Sahel J. Vet. Sci. Vol. 9, No. 1, pp. 25 - 31 (2010)

1605-8954/10/$25.00 + 00

Sahel Journal of
Veterinary Science

Marketing of Sahelian Goats in North -Eastern Nigeria: Experience from Borno State

A. C. Iheanacho*[1] and E. A. Ali[2]

[1]Department of Agricultural Economics and Extension, Faculty of Agriculture,
P. M. B. 1069, University of Maiduguri, Maiduguri, Nigeria;
and [2]Department of Agricultural Technology, College of Agriculture, Maiduguri, Nigeria

ABSTRACT

The study evaluated Sahelian goat marketing in Northeastern Nigeria, drawing experience from Borno State. It specifically identified the socio-economic characteristics of the respondents; examined the market structure and performance of Sahelian goat; determined the influence of some socio-economic characteristics on the sales' revenue of the respondents as well as the channel and problem of Sahelian goat market. Data were collected from primary source through the use of structured questionnaire. Descriptive statistics were used to analyze the socio-economic characteristics of the marketers while Gini coefficient was used to determine the market structure. Ordinary least squares (OLS) Technique was used to determine the influence of some socio-economic factors on the sales revenue of respondents. The result revealed that 61.54% of the respondents were between the ages of 27 - 45 years while 28.21% were in the age range of 46 - 51 years. Analysis of years of marketing experience of the respondents showed that 89.75% had marketing experience of 6 - 24 years while 64.1% of them were literates. The Gini coefficient of 0.876992 obtained from the study indicates a high level of inequality in income of the respondents. The result also revealed that the regressors explained about 31% of the variability in independent variables. Majority (51.28%) of the respondents identified double charges (Jangali and Local Government fees) as one of their problems. Based on the findings of the study, it was recommended that government should put in place modern goat market facilities like standard weighing, grader and veterinary clinic in the market. This will help to transform the marketing process from the current traditional system to more modern one.

Key words: Sahelian goat, marketing, Northeastern, Nigeria

INTRODUCTION

Goats are widely distributed in Africa. Though there are conflicting figures as to the numbers available, their importance especially to resource-poor farmers has been well documented (Devendra, 1985; Nuru, 1987; Itty *et al*. 1997; Peacock 1995). Nuru (1987) estimates that 144.7 million goats are in Africa, representing 20.2% of the total population of ruminant livestock in the tropics and subtropics. The domestic ruminant population in sub-Saharan Africa as estimated by Winrock International (1992) consists of 127 million sheep and 147 million goats, making up 26% of the world's small ruminant population. According to FAOSTAT (2005), 28,000,000 representing (3.5%) of world goat population are produced in Nigeria. Nigeria is the fourth producer of goat meat, accounting for 147,000 metric tonnes of goat meat, representing 3.2% of the world goat meat production.

Livestock ownership for the average rural farmer, with very few investment alternatives is a store of wealth and provides an effective hedge against inflation. Profits from agricultural or non-farm activities are used for the purchase of livestock (Itty *et al.,* 1997). The role of small ruminants, specifically goat, is extremely important within most farming systems. They have the potential of accumulating capital (Djajanegara *et al.,* 1996). Small ruminants are relatively easy to own by resource-poor farmers, especially women. The animals spread the risk inherent in agricultural production and are often used as a first step up and out of poverty. They reproduce very fast and are raised in a wide range of production systems (Peacock, 1995).

Household livestock holdings range from a few to hundreds of heads per household with varying ratios of cattle, sheep and goats (Wilson, 1995). In some areas especially with cash crop production, larger ruminants like cattle and donkeys provide draft power for tillage. Livestock are also a means of storing capital, of buffering food shortages in year of poor crop production and of meeting social and religious obligations of farmers (Powell *et al.,*

*Author for correspondence: *E-mail:* aciheanacho@yahoo.com

2004).

Production and marketing constitute a continuum and lack of development in one retards progress in the other (Olayemi, 1972). The existence of markets, is not enough to efficiently take care of the prices, as the structure and performance of the markets are equally very important. Studies on marketing of maize and fish (Ali and Iheanacho, 2008; Ali *et al.* 2008) were carried out in the study area, but empirical studies on structure and performance of sahelian goat market are lacking, thus the need to examine the sahelian goat market in this study.

The specific objectives of the study were to: (i). examine the socio-economic characteristics of the market participants, (ii). determine the structure and performance of Sahelian goats markets in the study area, (iii). examine the channel of Sahelian goat marketing, (iv). determine the economies of scale, and (v). identify constraints in the goat markets.

MATERIALS AND METHODS

Study area and data collection

The study area was Borno State of Nigeria. It has land area of about 67,436km,^{2} lying roughly between latitude $10^0$09'N and $13^0$44'N and longitude $11^0$36'E and $14^0$38'E (Ali, 2006). Maiduguri Regional Goat Market is within Maiduguri Metropolis, Nigeria.

Primary and secondary sources of data were used for the study. The primary data were basically personal interviews using structured questionnaires, which were administered to market participants in the Maiduguri Regional goat market. Forty market participants were randomly selected for the study. Secondary data were collected from journals, research reports and the websites.

Analytical technique

Descriptive statistics such as frequencies and percentages were used to analyze the socio-economic characteristics of the respondents. The Least Square Estimate was used to determine the scale economies, while Gini coefficient was used to examine the market concentration (Tiku *et al.,* 2004; Iheanacho, 2005; Afolabi, 2007). Mathematically, it is repressed as:

$GC = 1 - \sum XY$

where,

GC = Value of the Gini coefficient

X = Percentage of market participant

Y= Cumulative percentage of the sales of goat

$\sum$ = Summation sign

The Average cost function was used to measure the presence of scale economies associated with the marketing of goats. The model is expressed as follows:

$AMC = á + âX + e$

where,

AMC = The average marketing cost of an average live goat (₦)

X = The average number of goats handled per market participants per month

á = Constant

â = Coefficient of the number of goats handled

e = error term

A negative coefficient indicates the existence of scale economy (Iheanacho and Mshelia, 2004). Factors which influence the profits of goat marketers were determined, using multiple regression analysis. The model postulated for goat marketers in the study area is implicitly presented as:

$Y = f(X_{1,} + X_{2,} + X_3 + X_4 + X_5 + e)$

where,

Y = Profit per average goat

X_1= Age of market participant

X_2 = Years of formal education

X_3 = Years in marketing business

X_4 = Purchase price of goat

X_5 = Selling price of goat

e = Error term

RESULTS AND DISCUSSION

Socio-economic characteristics of the marketers

The socio-economic characteristics of the respondents, which include their age, marketing experience and

educational qualification are presented in Table 1.

Table 1. Socio-economic characteristics of the respondents (n = 39)

Variable	Frequency	Percentage
Age (years)		
≤ 27	1	2.56
28 - 33	2	5.13
34 - 39	9	23.08
40 - 45	12	30.77
46 - 51	11	28.21
52 and above	4	10.26
Years in goat marketing		
≤ 5	2	5.13
6 - 9	8	20.51
10 - 14	14	35.90
15 -19	7	17.95
20 - 24	6	15.39
25 - 29	1	2.56
30 and above	1	2.56
Educational qualification		
No formal education	14	35.90
Primary education	12	30.77
Secondary education	8	20.51
Tertiary education	5	12.82

Source: Field survey, 2008

The result reveals that 61.54% of the respondents were between the ages of 27 - 45 years while 28.21% were in the age range of 46 - 51 years. Majority (61.54%) of the respondents were therefore, in their middle age, which is the active (working) age, thus has positive impact on the business aggressiveness of the respondents. Analysis of years of marketing experience of the respondents reveals that 56.41% of the respondents were in the business for 10 - 19 years while 33.34% had marketing experience of 15 - 24 years. The table also shows that 64.1% (30.77% primary education; 20.51% secondary and 12.82% tertiary education) of these respondents were literates while 35.90% were not educated. The high level of literate respondents, *ceteris paribus,* has positive impact on their business transaction and planning.

Effects of socio-economic factors, purchase and selling prices on profit

The effects of socio-economic factors on profit of Sahelian goat was estimated using multiple regression (Table 2).

Table 2. Regression estimates of effects of socio-economic factors on market profit for goat

Variable	Coefficient	T- ratio	F-ratio
(Constant)	-29.3304	-0.23^{NS}	12.40*
Age	-1.9936	-1.22^{NS}	
Year of education	10.6160	5.51*	
Year of business	1.87306	1.14^{NS}	
Purchase price	-0.32137	5.56*	
Selling price	0.33449	5.78*	
R^2	0.65	-	

Source: Field Survey, 2008; *= significant at 1%; NS = not significant

The result reveals that the coefficients of selling price and purchase price were significant at 1%. The positive

and significant relationship exhibited by the selling price indicates that the higher the selling price, the higher the profit earned by the marketers in the goat business, while the negative and significant relationship of the coefficient of purchase price implies that higher profit was earned by marketers when the purchase price was low. This is possible based on the bargaining power of the market participants.

Age and years in marketing business had no significant relationship with profit. The coefficient of years in formal education was significant and education plays an importance role in marketing business. The significant coefficients of years of formal education with profit in the study area agreed with the findings of Lawal and Idega (2004) who observed that the level of education attended by the market participants to a large extent determines the strategies which he/she may use to solve his/her marketing problem and adopt new innovation without difficulties, and that will increase his profit.

Market structure

The study of market concentration among the respondents revealed a high Gini coefficient value of 88%, with daily mean sales of 111962.10 (Table 3). The high Gini coefficient indicates a state of market imperfection and implies the existence of inequality in income distribution among sellers. It can be attributed to the marketing activities of commission agents, wholesalers and retailers. The commission agents are the market participants who take title of the goats and bargain the price of goats for the producers. The producers do not have direct access for bargaining, rather they bring the goats to commission agents. The commission agents take title, bargain and sell the goat and get commission (fee) in return. This creates rooms for few wholesalers who are the sources of finance to participate in the market, since the commission agents would prefer to deal with bulk purchase for higher commission fee, thereby creating a monopolistic structure. The closeness of the Gini coefficient to unity indicates the existence of non-competitive behaviour such as collusion and inequality in earning (Iheanacho, 2005). The merchants (wholesalers or retailers) are the source of finance of the commission agents. Thus, they make the entry into the business with restriction, thus, exhibiting monopolistic competition. Also, people differ in their risk preference and those with high propensity to take risks tend to choose more risky ventures, which could lead to larger earnings and more profits. This strengthens their market power and endangers concentration (Okereke and Anthonio, 1988). In Sahelian goat market, the capital required is moderate and makes the entry moderate.

Table 3. The estimates of daily sales and Gini coefficient for Sahelian goat in Maiduguri regional goat market

Daily sales	Market frequency	% of frequence of merchant	Cum. % merchant
<35000	4	10.26	10.26
35001 - 70000	12	30.77	41.03
70001 - 105000	9	23.08	64.11
105001 - 140000	5	12.82	76.93
140001 - 175000	2	5.13	82.06
175001 - 210000	1	2.56	84.62
210001 - 245000	1	5.13	87.19
245001 - 280000	2	2.56	92.32
280001 - 315000	1	2.56	94.88
315001 - 350000	1	2.56	97.44
350001 - 385000	1	2.56	100.00
	39		

Total sales	% of total sales	Cum % total sales	X/100	Y/100	XY
103600	2.37	2.37	0.1026	0.023726	0.002434
620300	14.21	16.58	0.3077	0.142056	0.043711
765500	17.53	34.11	0.2308	0.175308	0.040461
619200	14.18	48.29	0.1282	0.141804	0.018179
317000	7.26	55.55	0.0513	0.072597	0.003724
180000	4.12	59.67	0.0256	0.041222	0.001055
217000	4.97	64.64	0.0256	0.049695	0.001272
530000	12.14	76.78	0.0513	0.121376	0.006227

Table 3 (continued)

Total sales	% of total sales	Cum % total sales	X/100	Y/100	XY
314000	7.19	83.97	0.0256	0.071909	0.001841
340000	7.79	91.76	0.0256	0.077864	0.001993
360000	8.24	100.00	0.0256	0.082444	0.002111
Total					0.123008

∑XY = 0.123008; Gini coefficient = 1- 0.123008 = 0.876992; mean sales = ₦111,964.10; X = percentage of market participant; Y= cumulative percentage of the sales of goat

Marketing channel of Sahelian goat

The marketing channel of Sahelian goat in Borno is shown in Figure 1.

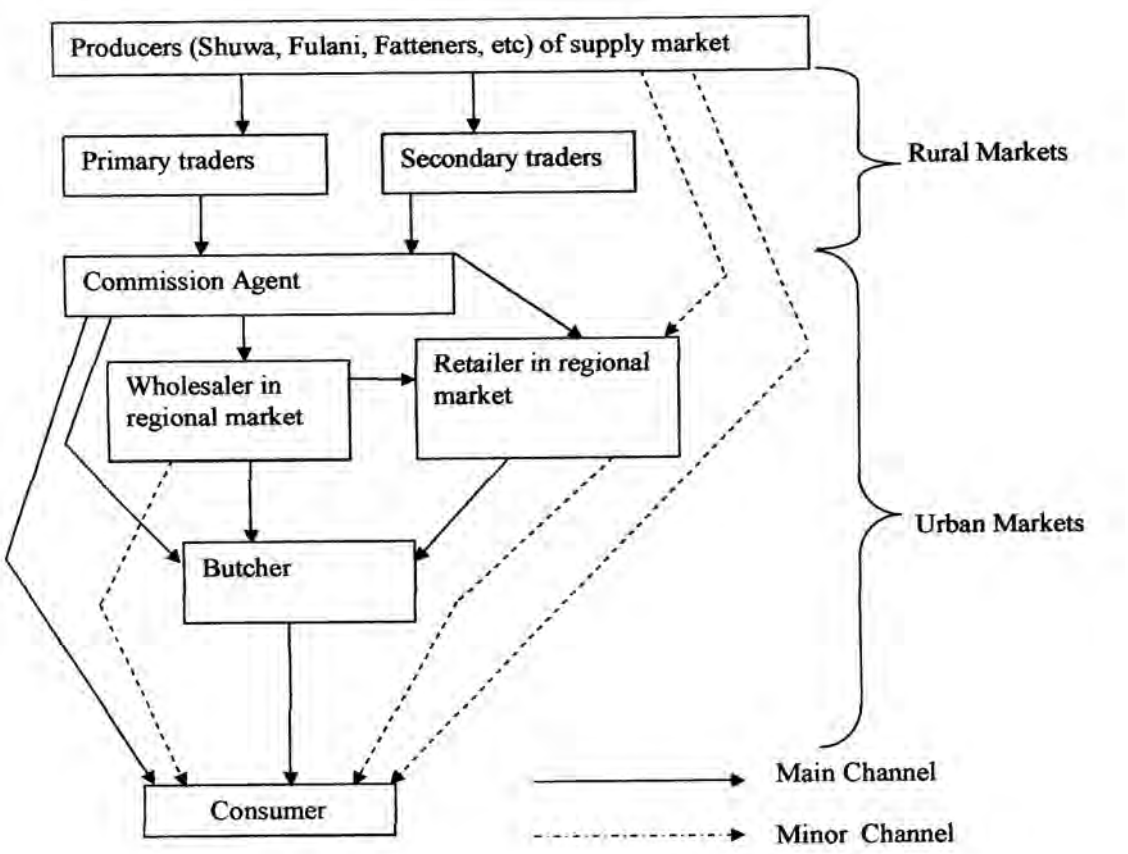

Fig. 1. Marketing channel in Maiduguri regional goat market

The Maiduguri regional goat market channel shows that goats are brought by the producers (Shuwa, Fulani, etc.) to the primary and secondary traders in the rural areas. The producers first of all pay certain fees to the Jangali and the Local Government Authority. Then the goats are registered before they are forwarded to the commission agent(s) in the urban market, who then take title of the goats for onward bargaining. The commission agent bargains the price and then sells the goats to wholesalers, retailers, butchers and sometimes consumers. The commission agents in return are paid for their services. The wholesalers usually buy the goats in bulk while retailers can only buy a few. The butchers usually buy from wholesalers and retailers and sometimes direct from the producers.

Scale economies

The result of the relationship between marketing costs and number of Sahelian goats marketed was estimated to determine the existence or absence of scale economies (Table 4).

Analysis of the result for market participants shows that the coefficient of determination (r^2) was 0.78. The coefficient of number of goats marketed was negative and statistically significant at 1% level. This means that the average marketing costs of market participants decreased with an increase in number of goats sold. The study is in

agreement with Scherer (1980) and Iheanacho (2005), who observed that average marketing costs among wholesalers decrease to the extent that unit costs are lower than their counterparts because of their size in business.

In goats marketing, scale economy is usually achieved through bulk purchase and marketing. Bulk purchase reduces transportation cost as well as unit price of goats. Also, agents are willing to reduce their commissions as the number of goats marketed increases.

Table 4. Regression estimate of the relationship between marketing cost and number of Sahelian goats sold

Marketers	Regression estimates						
	Constant	Coefficient	Standard error	T-value	R2	F-ratio	N
Market participants	436.750	−0.12539*	0.01086	−11.54	0.784	133.23	39

Source: Field Survey, 2008; *= significant at 1%

Problems of Sahelian goat marketing

The marketing of Sahelian goat in north eastern Nigeria are bedeviled with numerous problems. The problems are presented in Table 5.

Table 5. Problems of Sahelian goat marketing (n = 39)

Problems	Frequency	Percentage*
High cost of transportation	13	33.33
Lack of space in the market	4	10.26
Diseases	14	35.89
Problem of double charges	20	51.28
High cost of feed	8	20.51
Accident due to bad road	12	30.77
Robbery on the way to market	10	25.64

Source: Field Survey, 2008; * = multiple responses existed thus percentage>100%

The result reveals that 33.33% of the respondents complained of high cost of transportation, while 10.26% indicated problem of market space, especially during festivities. Delay in the sale of goats results to higher cost of space charges and feeding. Disease infection was one of the problems pointed out by 35% of market participants, while majority (51.28%) identified double charges (Jangali and Local Government fees) as one of their problems in the market. High cost of feed was reported by 20.51% of the respondents. Most farmers and commission agents use motorcycles and bicycles as means of transportation. The bad road conditions hamper efficient transportation, therefore, some goats are lost on the way to the market due to accidents and robbery as revealed by 30.77% and 25.64% of the respondents, respectively.

CONCLUSION AND RECOMMENDATIONS

The study shows that there is high return resulting from marketing of goat in Maiduguri regional goats market, although it is confronted with a number of problems. Based on the study the following recommendations are made to bring about better efficiency in marketing of goats. Government should encourage the formation of marketers and producers cooperatives so as to regulate the supply and demand of goats. This will enhance the marketing efficiency of goat, as government policies and market information can be affectively transmitted through the cooperatives. Jangali and Local Government Authority fees should be harmonized to reduce multiple charges to producers, while Veterinary clinics should be provided in the rural and urban markets. Bulk purchase and transportation of animals should be encouraged, through the cooperatives and individuals, to enable producers and sellers reap the benefits of scale economy.

REFERENCES

Ali, E.A. (2006). Spatial price analysis of selected crops in the rural and urban markets of Borno State, Nigeria.

Unpublished M. Sc. Thesis, University of Maiduguri, Maiduguri, Nigeria.

Ali, E. A. and Iheanacho, A. C. (2008). Spatial Price efficiency of Maize in Borno State, Nigeria. *Global J. Pure Appl. Sci.* 14(1): 25-30.

Ali, E. A., Gaya, H.I.M. and Jampada, T. N. (2008). Economic analysis of fresh fish marketing in Maiduguri Gamboru Market and Kachallari Alau Dam Landing Site of Northeastern, Nigeria. *J. Agric. Social Sci.* 4(1): 23-26.

Afolabi, J. A. (2007). Evaluation of poultry egg marketing in South-Western Nigeria. *Int. J. Poult. Sci.* 6(5): 366-366

Devendra, C. (1985). Integrated Farming Systems involving Small Ruminants. *Proc. III Asia-Australasian Animal Science Congress*, 6-10 May, Seoul, Korea.

Djajanegara, A., Pond, K. R., Batubara, L. P. and Merkel, R. C. (1996). Supplementation strategies for small ruminants in low and high inputs production system. In: *Small Ruminant Production: Recommendations for South-east Asia* (Subandrio, T. S. and Merkel, S. R., eds.), Small Ruminant Collaborative Research Support Program. Indonesian Aency for Agricultural Research And Development, Jakarta, Indonesia.

FAOSTAT (2005). www. Fao.org/waicent/portal/statistics

Iheanacho, A. C. and Mshelia, S. I. (2004). Economics of local rice marketing in Adamawa State of Nigeria. *Nig. J. Agribus. Rural Devel.* (NJARD) 4(2):69 – 79.

Iheanacho, A. C. (2005). Structural characteristics and performance of retail marketing of eggs in Maiduguri Metropolis of Borno State, Nigeria. *J. Sustain. Devel. Agric. Environ.* 1(1): 69-76.

Itty, P., Ankers, P., Zinstag, J., Trawally, S. and Pfister, K. (1997). Productivity and profitability of sheep production in the Gambia: Implications for livestock development in West Africa. *Qrt. J. Int. Agric.* 38: 153-172.

Lawal, W. L and Idega, E. O. (2004). Analysis of fish marketing in Borno State. *NAAE Annual Conference*, 2 - 3 Nov. 2004, Ahmadu Bello University, Zaria-Nigeria,

Nuru, S. (1987). *Trends in Small Ruminant Production in Nigeria*. NAPRI Publication, Ahmadu Bello University, Zaria, Nigeria.

Okereke, O. and Anthonio, Q. B. O. (1988). The structural characteristics of the market for grains in eastern Nigeria. In: T.O. Adekanye (Ed.), *Readings in Agricultural Marketing*. Longman, Ibadan, Nigeria. pp. 116-124.

Olayemi, J. K. (1972). Improving marketing as a strategy for generating increased food production: The Nigerian experience. *West Afr. J. Agric. Econ.* 1(1): 86-109.

Peacock, C. (1995). *Improving Goat Production in the Tropics. A Manual for Development Workers*. An Oxfam/ FARM Africa Publication.

Powell, J. M., Pearson, R. A. and Hiernaux, P. H. (2004). Crop-livestock interaction in West African drylands. *Agron. J.* 96: 469-483.

Scherer, F. M. (1980). *Industrial Market Structure and Economic Performance*, 2nd ed. Rand McNally College Publishing Co., Chicago, IL, USA.

Tiku, N. E., Ahmed, B. and Agbogo, E. A. (2004). Analysis of markets concentration amongst cocoa marketers in Cross River State. *Int. J. Bus. Common Market Studies* 2(1/ 2): 208-216.

Wilson, T. R. (1995). Livestock production systems: The tropical agriculturalist. CTA Macmillan Publication.

Winrock International (1992). Assessment of animal agriculture in sub-Saharan Africa. Winrock International Institute for Agricultural Development, Morrilton, USA.