

Socio-Economic Determinants of Cattle Production among Farmers in Bade Local Government Area, Yobe State, Nigeria

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ABSTRACT

The socio-economic determinants of cattle production among farmers in Bade LGA, Yobe State, Nigeria were investigated. Structured questionnaire was used for data collection from 200 cattle farmers and analyzed with descriptive statistics and regression analysis. Findings show that cattle farmers between the age of 40-59 years old dominated ownership of cattle (55.50%). Semi intensive system was still practiced with majority dependent on forage grazing for the animals. Among the major problems constraining cattle production in the study area, lack of good roads was the most critical challenge with weighted mean score of 4.49. This was followed by high cost of feeds, price fluctuation, and insecurity at the market, inadequate market information with weighted mean scores of 4.34, 4.23, 4.04 and 3.89 respectively. A regression analysis result showed that certain socio-economic variables such as educational level and cattle farming experience had direct impact on cattle production ($R^2=0.48$). The findings suggest that improved cattle production could be achieved by giving considerations to those significant variables; farmers cooperative should be initiated to offer opportunities to members to have access to capital/credit and other inputs. Also, the use of alternative feed resources could help to solve the problem of high cost of feeding so as to ameliorate the problems faced by the farmers.

Keywords: Socio-Economic, Cattle, Constraints, Bade LGA, Rural

INTRODUCTION

Nigeria is one of the leading countries in cattle production in sub-Saharan Africa (Ikpi, 1990). In 2008, the country had over 14.73 million cattle consisting of 1.47 million milking cows and 13.26 million beef cattle. Less than 1 % of this population is managed commercially while the balance is managed traditionally (Tibi and Aphunu, 2010). Under this system, there is the use of indigenous methods in all aspect of cattle production including health management (Mafimisebi *et al.*, 2012). This tilt towards traditional management will have grave implications for commercialization of the production of cattle and cattle products and their prices. Cattle singly contribute about 12.7 % of the agricultural Gross Domestic Product (GDP) in Nigeria (Central Bank of Nigeria, 1999). The cattle industry provides a means of livelihood for a significant proportion of the livestock rearing (pastoral) households and participants in the cattle value chain in the sub-humid and semi-arid ecological zones of Nigeria (Okunmadewa, 1999; FAO, 2006). Although, there are many sources

of animal protein in Nigeria, recent studies have shown that cattle and cattle products are the predominant and the most commonly consumed animal protein sources. Thus, cattle are a highly valued livestock in Nigeria (Tewe, 1997; Tibi and Aphunu, 2010) where they are kept for beef, hide, milk or for traction (Tukur and Maigandi, 1999). To some producers, cattle serve as a status symbol (Tibi and Aphunu, 2010). From the foregoing, it is obvious why cattle production and marketing are notable employment and income-generating livelihood activities for many Nigerians (Mafimisebi and Okunmadewa, 2006). Cattle and beef trade provides the largest market in Nigeria with millions of Nigerians making their livelihood from various beef-related enterprises (Umar *et al.*, 2008).

From the socio-economic perspective, cattle production is a source of investment and instrument against disaster (Lawal-Adebowale, 2012). Nigeria has population of about 34.5 million goats, 22.1 million sheep and 13.9 million cattle (Lawal-Adebowale, 2012). The larger proportion of these animals' population

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are however largely concentrated in the northern region of the country than the southern part. Specifically, about 90 percent of the country's cattle population and 70 percent of the sheep and goat populations are concentrated in the northern region of the country. Concentration of Nigeria's livestock-based in the northern region is most likely to have been influenced by the ecological condition of the region which is characterized by low rainfall duration, lighter sandy soils and longer dry season (Lawal-Adebowale, 2012).

Cattle are one of the major components of livestock existing in Yobe State. Aside being multiplied and sold to generate income, it has wider usage thus, help in the production of beef, hide and skin, Agricultural manure as well as source of transport for the movement of agricultural products from one location to the other. Similarly, it helps to provide power for the tilling of soil. Cattle are also fattened and sold, cross-breed to improved carcass weight, produce Agricultural manure. It also serves as a source of milk and cheese. The bones and blood are also used as part of ingredients needed for the production of chicken feeds among others. The socio-economic characteristics of cattle farmers in the study area is essential in order to answer the question as to whether they are to adopt and sustain livestock farming in their efforts to ensure food security and income generation. The objective of the study was to identify socio-economic determinants of cattle production among farmers in Bade LGA, Yobe state, Nigeria. Specifically, the study explored the socio-economic characteristics of farmers; identified the constraints to cattle production, and determined the relationship between socio economic characteristics and cattle herd size.

METHODOLOGY

Study Area



Fig1. Map of Nigeria Showing Gashua Town

The survey was conducted in Bade Local Government Area of Yobe State, Nigeria. Its headquarter is in the town of Gashua. It has an area of 772km² and Coordinates: 12°52'5"N 11°2'47"E with population of 139,782 at the 2006 census. The postal code of the area is 631(NIPOST, 2009). Gashua is a community on the Yobe River, a few miles below the convergence of the Hadejia River and the Jama'are River. Average elevation is about 299 m. The hottest months are March and April with temperature ranges of 38-40o Celsius. In the rainy season, June-September, temperatures fall to 23-28o Celsius, with rainfall of 500 to 1000mm.

The Bade and Duwai languages are spoken in Bade LGA. Bade is one of seven languages of the Chadic family indigenous to Yobe State. The town lies near the Nguru-Gashua Wetlands, an economically and ecologically important ecological system. The town is the location of the court of Mai Bade, the Emir of Bade. Gashua is well-known for its fishery. Agricultural production is, however, not large-scale nor is it mechanized. There are 10 wards under Bade LGA, these are Sugum/Tagali, Dagona, Sarkin Hausawa, Lawan fannami, Zango, Katuzu, Lawan musa, Gwio-Kura, Usur/Dawayo and Sabon Gari wards.

Sampling Techniques, Data Collection and Analysis

The study adopted a survey research design to assess the socio-economic determinants of cattle production among farmers in Bade LGA, Yobe State, Nigeria. Primary and Secondary data were used in this study. There are 10 wards under Bade LGA, namely; Sugum/Tagali, Dagona, Sarkin Hausawa, Lawan fannami, Zango, Katuzu, Lawan musa, Gwio-Kura, Usur/Dawayo and Sabon Gari wards. Random sampling technique was used to select six (6) wards out of ten wards in Bade Local Government. Structured questionnaires were administered in six different wards selected randomly across Bade Local Government. Direct survey and oral interview were also conducted among the 200 cattle farmers in the selected wards. Data on socio-economic characteristics, production systems and constraints were elicited using interview guides and analyzed with both descriptive statistics and regression analysis.

Method of Data Analysis

Both descriptive (frequency, percentage and mean) and regression model was used for analyzing the data generated from the study.

Descriptive Statistics

For grouped data, the mean;

$$X = \frac{\sum x_i}{N} \dots\dots\dots(1)$$

Where,

N= number of observations

X= mean

$\sum x_i$ = Sum of variables (i = 1, 2, 3....n)

For grouped data;

$$X = \frac{\sum fx_i}{\sum f} \dots\dots\dots(2)$$

Where x = mean

$\sum fx_i$ = sum of products of all variables (I = 1, 2, 3n)

$\sum f$ = sum of all frequencies

Regression Model

Regression analysis was used to ascertain the contributions of selected farmers' socioeconomic characteristics to cattle production systems. The multiple regression equation estimated model is given as:

$$Y = A + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 + \epsilon \dots\dots\dots(1)$$

Where,

Y = Cattle production (herd size)

A = Constant

X1 = Age (in years)

X2 = Sex

X3 = Educational level

X4 = Household size (number of people)

X5 = Farm size

X6 = School years

X7 = Cattle Rearing experience (in years)

X7 = Capital

ϵ = error term, assumed to be independently and normally distributed.

The model shows the coefficient of multiple determinations (R^2), which explains the 'goodness of fit' for the relationship between the dependent variable and each independent variable in the equation.

RESULTS AND DISCUSSION

Sex of Respondents

Sex could be male or female. Sex plays a vital role in the rural community. It also determines to a larger extent the activities or roles which an individual perform in the society. The distribution of respondents according to sex is presented in Table 1. All the respondents (100%) were male

while no female was involved in the cattle production in the study area. This implies that cattle production was a male dominated activity given the strength and ruggedness involved through the culture and tradition of majority of people residing in the study area. Ogunlade (2007) established male dominance of agricultural production activities in most parts of Nigeria, including Yobe State.

Age of Respondents

Table 1 showed that the highest percentages of the respondents (55.50%) were between the ages of 40-59, while (35.50%) were between 20-39 years of age. This implies that majority of those involved in cattle production in the study area is within their economically active, productive and energetic age. Hence, they will be able to withstand the pressure and rigors involved in cattle production activities. This finding disagree with that of Girei *et al.* (2013) who carried out similar study in Adamawa State found out that 36.7% and 22.2% of the respondents age were within the range of 28-38 years and 39-49 years respectively.

Marital Status of Respondents

The relevance of marital status is to determine the size of the family which influences the decision making of farmers. Large family size may have large and readily supply labor. The marital status of respondents as presented in Table 1 shows that 91% were married while only 7.5% were single. This finding agrees with that of Mohammed, Lawal & Musa (2015) who opined that marriage is a sacred institution that is cherished among humanity which confers and expands the frontiers of responsibilities on individual.

Household Size of Respondents

The household is a group of people who eat from the same pot. Table 1 shows that majority (62.00%) of respondents had between 1 and 20 household sizes, 22.00% reported a range of between 21 and 30 persons, while only 16.00% respondents falls within 31 and above household size. The result reveals that majority of respondents' maintained large household sizes, probably given the need to complement their cattle farm labor requirements. This finding agrees with the outcome of the study by Adegbite *et al.* (2007) who established that household size is an important factor in any rural development intervention. Besides, the children assist on the farm.

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Table1. Distribution of respondents according to Socio economic characteristics

| Variables | Frequency | Percentage |
|--|------------|---------------|
| Sex | | |
| Male | 200 | 100.00 |
| Female | 0 | 0 |
| Total | 200 | 100.00 |
| Age | | |
| <20 | 1 | 0.50 |
| 20 – 39 | 67 | 33.50 |
| 40 – 59 | 111 | 55.50 |
| 60 – 79 | 19 | 9.50 |
| >79 | 2 | 1.00 |
| Total | 200 | 100.00 |
| Marital Status | | |
| Married | 182 | 91.00 |
| Single | 15 | 7.50 |
| Divorced | 1 | 0.50 |
| Widow | 1 | 0.50 |
| Separated | 1 | 0.50 |
| Total | 200 | 100.00 |
| Household Size | | |
| 1 – 10 | 49 | 24.50 |
| 11– 20 | 75 | 37.50 |
| 21 – 30 | 44 | 22.00 |
| 31 – 40 | 26 | 13.00 |
| >40 | 6 | 3.00 |
| Total | 200 | 100.00 |
| Cattle Rearing Experience (Yrs) | | |
| 1-10 | 78 | 39.00 |
| 11-20 | 85 | 42.50 |
| 21-30 | 31 | 15.50 |
| 31-40 | 5 | 2.50 |
| >40 | 1 | 0.50 |
| Total | 200 | 100.00 |
| Level of Education | | |
| No Formal Education | 107 | 53.50 |
| Adult Education | 15 | 7.50 |
| Primary Education | 10 | 5.00 |
| Secondary Education | 32 | 16.00 |
| Tertiary Education | 26 | 13.00 |
| Total | 200 | 100.00 |
| Farm Record | | |
| Yes | 31 | 15.50 |
| No | 169 | 84.50 |
| Total | 200 | 100.00 |
| Extension visit | | |
| Yes | 27 | 13.50 |
| No | 173 | 86.50 |
| Total | 200 | 100.00 |
| Major Means of Transport | | |
| Pick-up Van | 144 | 72.00 |
| Motor Cycle | 34 | 17.00 |
| Foot | 12 | 6.00 |
| Others (trailer) | 10 | 5.00 |
| Total | 200 | 100.00 |
| Membership of association | | |
| Yes | 54 | 27.00 |
| No | 146 | 73.00 |
| Total | 200 | 100.00 |

Source: Field Survey, 2017.

Cattle Rearing Experience (Years)

The result in Table 1 reveals that 81.50% of the respondents had cattle rearing experience ranging from 1-20 years, 18.00% had 21 – 40 years cattle rearing experience while 0.50% had above 40 years experience, this implies that majority of the respondents have many years of cattle rearing experience. The combination of cattle rearing experience with the ability to manage resources efficiently is expected to translate to higher returns for cattle production in the study area. The more the farmers' experience the more their abilities to manage general and specific factors which affect the cattle business and other household activities.

Educational Level

Education is the process of acquiring knowledge, experience, skills and sound attitude through teaching and learning process. The findings in Table 1 show that 53.50% had no formal education, while 7.50%, 5.00%, 13.00% and 19.00% had adult, primary, secondary and tertiary education, respectively. The result suggests that substantial population of respondents had no formal education. This implies that lack of education may likely not enhance the awareness and adoption of new technologies needed to enhance their cattle production. Agwu and Anyanwu (1996) established that educational status of farmers had direct influence on farmers' perception and adoption of improved technologies.

Farm Record

The result in Table 1 shows that majority of the respondents (84.50%) had no farm record while only 15.50% had.

Extension Visit

Table 1 indicates that a substantial number (86.50%) of the respondents had no contact with extension agents. Mgbada (2006) affirmed that enhanced extension contacts increases the chance of redressing farmers farm level problems and the uptake of modern technologies necessary for improving production.

Means of Transport

Result in Table 1 reveals that the major means of transportation of cattle in the study area were pick-up, use of trailers etc. This result is in line with that of Mubi *et al.* (2012) who in their study of cattle production in Adamawa State reported that majority of the respondents transport their cattle in vehicles.

Membership of Associations

Table 1 shows the distribution of respondents based on membership of cattle rarer association, 73.0% of respondents were not members while only 27% of respondents reported that they were members. This shows that a little/ small percentage of cattle rarer belongs to one form of association or the other. According to Thomas, Togarepi & Simasiku (2014), association assist their members in production, and thus would be able to access information and markets that would otherwise not be available to them.

Factors Influencing Economic Efficiency of Cattle Enterprise in The Study Area

Some of the factors influencing economic efficiency of cattle enterprise in the study area are presented in Table 2. Regression model was used to determine the factors influencing economic efficiency of cattle enterprise of the respondents. The Pseudo R-square (coefficient of determination) is 0.4114 indicating that about 41.14% variation in cattle enterprise is explained by the explanatory variables included in the model. From the T – value of the regression, two independent variables (Educational level and Cattle farming experience) out of the eight variables included in the model were found to be statistically significant at 10% and 1% level of probability. They both have positive coefficients and directly related to efficiency of cattle enterprise in the study area.

Educational Level: As revealed in Table 2, the coefficient of educational level was positive (1.88) and statistically significant at 10% level of probability indicating a direct relationship with the dependent variable. This implies that a unit increase in Educational level of cattle rearers will increase the efficiency of cattle enterprise of the respondents. For instance, as the respondent increase in educational level, the likelihood of being efficient is high. This can be justified base on the fact that the more educated individual farmers was, the more the tendency to increase the number of workforce that source for income to cater for the need of the family thereby increasing the amount of income in that household.

Cattle Rearing Experience: As revealed in Table 2, the coefficient of cattle rearing experience was positive (5.44) and significant at 1% level of probability indicating a direct relationship with the dependent variable. This implies that a unit increase in cattle rearing experience of the farmers will increase the

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efficiency of cattle enterprise of the respondents in the study area. The combination of cattle rearing experience with the ability to manage resources efficiently is expected to translate to higher returns for cattle production in the study area. For instance, the more experienced they

are from cattle production, the more efficient their enterprise and more the farmers' experience, the more their abilities to manage general and specific factors which affect the cattle business. This finding is in agreement with the result of Asogwa *et al.* (2012).

Table2. Regression Coefficients of economic efficiency of the cattle enterprise

| Variables | Coefficients | Standard error | T – value |
|--------------------------------|--------------|----------------|-----------|
| Constant | 13.68847 | 5.367496 | 2.25** |
| Age | -0.1380563 | 0.1211426 | -1.14 |
| Sex | 11.02397 | 10.00919 | 0.10 |
| Educational level | 1.84698 | 0.9835711 | 1.88* |
| Household size | -0.0866316 | 0.1679368 | -0.52 |
| Farm size | 1.59136 | 0.8567899 | -0.67 |
| School years | -0.5449743 | 0.3791058 | -1.44 |
| Cattle rearing experience | 0.6960665 | 0.1289006 | 5.40*** |
| Capital | -9.25E-06 | 7.76E-06 | -1.19 |
| Pseudo R-squared | 0.4114 | | |
| R-squared | 0.4759 | | |
| Log likelihood function | 17.014 | | |

Source: Field Survey, 2017.

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

Constraints of Cattle Production in the Study Area

The constraints of cattle production encountered by the respondents were measured using a five point Likert Scale. This refers to the superiority of the constraints gotten as serious by the respondents scores from 3 and above were considered as severe constraints, while those below 3 were taken as not severe constraints. Table 3 shows that lack of good roads with weighted mean score of 4.49 was the most critical challenge. This was followed by High

cost of feeds, Price fluctuation, insecurity at the market, inadequate market information with weighted mean scores of 4.34, 4.23, 4.04 and 3.89 respectively, while the problem of Diseases, mistrust and cheating were ranked 6th with a mean score of 3.83.

On the other hand, problem of inadequate market information, lack of standardization and poor sanitation condition with weighted mean scores of 3.07, 3.50 and 3.65 respectively were ranked lowest 13th, 12th and 11th respectively.

Table3. Constraints of cattle production in the study area

| Constraints | S(1) | D(2) | U (3) | A (4) | SA (5) | SUM | MEAN | RANK |
|-------------------------------|------|------|-------|-------|--------|-----|------|------------------|
| Lack of good roads | 1 | 28 | 18 | 176 | 675 | 898 | 4.49 | 1 st |
| Insecurity at the market | 3 | 48 | 30 | 352 | 375 | 808 | 4.04 | 4 th |
| Price fluctuation | 3 | 10 | 57 | 360 | 415 | 845 | 4.23 | 3 rd |
| Poor sanitary condition | 4 | 82 | 99 | 264 | 280 | 729 | 3.65 | 11 th |
| Lack of standardization | 6 | 76 | 126 | 312 | 180 | 700 | 3.50 | 12 th |
| Lack of shade | 6 | 72 | 78 | 300 | 285 | 741 | 3.71 | 9 th |
| Disease | 1 | 56 | 111 | 292 | 305 | 765 | 3.83 | 6 th |
| Mistrust and cheating | 4 | 42 | 96 | 364 | 260 | 766 | 3.83 | 6 th |
| Inadequate market information | 50 | 52 | 87 | 204 | 220 | 613 | 3.07 | 13 th |
| Farmers/Herdsman clash | 11 | 36 | 57 | 348 | 325 | 777 | 3.89 | 5 th |
| High cost of feeds | 0 | 12 | 36 | 364 | 455 | 867 | 4.34 | 2 nd |
| Inadequate Extension Service | 6 | 68 | 90 | 300 | 275 | 739 | 3.70 | 10 th |
| Poaching | 15 | 28 | 90 | 320 | 305 | 758 | 3.79 | 8 th |

Source: Field survey, 2017

Note: SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree

CONCLUSION AND RECOMMENDATIONS

The findings of the study suggest that selected socio economic characteristics have become linked with cattle production. More importantly, possession of cattle was positively influenced by

educational level and cattle rearing experience. Some of the problems constraining cattle production were also identified to include inputs lack of good road, high cost of feed, price fluctuation, insecurity at the market, inadequate

market information among others. In order to solve these problems, the study recommends that improved cattle production could be achieved by creating enabling environment to ameliorate problems faced by farmers. For instance, farmers cooperative could be initiated to offer opportunities to members to have access to capital/credit and other inputs. Also, the use of alternative feed resources could help to solve the problem of high cost of feeding.

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