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ANALYSIS OF THE POVERTY STATUS OF SMALL RUMINANT FARMING HOUSEHOLDS IN KADUNA STATE, NIGERIA

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Abstract
The study analyzed the poverty status of small ruminant farming households in Kaduna state. Data was collected from 320 small ruminant farming households, with the use of a structured questionnaire. Data was analyzed using FGT Index. The study revealed that the mean household monthly per capita expenditure of small ruminant farming households was ₦12, 589.84 while the poverty line was ₦8, 393.23. This implies that the household whose monthly per capita expenditure (MPCE) is below ₦8, 393.23 was considered to be poor while those above the poverty line were considered to be non-poor. Also the poverty incidence among the small ruminant farming households was 0.625. This shows that 62.50 % of the small ruminant farming households in the study area was poor. The poverty depth among the small ruminant farming households was 0.31 implying that 31.00 % of the small ruminant farming households had the mean MPCE below the poverty line. The result further showed that poverty severity was 0.16 representing 16 % of the small ruminant farming households who are poorest of the poor farming households. This showed that higher level of differences; exist in the income levels of the poor and the non-poor. Furthermore, the result of the single ANOVA showed that there is a significant difference on the poverty status among the three production systems namely extensive, intensive and semi-intensive. The study concluded that the poverty status of small ruminant farming households was high, looking at the result of their MPCE, poverty line and poverty depth. It is recommended that small ruminant farming households should form formidable cooperative societies to harness credit and benefit from extension services delivery. They should also incorporate other means of livelihood diversification to adequately address their poverty situation while government and non-governmental agencies should intensify efforts in training of small ruminant farming households on new and improved technologies to improve their level of production and profit.
Keywords: Extension service, small ruminant households, poverty

INTRODUCTION

Livestock farming is a very important aspect of agriculture in Nigeria as it provides income, employment, food, farm energy, manure, fuel and transport (Edee, 2019). Small ruminant production is highly practiced in rural, urban and semi urban areas representing about 63.7 % of total grazing by domestic animals in Nigeria (Olabisi and Rasheed, 2017). Small ruminants like sheep and goats form a major component of animal production in most rural communities, it remains popular among the rural populace and resource poor people. The importance of small ruminant rearing is primarily associated with their small size which is significant for the advantage of mankind as it involves low investments and minimal risk of loss. They are also preferred to large ruminants of their feeding and reproductive efficiency and economic use of available land (Hamzat and Amao, 2017). Sheep and goats play a significant role in the food chain and overall livelihoods of Nigerian households (Yusuf *et al.*, 2018). According to Mayberry *et al.* (2018), the potential returns from sheep and goat production are high because of their low feed requirement. It has been documented that sheep and goats are the principal domesticated small ruminants in terms of total numbers and production of food and fiber products. Traditionally, sheep and goats have served as means of ready cash and a reserve against economic and agricultural production hardship (Enwelu *et al*, 2015). Hence, there is need to analyze the poverty status of small ruminant farming households in Kaduna State, Nigeria

Materials and Methods

The study was conducted in Kaduna State, Nigeria. The state has 23 Local Government Areas (LGAs). The area is predominant with livestock and crop production. A multi-stage sampling procedure was used in selecting farmers for this study. The first stage involved the selection of all the four agricultural zones. The second stage was the random selection of two LGAs from each of the four agricultural zones using a simple ballot system. This gave a total of eight LGAs (Sabon Gari, Giwa, Igabi, Lere, Kachia, Jaba, Kajuru and Chukun). The third stage was the random selection of two villages from each of the selected LGAs to make a total of 16 villages using a Slovian formula (1967) adopted by Oladimeji *et al*. (2017) for calculating sample size based on the assumption of 5 % expected margin of error, 95 % confidence interval and applying the finite population correction factor. The last stage involved a simple random sampling which was used to select farmers from each of the villages. Twelve percent (12 %) of the sample frame (2860) obtained from the Kaduna State Agricultural Development Agency was used as the sample size. A total of 344 farmers were randomly selected.

Data was collected from primary source with the aid of structured questionnaires and field observations. Foster, Greer and Thorbeecke (FGT) Index was used to determine the poverty status among small ruminant farming households in the study. A relative poverty line was constructed based on the Mean Per Capita Household Expenditure (MPCHE) of the small ruminant farming households. The General Foster, Greer and Thorbecke (FGT) poverty index (Pα) can be expressed as:

$$P_\alpha = \frac{1}{N}\sum_{i=1}^{q}\left(\frac{Z-Yi}{Z}\right)^{\propto} \quad \text{..... (1)}$$

Where: P = Foster, Greer and Thorbecke index; N = total number of households; q = number of households below the poverty line that is poor people; Yi = per capita expenditure of the households and
z = the poverty line.
α is a non-negative poverty aversion parameter (0, 1, 2)
The analysis of the poverty status was decomposed into three indicators: - prevalence of poverty (P_0), poverty depth (P_1) and severity of poverty (P_2). If α = 0, the index become

$$P_0 = \frac{q}{N}. \quad \text{..... (2)}$$

Where P_0 = the head count ratio or the incidence of poverty which is the percentage of households in poverty that is, whose per capita expenditure is below the poverty line. Where q = no of poor in the population and N = total population.

If α = 1, it reflects the depth of poverty or the proportion of the poverty line that the average poor will require to attain to the poverty line

$$p_1 = \frac{1}{N}\sum_{i=1}^{q}\left(\frac{Z-Yi}{Z}\right). \quad \text{..... (3)}$$

If α = 2, the index measures the severity of poverty which is the mean of square proportion of the poverty gap

$$p_2 = \frac{1}{N}\sum_{i=1}^{q}\left(\frac{Z-Yi}{Z}\right)^2 \quad \text{..... (4)}$$

ANOVA was used to analyze the differences in the profitability of the three systems production

Results and Discussion

Poverty Status of Small Ruminant Farming Households

In Table 1, the poverty status among the small ruminant farming households was analyzed using three indicators; poverty incidence (P0), poverty depth (P1) and severity of poverty (P2) from FGT Index. Households' per capita expenditure was used as a measure of poverty, this is because expenditure gives a clear picture of the consumption level of both food and non-food items of the household. The more a household consumed in food items, the better their standard of living. Results revealed that the mean monthly per capita expenditure of small

ruminant farming households was ₦12, 589.84 while the poverty line was ₦8, 393.23. This implied that the household whose MPCE is below ₦8, 393.23 was considered to be poor while those above the poverty line were considered to be non-poor. The result also revealed that the poverty incidence among the small ruminant farming households was 0.63. This showed that 62.50 % of the small ruminant farming households in the study area was poor. The poverty depth among the small ruminant farming households was 0.31. This implied that 31.00 % of the small ruminant farming households had their mean monthly per capita expenditure below the poverty line. Also, it showed that 31 % of ₦8, 393.23 was required to bring the monthly per capita expenditure of the poor small ruminant farming households up to the poverty line. This result can be compared with that of Adetayo (2014) who found poverty gap of 0.56. Furthermore, the result showed that the poverty severity was 0.16 representing 16 % of the small ruminant farming households who are poorest of the poor. This showed that higher level of differences exist in income levels of the poor and the non-poor. This result can be compared with that of Abur (2014). This result generally showed that poverty is a serious concern in the study area as it manifested itself in high poverty incidence, poverty depth and severity of poverty.

Table 1: Poverty status of small ruminant

Poverty categories	frequency	Percentage
Non- poor	120	37.50
Poor	200	62.50
Poverty indices		
Poverty incidence (p_0)	0.63	63
Poverty depth (p_1)	0.31	31
Poverty severity (p_2)	0.16	16
Mean per capita household expenditure(MPCHE)	₦12, 589.84	
Poverty line 2/3 of MPI	₦8, 393.23	

Farming Households Significant Difference on the Poverty Status of the Three Production System

A single factor ANOVA was used to establish if there was any significant difference on the poverty status of the three production system (extensive, intensive and semi- intensive). The result in Table 2 showed that, the F-tabulated was 17.03, while the F-critical at 5 % level of probability was 3.070. This result shows that the F-calculated is higher than F-critical. Consequently, the hypothesis which stated that there is no significant difference on the poverty status among the three production systems (extensive, intensive and semi-intensive) of production is rejected at 5 % level of probability.

Table 2: A single factor ANOVA showing significant difference in the poverty status among the three production systems

Source of Variation	*SS*	*Df*	*MS*	*F*	*P-value*	*F crit*
Among Groups	9.16E+08	2	4.58E+08	17.02567	3.01E-07	3.070512
Within Groups	3.28E+09	122	26890609			
Total	4.2E+09	124				

Conclusion

The study analyzed the poverty status of small ruminant farming households in Kaduna state. The study revealed that the MPCE of small ruminant farming households was ₦12, 589.84 while the poverty line was ₦8, 393.23. This implied that the household whose MPCE is below ₦8, 393.23 was considered to be poor while those above the poverty line were considered to be non-poor. Also the poverty incidence (p_0 = 0.625), poverty depth (p_1 = 0.31) and poverty severity (p_2 = 0.16) showed that small ruminant farming households were poor, In addition, small ruminant farming households had their MPCE below the poverty line. Furthermore, the result of the single

ANOVA showed that there was a significant difference on the poverty status among the three production systems: extensive, intensive and semi-intensive. The study concluded that the poverty status of small ruminant farming households in the study areas were high, looking at the result of their MPCE, poverty line and poverty depth. Therefore, it is recommended that small ruminant farming households should be encouraged through adequate provision of extension service officers to engage more in cooperative activities for easy access to credit as well as incorporate other means of livelihood diversification to adequately address their poverty situation. Government and non-governmental agencies should intensify effort in training the small ruminant farming households on new and improved technologies to improve their level of production and profit.

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