Structural Analysis of Cattle Market in Kano State, Nigeria

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Abstract
The study examined the structure of cattle market of some selected markets in Kano State. A multi stage sampling technique was employed for the study in which purposive sampling technique was used in the selection of 2 markets, based on the concentration of the cattle marketing activities. The second stage involved random selection of 123 cattle marketers. The data were collected using structured questionnaire supplemented with focus group discussion. Data were analyzed using descriptive statistics and Gini coefficient analysis. Result of descriptive statistics revealed a market structure based on the elements to have many buyers and sellers with cattle traded to be differentiated based on types and breeds of cattle. Entry and exit condition was free with buyers and sellers relatively informed about product and price of cattle. Forces of demand and supply determined the price of cattle. Result of Gini coefficient revealed a value of 0.70 implying a high market concentration and high level of inequality in size and distribution of marketers. The major constraints militating against the development of an efficient marketing system for cattle include inadequate credit, high cost of feeds, high road charges and poor pricing. Smooth access to credit facilities, provision of more infrastructural facilities, re activating of co-operative associations and provision of more grazing land were recommended.
Keywords: Structural, Analysis, Cattle, Market, Coefficient

1 Introduction

Livestock production is a source of employment and livelihood to many Nigerians and cattle are the most predominant and highly valued livestock in Nigeria (Tewe, 1997). The growth rate in the national herd is estimated at 1.5 percent annually (Arizanino, *et al.,* 2000). Cattles are raised as livestock for meat (beef and veal), dairy and as work animals (oxen/ bulls). The livestock sub-sector's contribution has decreased in recent years, contributing only about six percent (6%) of the GDP in year 2007 (CBN, 2007). Livestock contributed about 25% of the contribution of agriculture to Gross Domestic Product (GDP) in Sub-Saharan Africa (SSA), and even exceed this value in some West African countries (Okuneye, 2002). Beef cattle play a very important role in the Nigerian agriculture contributing about 12% of the total gross domestic product (GDP) of the country (CBN, 1999). Nigeria's livestock resources consist of 14 million cattle, 34 million goats, 22 million sheep, 100 million poultry, 1 million horses and donkey as well as negligible number of camels (Umar, 2007). Millions of Nigerians make their livelihood from the beef enterprises as producers, marketers and transporters; others as; processors of beef products, feed millers, veterinary services, and, in agricultural machineries. It also generates a lot of revenue to the government through various forms of taxations (Oni, 2006). Nigeria with a projected population of over 155 million people requires several herds of cattle to satisfy its demand for beef cattle and cattle products. However with more than 80% of the cattle population in the hands of traditional pastoralists, the supply cannot match the demand (Oni, 2006). Beef cattle are important livestock species in terms of protein value and biomass as they supply not only meat and milk but also skin, bones, blood, hooves and horns (Tewe, 1997).

In spite of all the contributions the livestock sub-sector provides, it is relatively at disadvantage position when one considers some indices of perpetual growth of its business and its importance in enhancing economic growth and development of a nation (Oni, 2006). Though Nigeria plays a vital role in the livestock economy of Africa, its livestock production is not enough to meet the domestic consumption requirements. The total supply of livestock products fall short of the overall demand in some cases, the domestic production and noted importations are together still not enough to meet more than 60% of the actual demand (Mbanasor, 2000). This suggests that, marketing of beef cattle has not been given the adequate attention required by individuals, groups and governments considering the role of marketing in national development (Gilbert, 1995). The wide gap in the supply and demand of beef cattle is also expressed by the price of cattle, being that the high cost of purchase of cattle influences the number of cattle supplied or sold in the market

Marketing provides the mechanism whereby producers exchange their livestock and livestock's products for cash. The cash is used for acquiring goods and services which they do not produce themselves, in order to satisfy a variety of needs ranging from food items, clothing, shelter, medication and schooling to the purchase of breeding stock and other production inputs and supplies (Solomon and Nagussie, 2002). Marketing is part and parcel of the production process. It supplements production in that it makes what is produced available to consumers and other users at the time, place and form required irrespective of the distance between them and the producers (Olukosi *et al.,* 2007).

Beef cattle marketing are one of the major business enterprises that are conducted by many people most importantly in the area under investigation. In recognition of the importance of marketing in the production process

and the numerous allegations of inefficiencies leveled   against marketing system for agricultural products especially beef cattle in Nigeria, study on cattle marketing in Kano State will shade more light on some of these allegations. Marketing system is an allocating mechanism which exist to facilitate the rational allocation of resources in production   and of the fact that the marketing activities increases the form and place utilities by processing and transporting agricultural commodities (Isitor 1990).

Market structure relates primarily to factors found in every market that are significant internal features of the market setting and that affect the conduct of firms. The characteristics mostly emphasized as strategic aspects of market structure include the relative sizes and number of buyers and sellers, freedom of entry and exit, degree of produce differentiation, market knowledge and the degree of seller or buyer concentration. These elements measure the extent of deviation from perfectly competitive norm. It is against this background that this research was undertaking with aim of examining the structure of cattle market in Kano state and find out the major problems militating against sustainable cattle production and marketing in the study area.

2 Methodology

2.1 The Study Area

The study was carried out in Kano State which is located on latitudes 10^033^lN to 12^037^l N and longitudes 7^040^lE to 9^029^lE. The total land area of the state is 20,760 square kilometers and the mean daily maximum and minimum temperatures are 91.6^0F (33.1^0C) and 60.6^0F (15.85^0C) respectively   (KNARDA, 1995). It falls within Sudan Savannah and the rain fall varies considerably from year to year ranging from 635.00mm to 889mm and is concentrated from June to September (KNARDA2001). Kano state is bordered to the north and northwest by Katsina state, to the east and northeast by Jigawa state, to the south by Bauchi State and to the southwest by Kaduna state. According to Official Gazette of the Federal Republic of Nigeria, the state has a population of 9, 386,782 in habitants, with an annual growth rate of 3.3%, who are mainly Hausa and Fulani by tribe (NPC, 2006).

The State has a large number of markets categorized into rural and urban markets where agricultural commodities including livestock are assembled. Most of the rural markets are periodic in nature except urban markets which operate most often. This attracts market participants not only from within the state but from all over Nigeria and neighboring countries.

Kano State is currently made up of 44 Local Government Areas (LGAs) and the state is agriculturally classified into three (3) Zones by the Kano State Agricultural and Rural Development Authority (KNARDA, 1995). Generally, beef cattle marketing activity is practiced in the three ADP zones, (KNARDA, 1995).

2.2 Sampling Procedure

A multistage sampling technique was used   for the study. The first stage involved a purposive selection of two zones because of their role in beef cattle marketing. The second stage involved   purposive selection of one market from each of the two zones based on size and high concentration of beef cattle marketing activities, Dambatta and Wudil markets from zone II and III were selected respectively. A pre-survey was conducted and a total of 410 beef cattle marketers were identified from the two markets which were stratified into large, medium, and small scale. According to the information provided by the marketers during the field survey, marketers who purchased 1-7 cattle were categorized as small scale, 8-15 as medium and 16 and above as large scale cattle marketers. Out of which 30% of each category was selected using stratified random sampling technique in selecting the proportionate number of respondents, a total of 123 cattle marketers were therefore selected for the study.

2.3 Data Analysis

Descriptive statistics and Gini Coefficient analysis were used in analyzing the data.

2.3.1 Descriptive Statistics

Descriptive statistics used include frequency tables, percentages and means. It is one of the simplest and frequently utilized tools of analysis in most researches. It is employed to organize and summarize observation so that they are easier to comprehend (Edward, *et. al.,* 1993). Descriptive statistics was used in determining the type of market based on the structure elements.

2.3.2 Marketing Structure analysis

Gini coefficient was used to determine the market structure and concentration. It is a measure of statistical dispersion developed by the Italian statistician and sociologist Corrodo Gini. Gini coefficient is a measure of inequality of distribution, a value of 0 expressing total equality and a value of 1 expressing maximal inequality. It has been applied in various disciplines such as sociology, economics, health science, ecology, chemistry, engineering and agriculture (Sandras and Bongiavanni 2004).

$$GC = 1 - \sum XY \text{ --- (i)}$$

Where

GC = Gini coefficient

X = the percentage of beef cattle sellers

Y = the cumulative percentage of their sales

3 Results and Discussion

3.1 Market Structure Analysis

Market structure refers to those characteristics of a market which seem to influence strategically the nature of competition and pricing within a market (Olukosi et al, 2007). The market structure for cattle market was analyzed based on market concentration and the elements that determine market structure.

The analysis of the market structure for cattle market based the elements that determine the market structure is presented in Table 1. Result revealed that majority (74.2% and 89.2%) reported the presence of many sellers and buyers of beef cattle respectively. The result of the analysis further revealed that cattle are differentiated based on their colour or breeds. Red Bororo breed of cattle was the dominant (53.4%) type of breed marketed because of its high food conversion ability which stimulates rapid growth while White Fulani (32.5%) was also a common breed sold because of the advantage the breed has for water tolerance.

Table 1 Description of Market Structure for Cattle Market

Variable	Frequency	Percentage
Number of sellers		
Many	107	89.2
Few	13	10.8
Number of buyers		
Many	89	74.2
Few	31	25.8
Nature of product		
White *Fulani*	39	32.5
Red *Bororo*	64	53.4
Barahaje	2	1.7
Gudali	4	3.3
Bakoloji	11	9.2
Entry and exist		
Open	120	100
Restricted	-	-
Information Availability		
Available	120	100
Source of Information		
Traders	51	42.5
Cooperative Union	4	3.3
Commission agents	54	45.0
Producers	11	9.2
Price Setting		
Forces of Demand and Supply	107	89.2
Purchase Price of Cattle	13	10.8

Source: Field Survey 2013.

The **e**ntry and exist condition refers to the presence or other wise of barriers into and out of the market; result from Table 1 revealed that all the cattle marketers agreed that there was no barrier in cattle marketing. Information concerning prices, demand and supplies is an important element that determines the type of market structure for any given agricultural commodity and the result in Table 1 revealed that the marketers had access to market information with different sources of information available. The main (45%) source of information for the marketers were the commission agents closely followed by co-traders (42.5%). Cooperative unions and cattle producers also provided information to the marketers. It is believed that buyers and sellers will make more rational decisions if they have more information at their disposal pertaining to prices in different market and qualities of various products.

Price determination refers to the different ways the marketers arrived at the prices fixed for their cattle. Suleiman (2007) described pricing strategy as predatory, exclusionary and collusive in the conduct approach in descriptive and organizational market analysis. The result in Table 2 further shows that majority (89.2%) of the traders sold their cattle based on prevailing market price implying that the forces of demand and supply determined the price paid for cattle in the market. Based on the analysis of the elements of market structure, it can be inferred that the cattle market in the study area is monopolistic competitive in nature.

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3.2 Market concentration for Cattle Market

The result of the analysis for the Gini coefficient for beef cattle marketing is presented in Table 2

Table 2: Gini Coefficient for Business Concentration of Traders

No of Cattle Traded	No of Traders	Proportion of Traders (x)	Cumulative proportion of Traders	Total value of sales(#)	proportion of Total Sales	Cumulative proportion of Total Sales(y)	∑XY
1-7	80	0.67	0.67	19,679.000.00	0.183	0.183	0.1220
8-15	25	0.21	0.88	28,330.000.00	0.263	0.446	0.0937
16-20	5	0.04	0.92	12,200,000.00	0.113	0.559	0.0224
21-25	5	0.04	0.96	9,500,000.00	0.088	0.647	0.0259
26-30	1	0.01	0.97	7,500,000.00	0.070	0.717	0.0072
31-above	4	0.03	1.00	30,600,000.00	0.284	1.001	0.03
	120	1.00	1.00	107,809,000.00	1.00	1.00	0.3018
∑XY							0.302
G C		(1-0.302 = 0.698)= 0.70					

Source: Field Survey 2013.

Result in Table 2 measured the level of inequality in market share among the marketers. The result of Gini co-efficient for business concentration of traders was 0.70 which expressed a high level of inequality among the cattle markers. This implies that the market functions with some level of imperfection as it is highly concentrated. This is in conformity with the findings of Mukaso (2012) who reported a highly concentrated market in the marketing of beef cattle in Kaduna state. Similarly Girei et al (2013) reported a Gini coefficient of 0.65 in cattle marketing in Central zone of Adamawa state, Nigeria.

3.3 Constraints associated with Beef Cattle Marketing

Table 3 Present the constraints associated with cattle marketing, the enterprise is associated with numerous constraints.

Table 3: Constraints Associated with Beef Cattle Marketing

Problems / Solutions	Frequency	Percentage	Ranking
High cost of feed	65	54.2	1st
Inadequate capital	56	46.7	2nd
High road charges	55	45.8	3rd
Inadequate security	41	34.17	4th
Poor prices	34	28.3	5th
Inadequate infrastructures	25	20.8	6th
Credit purchase	15	12.5	7th
Poor market infrastructures	11	9.2	8th

Sources: Field Survey, 2013.

*Multiple Response

Marketing of agricultural product in developing countries like Nigeria is associated with numerous constraints (Olukosi *et al*, 2007). Result from Table 3 revealed that high cost of feed was a serious constrain as indicated by 54.2% of the beef cattle marketers. This constrain becomes worse during the dry season when there is a reduction in the availability of livestock feed. Inadequate capital, high road charges and inadequate security in the market were also serious constraints as indicated by 46.8%, 45.8% and 45.8% respectively. Some of the solutions mentioned by the marketers were that good management and effort from their cooperative group can ease some of these problems.

Based on the findings of the study the following recommendations were made:-

- Capacity building on the formation of strong and viable association will go a long way in making the marketers face challenges and improve the marketing system.
- There is a need for linking marketers with financial institutions such that access to credit is enhanced.
- Provision and improvement of infrastructural facilities such as drinking water, shades and electricity will enhance security in the market.

3.4 Conclusion

The market structure revealed a monopolistic competitive market with many buyers and sellers of beef cattle differentiated by colour and breed. The entry and exit condition was free and information available from different sources. The level of inequality was also high. Various constraints were identified to be militating against beef

cattle marketing.

References

Ariza-Nino, E. J., Herman, L., Makinen, M. & Steedman, C. (2000) .

Livestock and meat marketing in West Africa, Volume I. Synthesis, Upper Volta.Center for Research on Economic Development, University of Michigan, Ann Arbor, 204pp.

Central Bank of Nigeria (1999): CBN Annual Report of 1998, Lagos Nigeria, Vol.10 page 41.

Central Bank of Nigeria (2007): CBN Annual Report of 2008, Lagos Nigeria, Vo5 page 22.e

Edward, W.M. Bruce, M.K. & Garden, B. (1993), Statistical Reasoning in Psychology and Education. John Willey and Sons Inc. New York, U.S.A.

Gilbert M. (1995) "A Primer on Marketing Channel and Margin" In: Prices, product and people" Analysis of Agricultural marketing in developing countries. Lynne Reinner Publishes Boulder – London

Girei A. A., B. Dire &B. H. Bello (2013). Assessment of Cost and Returns of Cattle Marketing in Central Zone of Adamawa State, Nigeria, British Journal of Marketing Studies Vol 1(4) pp1-10

Isitor S.U (1990) The Structure and performance of the Beef Cattle Marketing System in Northern Nigeria some Issues for Policy in the 1990s: Paper Presented at the National Conference on Nigerian Livestock and Prospect for the 1990s.

KNARDA (1995) Kano State Agricultural and Rural Development Authority Headquarters, Kano – 1995 Bulletin.

Mbanasor, J.A. (2000). "The future of livestock in Nigeria" in: ukachukwu, S.N., Ibeawuchi, J.A., Ibe, S.N, Ezekwe, A.G. and Abasiekong S.F. (ed.). Animal Production in the New Millennium Challenges and Options: Proceedings of the 25th Annual Conference of Nigerian Society for Animal Production held at the Michael Okpara University of Agriculture Umudike, Nigeria, March 2000.

Mukaso C., Ojo A.O., Adepujo S. O. & Dabo A (2012). Market Analysis of Cattle in Southern Kaduna State. Science Journal of Agricultural Research and Management. Volume 2012, article IDSjour-196

National Population Commission (NPC, 2006) Briefing on World Population day in Abuja as reported by the Guardian Newspaper, No. 28, vol 11885, July 12, 2011. PP 30-35

Okuneye, B. (2002). Livestock Sub-Sector in Nigeria; Challenges and Prospects. In: Diversification of the Nigeria Economy: Policies and Programmes for Increasing Agricultural Output, In:Mordi, C.N.O., Nnanna, O.J., Ukpony, G.E. and Adepegba, A. (eds), Central Bank of Nigeria Billion 26 (3): 16-22.

Olukosi J. O., Isitor, S. U. & Ode, M. O. (2007). *Introduction to Agricultural Marketing; Principles andApplication*. 3rd Edition.G. U. Publisher, Abuja, Nigeria. Pp. 47 – 57.

Oni, O. (2006). Investing in Cattle Fattening. An Article Presented on the Internet by Business Day Media Ltd. http//www.business day on line com/5089-5140.

Sandras, V. O. & Bongiavanni, R. (2004) Use of Lorenze Curves and Gini Coefficient to Asses Yield inequality within Paddocks. Field Crop Residues 90.Pp 303-310.

Solomon B. & Negussie, T. (2002) Livestock Marketing Studies. http/www.fao.org/weirdoes/ILRI/X5542B/5542BOJ.HTM.

Suleman A. (2007) "Economic Analysis of Artisanal Fish Marketing in Kebbi State of Nigeria" An Unpublished Ph.D Thesis submitted to the Department of Agricultural Economics and Rural Sociology, Ahmadu Bello University Zaria pp 57 – 58.

Tewe, O. O. (1997). Sustainability and Development: Paradigms from Nigeria's Livestock Industry. Inaugural Lecture Series. University of Ibadan Press, Ibadan.

Umar, A. S. S., Alamu J.F & Adeniji O.B (2007) Financial Analysis of Small Scale Beef Fattening Enterprise in Bama Local Government Area of Borno State. An Unpublished M.Sc.

Thesis Submitted to the Department of Agricultural Economics and Rural Sociology, ABU, Zaria.