

The Structures and Marketing of Beef Cattle in Katsina State of Nigeria

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Abstract: Beef cattle production is a crops-livestock economic activity in the core cattle producing States of Nigeria. This is because same animals are used in farming and haulage operations and later fattened and sold. Breeding is avoided because of its longer production cycle and thus, males are used. A survey of nine Local Government Authorities (LGAs) in Katsina State was carried out with the view of providing information on beef cattle production and marketing. Results show that animals are purchased between 2.00 and 4.00 years and used for between 2-3 more years. During this period, they are grazed on natural pastures and crop residues. Ownership numbers were for Katsina, Dutsin-Ma and Malumfashi were 3.00, 3.00 and 4.00 pairs, respectively (i.e., within eight animals per household). Also, 59.00, 64.00 and 64.00% sourced their capital internally and only 5.00, 7.00 and 11.00% sourced it from the banks. Operating costs ratios were very low and were: 43.36, 36.50 and 29.02%, respectively. This activity is more profitable in Malumfashi axis because of its proximity to cotton ginneries that requires haulages to and from it and its by-products used as feeds. Dutsin-Ma axis follow, as irrigation activities in it require haulages of inputs and outputs; and by-products used as feeds. It is concluded that this is a profitable venture being limited by land and forage/fodder availabilities. Its amelioration can be enhanced by the development of community-based rangeland and pastures establishment schemes under the management of the farmers in the Wards and used by its registered members.

Key words: Beef cattle, structures, marketing, Katsina State

INTRODUCTION

The estimated cattle population of Nigeria in 2004 was 15.986 million made-up of indigenous breeds of which the *Bunaji* (White Fulani), Sokoto and Adamawa *Gudali* are the major breeds. These animals are owned or managed by the pastoral Fulani, rural farming households and some urban-based Hausa-Fulani. The pastoral Fulani management method is regarded as extensive with massive reliance on social goods-the rangeland for fodder (herbaceous and leguminous plants) that occurs naturally. The structure of ownership are as follows: 81.21, 18.43 and 0.36% owned or being managed by the Pastoral Fulani, Village Farmers and, by urban dwellers especially those of *Fulani* ancestry. The Pastoral Fulani own and manage dairy cows and are therefore, the main breeders. Most of the Village Farmers are Hausawa who own/manage mainly male (beef) cattle because it has shorter cycle, could be used for farming and haulage operations before being fattened and sold. The urban cattle owners are very few and own mixtures of dairy and beef cattle. They are also owners of the few ranches in the country. This cattle population provides an offtake of 1.924 million through slaughter.

There have been various efforts aimed at improving upon the productivity of the herds owned by these groups. The Grazing Reserve project was aimed at settling the pastoral Fulani so that their management system can be upgraded in an integrated manner. Ranches were established with the aim of procuring mature animals for Feedlotting projects established in Galambi and Mokwa. These, together with other thrusts in the crops production subsector were to enhance linkages in inputs and outputs availability and uses. However, successes have been very limited and Nigeria still faces deficit in meat and milk supplies.

Problem statements: Nigeria's estimated cattle population yields a slaughter figure of 1,923,781 million or, an offtake of just 12.03%. Apart from low disposable income that may not allow for optimality in attaining World Health Organization and the Food and Agriculture Organization recommended beef derived protein intake of a minimum of 3.60 Kg per caput/year or, 13.14 Kg, this population and offtake are assumed to be very low vis-à-vis Nigeria's human and other resources. An intensive production method is required on a much more diffused scale than it is now.

Table 1: Crops-livestock production structures

Axis	Famplots owned hectares	Household sizes	Starting number	Number now	Desired number
Katsina	10	16	6	8	8
Dutsin-Ma	6	22	6	6	8
Malumfashi	6	18	6	8	8

Source: Field survey data

Table 2: Ranges of animal ages (years)

Axes	Procurements ages		Disposal ages	
	Minimum	Maximum	Minimum	Maximum
Katsina	2.5	3.5	3.5	5.0
Dutsin-Ma	3.0	3.5	3.5	6.0
Malumfashi	3.0	3.5	3.5	6.0

Source: Field survey data

Feedlotting and fattening could increase supplies from existing stocks of animals. Presently, most of it are carried out by rural farming households instead of integrated cattle ranches and Feedlotting enterprises..

Thus, effective demand of beef is calculated to be 13.14 Kgs per caput per year multiplied by 94 million people or 1,235,160 tons. This will be sourced from an average of 130 Kg beef yield per bull of between 300-350 Kg live-weight. Therefore, in 2004 supplies would have been 1.923 million multiplied by 130 Kg of beef or, 250,009.53 tons. This gives a deficit of 985,109 tons. If fattening and assuming 30.00% of the slaughtered 1.923 (or 576,900) cattle took place and at a daily weight gain of 0.30 Kg for 154 days and at 130 beef per animal, yield (supply) of 3,464.861.40 tons was possible. Therefore, the deficit would have been wiped out and Nigeria would have surplus beef for value additions (minced meat, corned beef, etc.) and for export. Consequently, the massive deficit could be assumed to be cushioned by other sources of meat derived protein such as poultry and goat meats, pork, mutton and fish (Unpublished Completion Report of Mokwa Ranch, 1974:12-36 and Annual Report of Federal Department of Livestock and Pest Control Services B FDL and PCS, 2004. 1-26. Tables 1 and 2 and Annual Report of the Central Bank of Nigeria B CBN B 2003:140-156, Fricke,^[1] :87, 93 and154). Therefore, fattening is a veritable means of increasing supplies.

Conceptual background: Several studies have shown the inhabitants of Katsina State to be admixtures of Hausa and Fulani. The Hausa group are agrarian farmers and mainly own and manage small ruminants (goats and sheep) jointly with cropping activities. This they do by procuring young male animals, train it for animal traction, use it for upto three years, then fatten and sell it for slaughter. The Fulani with cattle were mainly the pastoralists and are termed breeders. This is because female animals comprise over 70.00% of their herds. and, unlike the Hausa, own and manage herds not units made-

up of pairs hardly exceeding a total of ten animals per household Fricke^[1], Griffith and Stenning^[2]. Following Stenning^[2], the Fulani and Hausa groups can be classified into four as:

- Fulltime cattle breeders
- Cattle breeders but with full-time crops cultivation
- Cattle management as a subsidiary activity and
- Special forms of subsidiary cattle keeping and ownership.

Fulltime cattle breeders are the pastoral Fulani that practises transhumance or herd-splitting annually. They own and manage herds and are not involved in major cropping activity (i.e., cultivating upto one hectare). The rest three groups are admixtures of Hausa and sedentary pastoral Fulani. Therefore, production activities are carried out in an integral manner and crop-livestock linkages were assumed to be optimal. Also, they are simultaneously producers and processors of beef cattle. They produce through beef yield arising from fattening while processing from utilization of inputs that will lead to rational weight gains. Hence, within the concepts of utilities or value additions, those of time and form are important in analysing their economic activities.

Generally, animals are used for farming operations thereby allowing for famplots to be timely cultivated, weeded and ridged. These in turn allows for crop residues to be duly transported and stacked at roof-tops or economic trees around the homesteads. Cowpea, sorghum, millet and maize fall into this category. They are also known to procure cottonseed, wheat offal, cottonseed cake and maize offal for supplementation purposes. Therefore, variable or explicit costs can be attributed to their production and processing activities^[1-3].

Therefore, the broad objective of this study is to understand the production and marketing systems of beef cattle in nine LGAs of Katsina State. Other specific objectives are:

- To show sources of capital, variable costs and returns from the activity.
- To categorize the farmers into appropriate marketing concept and
- Proffer suggestions on how to upgrade their production and marketing systems.

MATERIALS AND METHODS

Katsina State was chosen because mixed farming (crops-livestock linkages/integrations) has been the mainstay of its farming activities. The State has the first integrated grazing reserve project near Dutsin-Ma. Finally, the first generation Agricultural Development Project (AD), the Funtua ADP was in it. It also share borders with Niger Republic-Daura and Jibiya-through which importation of mainly beef cattle into Nigeria takes place. Hence, this State has international and interregional livestock markets. Funtua to Malumfashi axis are major cotton producers requiring bulls for haulage of both its inputs and outputs and, its by-products being used for beef cattle feeding. Dutsin-Ma is a centre of massive irrigation scheme (Zobe Dam) again requiring haulage facilities and its by-products used by animals.

The State was divided into three axes B Katsina, Dutsin-Ma and Malumfashi in conformation with its defunct developmental divisions. Each axis was further divided into three clusters (blocs) made-up of LGAs. Those selected are: Charanci, Dutsin-Ma, Katsina, Jibiya, Mashi, Daura, Maluimfashi, Funtua and Sabuwa.

Structured questionnaires were prepared and after having the permissions of the ADPs and LGAs' Chairmen, twelve were administered in each simultaneously, with Rapid Rural Appraisal method of soliciting information from grouped respondents. Three research staff was supervising four technical and six junior staff within the one-week the survey lasted. It was envisaged that a detail production and marketing of beef cattle would follow after this. Unfortunately, funds non-availability did not allow for it to be carried out hence, the publication of this survey results.

Farm Efficiency assessment method as explained by Kahlon and Singh^[4] was used. It is stated as follows:

There are two types of efficiency measures to indicate the volume of business: (1) ratio methods and (2) aggregative measures. The ratio methods are simply per unit returns or costs to the factor inputs involved in the business. These measures help work the rate at which a resource is converted into output, whether or not that resource is being utilized optimally. It provides for the source of attack in the weakness of a farm organization.

There are three Costs related ratios that provide a measure of determining whether costs are high or low. They indicate what proportion of the gross income these expenses consume. Simply increasing production can reduce the fixed ratio, whereas reduction in the operating ratio revolves round the utilization of resources in a most optimal manner.

1. Gross Ratio = Total Expenses/Gross Income
2. Fixed Ratio = Fixed Expenses/Gross Income
3. Operating Ratio = Operating Expenses/Gross Income

The Operating cost ratio was chosen because data used did not emanate from a Pilot Study. Secondly, it was assumed that technological development arising from research is aimed at optimality in factors of production (resources) under the manager. Consequently, it is used in order to show the magnitudes of visible or attributable explicit costs of production. It will be further assumed later that operating costs ratios below sixty percent will be preferred in order to account for other explicit costs not included in research thrust activities (on-station).

RESULTS AND DISCUSSIONS

From the questionnaires administered, the following information is tabulated below as:

Questions were made as simple as possible in both the questionnaires and during the rapid rural appraisal approaches. It was shown that Katsina respondents had higher farmplots but not necessarily household sizes on the average. It was viewed as a coincidence as in all three axes; the starting number was three pairs. The numbers of animals preferred were similar in all three axes. Six hectares of farmplots were also stated as optimum because additional revenue accrues from haulage and farm operations activities. It was also stated that shortages of arable lands were fast becoming limitations to expansion in all the axes.

This study has shown that cattle fattening is an integral economic activity of the rural farming households in the LGAs studied. As will be shown later, it is also profitable. In terms of agricultural development, it is affords the farmers immense impetuses of livestock-crops integration whereby livestock provides the labour saving opportunities, cash inflows and organic manures. Generally, it has been noted in the study areas that problem of land acquisition was a limiting factor to expansion as competition for rangeland resources prevail not only between the farmers themselves, but also, the nomadic pastoral Fulani.

Table 3: Sources of capital (%) and annual costs outlays (in Nigeria)

Axes	Banks	Loans	Self financed	Variable costs	Capital	Total outlay
Katsina	5	4	91	20,000	25000	45000
Dutsin Ma	3	7	90	15000	25000	40000
Malumfashi	11	10	79	20000	25000	45000

source: Field survey data

Table 4: Intra-zonal utilities' costs (in Nigeria/per animal)

Axes	Place	Time	Form	Total
Katsina to others	400	250	200	850
Dutsin Ma to others	350	250	250	850
Malumfashi to others	350	350	200	900

Source: Field survey data

Katsina respondents had higher farmplots but not necessarily household sizes on the average. It was viewed as a coincidence as in all three axes, the starting number was three pairs. The numbers of animals preferred were similar in all three axes. Six hectares of farmplots were also stated as optimum because additional revenue accrues from haulage and farm operations activities. Desired number of cattle are restricted by rangeland opportunities and as already stated, competition for its extraction prevailed. It is plausible to state that maximum of four pairs of working animals (eight) appears to be the optimal number in the study area.

Buying of an animal is based on visual inspection and perceived conformity and from experience, the levels of possible docility that would make it amenable to training and work. Young animals in this case are between 2.50 and 3.0 years and approaching maturity about 3.5 years. There were no clear preferences for any of these apart from conformity aspects.

The ages of culling followed the same pattern and it could start from 3.50 years when owners could determine if the animal would be fit for a minimum of three years of service. This assessment begins immediately and within six months, it is completed. Sales (culling) starts from the fifth year in order to give room for using it for upto two or three years before replacement. It could be stretched for upto a year if speculative stances permit it.

It is only in Dutsin Ma that securing of loan from banks was low. It was highest in Malumfashi being the centre of cotton ginners in the State. Self-financing is very important. Respondents were able to differentiate between capital and variable costs and it appears the amount Abudgeted@ for variable and capital outlays were similar (Table 3). Therefore, it is being assumed that cross flow of information on it prevails. Variable costs are budgeted for because some feeds and fodder (crop residues in particular) are procured. Capital pertains to replacement costs, as assessments of animals are a continuous process. Also, opportunistic and speculative purchases could prevail. Total outlay portrays those engaged in this activity as village elites in terms of stock and flows of cash.

Respondents were requested to give maximum charges for transportation to last destinations within Katsina to other States such as Kano, Kaduna or nearby Zamfara. They were requested to also give maximum estimates of storage/inventory costs made-up of guarding, handling and other management activities at the markets. Finally, they were requested to give estimates for processing the animal. This includes taxes, fares, feeds, drugs and materials for the animals. These are required in determining the levels of perfect competition prevailing and possible effects of transfer costs leading to intra-zonal price differences (Table 4). Again, the differences in costs do not look significant to warrant any analyses^[5].

As already stated, Malumfashi has ginners and thereby, haulage activities are highest there. To measure the efficiency of the activities, the simple operational costs ratio method was used as enunciated by Kahlon and Singh^[4]. It measures the ratio between total expenses divided by total revenue (Table 5). There is no rule of thumbs for strict efficiency method, but ratios that are within for example, 45.00-60.00 will be preferred. This is because it will give room for other implicit costs and explicit ones such as interest rates, exchange rate movements causing inflation higher than price movements among others.

Therefore, this economic activity is profitable because all operating costs ratios are below 50.00% giving room to cover other costs and make profits in excess of the interest rates charged for activities such as this (12.50%). It was not possible to attribute reasons for why Malumfashi indicated highest possibility of profits. This is because the ranges of ages of animals and culling periods were similar. However, because of the availability of cotton by-products notably cottonseed, it is likely that its animals have higher and positive conformity quotients (or weigh more). This was not investigated.

CONCLUSIONS

Rural farming households in the Study Area are viewed as optimising crop-livestock linkages and hence, increasing productivity of beef for the country. This they are doing profitably. Therefore, it is necessary that the three tiers of Government should recognise their efforts. While Katsina State does provide loans for purchases of

Table 5: Analyses of revenue and operational costs ratios

Axes	Farming	Haulage	Sales	Total costs	Total revenue	Operational costs ratio
Katsina	22000	2500	50000	32300	74500	43.36
Dutsin Ma	30000	3500	55000	30475	88500	36.50

Source: Field Survey data

animal traction and its implements, animals and, train the farmers through the ADP system, the limitation they are facing is in the realm of animal nutrition. Therefore, in addition to thrusts presently in operation, there is the need to evolve and sustain:

- Community-based rangeland improvement to increase carrying capacity of the free fodder resources that can be extracted.
- Community-based pastures and silage production so that additional sources of feeds can be available for the registered farmers or, for sale.
- Assurance of supplies of genuine and standard drugs through the control of its marketing in the LGAs.
- Contract forage/fodder growers who will be made to sell their outputs to farmers within specified communities not with capacity to produce it.

Nigeria has immense potentials for increasing the productivity of her beef through the systems enunciated above. What is needed is the political and economic-support wills from notably, the States and LGAs with comparative advantages in cattle production.

REFERENCES

1. Fricke, W., 1979. Cattle Husbandry in Nigeria. A Study of its Ecological conditions and Sociogeographical Differentiations. Heidelberg Geographische Arbeiten, Germany, pp: 23-126, 87-93,120-121, 133: 145-159.
2. Stenning, D.J., 1959. Transhumance, Migratory Drift, Migration patterns of the pastoral nomadic fulani. J.R. Anthropology, London, pp: 87, 101, 103, 146, 209.
3. Okediji, F.A.B., 1973. The cattle industry of Northern Nigeria, 1900-1939. African Studies Program. Indiana University, USA, pp: 13-26.
4. Kahlon, A.S. and K. Singh, 1980. The Economics of Farm Management in India. Allied Publishers, New Delhi, India, pp: 92-93.
5. Ejiga, N.O.O., 1981. The Economics of Cowpea Marketing in Nigeria. Department of Agricultural Economics. New York State College of Agriculture and Life Sciences. A Statutory College of the State university, Cornell University, Ithaca, New York, pp: 14-66.