 67.5% of the respondents have completed their tertiary education, those with secondary education are 22.5%, while respondents with primary and Quranic education are 2.5% and 7.5%, respectively. The results further revealed that the mean years of experience of the broiler farmers was 8.5 years. This implies most of the respondents have high level of experience in broiler production. Majority of the broiler farmers (85%) have farm capacity less than 1000 birds, 2.5% have farm capacity between 1000 and 1999, while 12.5% have farm capacity of 2000 and above, with a mean of 687 birds. This is an indication that majority of the farmers are small scale broiler farmers. The result also showed that most of the broiler farmers (75%) do not have access to credit, as only 25% have access to credit.

Table 1: Socioeconomic characteristics of the broiler farmers

Variables	Frequency	Percentage (%)	
Age (years)			
25 – 32	17	42.50	Mean = 34
33 – 40	12	30.00	
41 and above	11	27.40	
Sex			
Male	24	60.00	
Female	16	40.00	
Marital Status			
Single	13	32.50	
Married	27	67.50	
Household size			
4 and below	24	60.00	Mean = 4.25
5 – 9	14	35.00	
10 – 14	2	5.00	
Educational status			
Quranic	3	7.50	

Primary	1	2.50	
Secondary	9	22.50	
Tertiary	27	67.50	
Years in broiler farming			
1 – 5	9	22.50	Mean = 8.5
6 – 10	14	35.00	
11 – 15	13	32.50	
16 and above	4	10.00	
Capacity of farm (birds)			
Less than 1000	34	85.0	Mean = 687
1000 – 1999	1	2.50	
2000 and above	5	12.50	
Access to credit			
Yes	10	25.0	
No	30	75.0	
Total	40	100	

Source: Field survey, 2022

Cost and Return of the broiler farmers

Table 2 is the result for the cost and return analysis of the broiler producers. The result showed that the total variable cost (TVC) in broiler production in the study area was ₦18,245,300 and the total revenue (TR) was ₦22,953,652, while the gross margin was estimated as ₦4,708,352. This implied that broiler production was profitable in the study area. The cost and returns per birds revealed that TVC/bird, TR/bird and the GM/bird, were ₦1,437.20, ₦1,808.09 and ₦370.88, respectively. The findings in this research corresponds to that of Ramon *et al*. (2016) and Levy (2017) who found out that broiler production is profitable among small scale farmers.

Table 2: Cost and return of broiler production

Variables	Total Variable Cost (TVC) (₦)	Total Revenue (TR) (₦)	Total birds	Gross Margin (GM) (₦)	TVC/bird (₦)	TR/bird (₦)	GM/bird (₦)
Day-old chick	6,906,300				544.02		
Feed	10,334,700				814.08		
Medication	519,800				40.95		

Labour	484,500				38.16		
Output		22,953,652		4,708,352			370.88
TOTAL	**18,245,300**	**22,953,652**	**12,695**	**4,708,352**	**1,437.20**	**1,808.09**	**370.88**

Source: Field survey, 2022

Cost Incurred and Sales Price of Birds in the Value Addition Process

Table 3 showed the cost incurred in the value addition process for the actors in the study area and also the sales price after the value addition. The results showed that the cost incurred in purchasing the birds by the producers is lower than that incurred by the processors and marketers. Of interest to note in this study is that the cost of purchase by the processors is lower than that of the markets, this might be as a result of the facts that most of the processors in the study area purchase their birds directly from the farmers and not from the marketers. The results also revealed that the total cost incurred per bird by various actors in the value addition process were ₦1,437.21, ₦1,889.03 and ₦1,776.25 for producers, marketers and processors, respectively. This result is in line with the findings of Khatun *et al.* (2016), who opined that value addition occurs in poultry production at producer, wholesaler, and retailer.

Table 3: Cost incurred in value addition

Actors	**Cost of purchase per bird (₦)**	**Other cost incurred per bird (₦)**	**Total cost per bird (₦)**	**Sales Price per bird**
Producers	544.02	893.19	1437.21	1808.09
Marketers	1804.42	84.61	1889.03	2163.00
Processors	1636.76	139.49	1776.25	2207.00

Source: Field survey, 2022

Value Addition at the various nodes of the Broiler Value Chain

Table 4 showed the value addition by the various actors in the broiler production. The results revealed that the value addition and the percentage value addition at producer's, marketer's, and processor's level are ₦370.89 (25.00%), ₦354.91 (18.00%), and ₦44.00 (2.50%), respectively. This implied that there was value addition by all the actors in the broiler value chain, but higher at the producers' level. This finding correspond with the finding of Khatun *et al.* (2016), who estimated the value each actor of the value chain added in Bangladesh and the percentage of the value addition.

Table 4: Value Addition by the various actors of the Broiler Value chain

Value addition	**Value addition per bird (₦)**	**Percentage Value Addition per bird (%)**
Value addition at Producer's level	370.88	25.00
Value addition at Marketer's Level	354.91	18.00
Value addition at Processor's Level	44.00	2.50

Source: Field survey 2022

CONCLUSION AND RECOMMENDATION

The study analysed value addition of broiler production and the study indicated that broiler farmers, marketers, and processors are the actors involved in the broiler value chain. The study determined the cost

and return of the broiler farmers and the value addition at various stage along the value chain. It concluded that there was value addition at all level among the actors in the broiler value chain. The farmers (producers) have the highest value addition while processors have the lowest value addition. The study indicated that the broiler farmers are making profit from broiler production, even though the profit is not much. Due to the high cost of production of broilers by the farmers as seen in the gross margin analysis, it is recommended that policy makers should provide subsidy for production inputs for poultry farmers in order to reduces cost of production and increase their profit.

REFERENCES:

FAOSTAT. (2017). *Food and Agricultural Organization of the United Nation*. Retrieved from http://www.fao.org/statistics/en/

Garcia-Winder, M., Riveros, H., Pavez, I., Rodriguez, D., Lam, F., Arias, J., et al. (2009). *Agrifood Chain: A tool for streghthening the institutional framework of agricultural and rural sector.* Article in Perspectives, Inter American Institute for Cooporation on Agriculture IICA.

German Technical Cooperation (GTZ) (2007). Value Links Manual. *The Methodology of Value Chain Promotion* . Eschborn, Germany.

Heise, Crisan, & Theuvsen. (2015). The Poultry Market in Nigeria: market Structure and Potentialfor investment in the market. *International Food Agribusiness Management Review.* Vol. 18; pp 197.

Khatun, R., Shamin, A., Amirul Hassan, M., Saiful Islam, M., Ashab Uddin, A., & Mahmud, S. M. (2016). Value Chain Analysis of Processed Poultry Products (Egg and Meat) in Some Selected Areas of Bangladesh. *American Journal of Rural Development, Vol 4*.

Levy, K. K. (2017). ProfitabilityAnalysis of Broiler Rearing in Nueva Ejica Philippines under Climate Controlled Housing and Conventional Housing. International Journal of Economics, Commerce and Management. Vol. V, 10:528

Nguyen, N. (2010). *Better Poultry Value Chain Development Through Microfinance in Vietnam.* [Dessertation]. Bruxelles: Solvay Brussels School of Economics and Management, Belgium.

Organization for Economic Cooperation and Development (2016). *Agricultural outlook 2016 - 2025*. Retrieved from https://www.oecd-ilibrary.org/agriculture-and-food/oecd-fao-agricultural-outlook-2016_agr_outlook-2016-en

Ramon Cesar D. Salas1, Edgar A. Orden, and Maria Excelsis, M. Orden (2016). Productivity and Financial Viability of Commercial Broiler Farm Using Climate Controlled System: The Case in a State-Owned University in Nueva Ecija, Philippines. *The CLSU International Journal of Science &Technology*, Vol. 1, No. 1: 32-45.

Shaw, M., Nielson, H., & Rose, M. (2019). *Poultry Sector Study*, Final draft. (N. H. Shaw M., Producer, & Department for international development;) Retrieved from http://www.bdsknowledge.org/dyn/bds/docs/960/DFID%20Poultry%20Sector%20Study%20180419.pdf

World Bank. (2017). (Livestock Productivity and Resilence Support Project) Retrieved from worldbank.org/curated/en/386621567697691142/pdf/