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Assessment of Beef Marketing and Quality Control within the Abeokuta Metropolis, Ogun State, Nigeria

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Abstract

Beef marketing is a profitable trade in the Abeokuta metropolis and it offers the potential of growing further than it is today. However, possibilities of further development is hampered by socio economic characteristics of marketers and other serious challenges like high prices, transportation cost, infrastructural capacity, heavy taxes and unofficial charges. In the context of the above challenges, this paper aim at assessing beef marketing in the Abeokuta metropolis based on factors such as the number of beef markets within Abeokuta, membership of beef marketing association, sample representation of interviewed members and respondents, socio-economic characteristics of beef marketers, sanitation and infrastructural capacity. Primary data is generated through a structured questionnaire from a sample size of 41 respondents in three main beef marketing locations controlled by the Abeokuta Beef Sellers Association within a period of three weeks. Pre-testing of the questionnaire was done at Kara market on the outskirts of the study area. Interviews with focus groups and other secondary sources were also used. The results was analyzed using descriptive statistical analysis and shows that younger people are more involved in the trade and that lack of education and poor sanitary conditions affects the quality of beef sold to consumers. It further shows that high cost of beef is associated with high transport cost, taxes and unofficial charges.

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Socio-economic, beef marketers, quality control, infrastructure, sanitation.

Introduction

It is evident that there is an increasing consumer demand for cattle and its products worldwide as a result of population growth and rural urban migration. On the global stage, there are 1.5 billion heads of cattle, many of which are used for dairy (FAO, 2019). The growing importance of beef and its huge demand has been branded by researchers as livestock revolution (Thornton, 2010; Pica-Ciamarra and Otte, 2011).

Industrial countries have accelerated their production capacity to match with the growing demand for livestock but Sub Sahara Africa still lag behind (Ehui, 1993; Alexandratos and Bruinsma, 2012; OECD/FAO, 2016). Rising populations and incomes in developing countries are likely to double demand for livestock products by 2020 (Delgado, 2001). This strong demand has potential to improve profitability for farmers, including those in northern Nigeria, but will require improved animal feeding in both semi-intensive crop livestock and more

extensive livestock systems. The low production capacity has to be addressed in order to meet the rising demand and increase the supply of cattle to markets in the southern part of Nigeria. One of the driving factors of cattle marketing is the interplay between demand and supply which is related to income and urbanization (FAO, 2019). This is a crucial factor based on the premise that a good diet, adequate for growth, development and maintenance of health, is a variety of food products that can supply enough of the complete range of nutrients, especially from animal protein sources. Therefore, it means that an improvement in human diet is mostly reliant on the selection of complementary foodstuffs that provides the required nutrients needed. One of the relevance of beef is that it complements most diets and it is more important for those with limited access to vegetable foodstuffs. Evidence suggests that beef is one of the most important sources of iron because meat products are highly concentrated with high quality protein and amino acid (Pighin, 2016). It is a source of easily absorbed iron and assist the absorption of iron from other foods as well as zinc, and is a rich source of vitamins. By providing such nutrients, beef consumption can alleviate common nutritional deficiencies (Taljaard, 2006). Beef consumption has been identified as an option of reducing anaemia particularly in women and children as the required average daily intake of meat products for adequate nutrition is 1g per kg of body weight (Vougat, 2016). In developed nations, this is attainable but in most developing countries, it is a huge challenge. Ideally, the percent of daily protein intake from animal sources should be 30 to 50 percent in developing countries as it provides an optimal range of amino acids. However, the average protein intake in developing countries (Nigeria inclusive) is as low as 15g per person per day compared to 60g per person per day in developed countries (Vougat, 2016).

In Nigeria, Cattle and beef trade provides the largest market with millions of Nigerians making their livelihood from various beef-related enterprises (Bobola, 2015). As a leading country in cattle production in Sub Sahara Africa, Nigeria had over 14.7 million cattle consisting of 1.5 million milking cows and 13.3 million beef cattle in 2008 (Nwigwe, 2016). About a percent of this population is managed commercially while the rest is traditionally managed and this accounts for 13% of Nigeria's agricultural GDP (Ibid). It is no guess saying that the Nigerian cattle industry is a vital means of livelihood for a significant population of the country and it is also the predominant source of protein. In

many circles, cattle serve as a social status symbol wherein the more of it that is possessed by a family, the more prominent and rich that family is regarded (Bobola, 2015). Thus, cattle production and marketing are essential for employment and better livelihood for many Nigerians (Ibid). The underlying importance of cattle production and marketing supports the common adage that it constitutes a band wherein the lack of development in one will necessarily obstruct development in the other (Beierlein, 1991).

A prominent feature of cattle production and marketing in Nigeria is the process of transporting cattle from the Northern part of Nigeria where it is largely produced to the rest of Nigeria for consumption purposes. The northern part of Nigeria is notable for producing cattle while the demand for cattle is usually from the south where most of the final consumers reside (Kubkomawa, 2018). The cattle marketing process makes possible the delivery of cattle to the buyers in the form, place and time needed. It is vital to understand the process of bringing the cattle from where they are surplus or produced to where it is in shortage or highly demanded. This process needs to be fully understood to enhance the efficient working of cattle markets, which is significant in achieving sustainable and profitable commercialization in the livestock sub-sector in Nigeria (Mafimisebi, 2012). Cattle marketing is an essential activity that motivates further production and it is vital to both the producer and consumer of cattle, especially when efficiently done. It ensures that the producer gets remunerative price for the product to continue to produce while the consumer gets it at an affordable price that stimulates continued consumption (Tham- Agyekum, 2010). In Nigeria, the last decade witnessed the decline of cattle supply while demand for it has been on consistent increase (National Livestock Project Department, NLPD, 2016). Apart from profit motives, another contributing factor to this situation is the cost of transportation and its associated menaces like unofficial charges at checkpoints, increment in fuel prices that ultimately results in increment in transport cost per cattle head or the personal greed nature of traders. This is as a result of the considerable spatial separation of production area from consumption area and high handling cost especially in relation to cattle transportation (Tham-Agyekum, 2010). These are crucial challenges in the Abeokuta metropolis in Ogun state, Nigeria where beef consumption is rather high. Cattle is mostly imported to Ogun state, southern Nigeria from the northern part of Nigeria, thus rendering the imbalance of low supply with high demand, consequently resulting to higher price in the midst of scarcity. It is within this

context of low supply and high price of beef that this paper seek to investigate the socio economic characteristics of beef marketing, infrastructural capacity and quality control measures within the Abeokuta metropolis in Ogun state, southern Nigeria. The methodology is based on primary data generated through a structured questionnaire executed among forty one (41) butchers and marketers as sample size from three main beef markets under the administration of the Abeokuta Beef Sellers Association. This represents fifty five percent of the association's 74 members in the three markets and 50 percent of the six main beef markets that are directly administered by the association. Secondary data from textbooks, scientific articles and the internet will also complement the information derived from the questionnaire.

There have been several research papers on cattle marketing and the importance of cattle products in Nigeria. Some of these literatures are largely concerned about the food value derived from beef while others focused more on the socio economic implications of the trade. However, none has specifically focused on analysis of beef marketers in Abeokuta metropolis in Ogun state, Nigeria. Thus, this paper seeks to cover that gap. Literature reviewed for this work includes past publications on the subject matter that borders on states within Nigeria.

Fasae and Bakare (2016) analyzed cattle handling, hygiene and slaughtering techniques in cattle markets in Abeokuta and environs, Ogun state, Nigeria. The study suggests that the welfare of animals in the selected cattle markets is inadequate due to poor infrastructural facilities and low literacy level of handlers as well as indiscriminate slaughtering of cattle.

It was revealed that bacterial infections result from poor hygienic situations in the studied markets, completely ignoring the socio-economic implications of beef marketing in the study area. This research therefore focuses on the socio-economic, infrastructural capacity and sanitary complications in beef marketing with thorough empirical analysis in order to lay bare the underlying issues. The empirical study by Kubkomawa *et al.*, (2018) examined beef production and marketing in Nigeria and identified the relationship between the beef producers, marketers and intermediaries from production to sales unto the final consumers. Among the problems highlighted were lack of accurate market information, high cost of transportation emanating mostly from unofficial payments at checkpoints on the roads,

payment of heavy taxes, lack of infrastructure and credit facilities, fluctuation in demand and supply, lack of security within the market place and buying of stolen animals. The article found evidence that market prices of beef in Nigeria are determined by visual evaluation using such indicators like breed, age, sex, colour, body condition score, temperament, anus stain and the purpose of buying the animals.

Also, Tibi and Aphunu (2010) contributed to the knowledge of beef marketing in Nigeria but also fell short of clarity and validity. The study determines basic factors that influence cattle market in Delta state.

Random selection of six markets as sample was adopted for a questionnaire distribution. The highlighted factors that determine the supply of cattle are transportation, condition of road used for transportation, means of transportation, number of cattle sold per day, the price of the cattle, cost incurred by marketers.

Kubkomawa *et al.*, (2018) analyzed the issues of beef production and marketing in Nigeria but a lot of issues were neglected which need to be addressed. Against the backdrop of such limitations, this article will seek to address the above issues in order to ensure a valid conclusion by focusing on the study area, reliability of the instruments in the questionnaire, respondents and the factors that determine market prices of beef within the study area. Focus is also placed on assessing the main factors that characterize beef marketers in the study area, assessing the infrastructural capacity and quality control of beef marketing within the Abeokuta metropolis.

Objectives

The main objective of the study is to examine the factors that influence beef marketing and also assess quality control mechanisms in the Abeokuta metropolis, Ogun State, Nigeria.

The specific objectives are to:

Describe the socio-economics characteristics of the beef marketers and butchers in Abeokuta metropolis;

Examine the factors that influence the price of beef and its supply

Assess quality control measures in the context of beef marketing within Abeokuta

Materials and Methods

Primary data is collected using structured questionnaire distributed among sixty (60) cattle butchers and cattle marketers as target group. Forty one of the questionnaires were completed by the respondents. These butchers and marketers that completed the questionnaires make up the sample group. Four students from the Federal University of Agriculture were engaged as enumerators to administer the questionnaire within Abeokuta metropolis, Ogun State, Nigeria. Interviews and conversations from focused groups are also used to complement the primary data. Secondary information from the internet, text books, journals and organizations will be used to complement the primary data, when necessary

Study Area

The study was carried out in Abeokuta comprising of north and south local council areas in OgunState, located between longitude 30° 30' north and 30° 37' east and latitude 7° 0' and 7° 5' north. Abeokuta has a population of 250,278 thousand inhabitants (2006 census). The two important rivers in the town are the Ogun and Oyan rivers both flowing and joining in a confluence north of Abeokuta, the State capital. The study area lies entirely within the low land area within altitude of between 0-200m above sea level. The town is characterized by two distinct topographical units: the flat low-lying areas mostly adjacent to the rivers and the uplands which are flat to slightly undulating plateau of the low elevation terrace and further from the rivers. The areas are not naturally flooded but with high water table due to heavy soil texture and a natural drainage system for evacuating the excess rainfall. Three rock formations can be identified in the two local government areas: Sedimentary rocks which are more extensive and cover about 69% of the study area; metamorphic rocks which occupy about 20% of the study area; and hydromorphic rocks which are made up of mainly alluvial parent materials and occupy the remaining 11% of the two local government areas. Most soils in the area contain a mixture of coarse alluvial and colluvial deposits and are largely forested (Ojo, 1990).

Data Collection and Sample

Primary data was collected using structured questionnaire distributed among sixty (60) cattle butchers and cattle marketers as target group. Forty one of the questionnaires were completed by the respondents.

These butchers and marketers that completed the questionnaires make up the sample group. Interviews and conversations from focused groups are also used to complement the primary data. Secondary information from the internet, text books, journals and organizations will be used to complement the primary data, when necessary. The design of the questionnaire is based on the above objectives. Information on variables such as the socio-economic characteristics of beef marketers, market distribution, number of respondents, percentage representation of respondents, quality control measures, sanitation of abattoirs and sample market locations in the study area were collected from the respondents.

Pre-testing questionnaire

Preliminary or pre testing of the questionnaire is done within the Kara market located at the outskirts of the Abeokuta metropolis. The purpose was to determine the relevance of the instruments of the questionnaire and to further address issues that were hitherto neglected.

Data analysis

Data generated from the survey was subjected to descriptive analysis such as percentages, frequency distribution, parameters and means to explain the socio economic characteristics of beef marketers, the factors influencing beef supply and the quality control measures of beef marketing in Abeokuta metropolis.

Results and Discussion

Distribution of Respondents across the surveyed market

This will include the total number of beef markets where data is collected, the total number of association membership of each of the markets, the total number and percentages of members interviewed and the percentage of respondents from the sample markets.

Markets and their membership

Figure 1 above represents the result from the questionnaire survey conducted within the Abeokuta metropolis, Ogun state, southern Nigeria. The chart reveals that 3 main beef markets (Allah dey, Odo-eran and Aladesanmi markets) were covered during the survey. This represents 50 percent of total number of 6 main markets within the Abeokuta metropolis. The three

markets fall under the domain of the Abeokuta Beef Marketers association with 74 registered members distributed as follows; Allah dey market with 22 members, Odo-eran market with 28 members and Aladesanmi market with 24 members

Interviewed members/respondents

From figure 1 above, the number of interviewed members or respondents is 41 out of a membership of 74 from the three sample markets. This represents is distributed as follows: Allah dey market with 22 members had 11 respondents interviewed; Odo-eran market with 28 members has 16 respondents interviewed and Aladesanmi market with 24 members had 14 respondents interviewed

Percentage of interviewed members from total membership

Figure 1 above reveals that 50 percent of the membership from the Allah dey market were interviewed as sample respondents. Furthermore, the chart reveals that 57 percent of the membership from Odo-eran market were interviewed as sample respondents. In Aladesanmi market, chart 1 above reveals that 58 percent of the membership were interviewed as sample respondents. Thus, the total percentage of interviewed members from the three sample markets is 55 percent as seen in chart 1 above.

Percentage of members from total respondents

This category represents the percentage of marketers that completed the questionnaire and form the category of respondents. The total number of respondents is 41 out of a membership total of 74 as seen from chart 1 above. This represents 55 percent of the total membership represented and 45 percent unrepresented from the three markets. The chart above reveals that 27 percent of the 41 respondents were from Allah dey market while 39 percent of the 41 respondents were from the Odo-eran market. It further shows that 34 percent of the 41 respondents were from the Aladesanmi market

Socio-economic characteristics of meat sellers

This category will include the age and sex distribution of the respondents, marital status, tribal connections, family social status, educational status, sources of cattle, average quantity of beef slaughtered daily (kg) and average quantity of beef sold daily (kg)

Age Distribution

From the above table, 15 respondents which represents 36.59 percent were between the ages of 30 and 40 while only 8 respondents representing 19.51 percent were above the age of 50. Only 6 respondents were below the age of 30 years while 12 respondents were between the ages of 40 and 50 years, representing 14.63% and 29.27% respectively. This implies that younger people are more engaged in beef marketing in the study area than older folks. This is as a result of difficult and hectic nature of the business which requires strength and agility in chasing the animals, restraining them, transporting and slaughtering the animals. Older folks are also very much active in the business in order to earn legitimate income but are mostly assisted by the youths. This result consistently agrees with the findings of FAO (1990, 2005 and 2015) which suggests that younger people are more active in the cattle business in Africa generally. The result further buttressed findings from Mafimisebi *et al.*, (2013) that suggested that majority of beef marketers in Nigeria fall within the age brackets of 41 and 50 years.

Sex Distribution

The above table also reveal that 36 respondents were male and only 5 were female. This represents 88 and 12 percent respectively. This again further emphasized the physical demands of the business which mostly involves wrestling to control the animals and in many cultures in Africa, animal slaughtering is an exclusive role performed by men only. It is also a business full of risks from attacks from thieves and other hazards like exposure to wild and dangerous animals within the cattle fleet. It is also a common narrative that people have been killed in the past by some sharp-pointed horned wild and temperamental animals.

This result agrees with the findings of Fenn (2007) and Auwal (2015). Moreover, although there is no scientific basis of proof, it is believed that most marketers use charms to enable them maneuver their ways easily without any challenge from the animals. Others use charms to make animals docile and easy to handle, to make sellers to sell at a giveaway price or buyers buy with good price and for protection against theft and intimidation from rivals. These charms are believed to be dangerous for women who bear children as pregnancy can be easily destroyed using them, thus limiting the number of women engaged in the trade. Iro *et al.*, (2014) confirmed this finding that cattle are usually managed and sold by male family members

assuming automatic rights to all cattle, making it difficult to determine cattle ownership by female family members.

Marital status

Table 1 above also reveal that 35 respondents were married, 2 were divorced and 4 were widows. This represents 85, 5 and 10 percent respectively. In effect, this shows that beef marketers in the study area are made up of responsible citizens who caters and support their respective families. It further shows that if the business is adequately supported by the concerned authorities, it can be a profitable business that could keep families sustainable. The results are in agreement with similar findings obtained by Kohls and Uhls (2005).

Tribal distribution

The result further indicated from table 1 above that 28 respondents are from the Yoruba tribe, 10 respondents were Hausas and 3 were from other tribes. This represents 68, 24 and 8 percent respectively. In the recent past, this trade was dominated by the Hausas and Fulani tribes but given the fact that Ogun state lies in the southern part of Nigeria, far away from the North where cattle rearing is predominantly carried out by the Hausas and Fulanis, and given the fact that Ogun state is in the heartland of the Yoruba tribe, it is logical that the local tribe dominates the business. In all three of the markets where this study was executed, the language of business was usually Yoruba, thus making it easier for the Yoruba traders than other tribes. The few beef marketers from other tribes as recorded by this study are those categories of people who don't have alternative business; otherwise they would have opted for other businesses. Most of them serve under their masters as apprentices with little or no capital of their own.

Family social status

Information for the survey of this study as shown in table 1 above reveals that 37 respondents were heads of their households while only 4 respondents were dependents. This represents 90 and 10 percent respectively. This further shows that the individuals involved in the business in the study area are mostly responsible people who takes care of family responsibilities. The low percentage of dependents in the business can only show how the business is controlled in terms of capital availability and other restrictions bordering on cultural practices in the study area.

Educational status

Table 1 above presents the educational qualifications of beef marketers within the study area. Primary education dominated with 34 respondents, followed by 5 secondary education respondents and 2 respondents were completely without any formal education. This represents 83, 12 and 5 percent respectively.

This implies that, majority of the beef marketers have at least some form of education because of Ogun state policies with regards to education which ensures compulsory education for all primary school going children. The 2 respondents who had no formal education were later discovered to have migrated to Abeokuta at later stage of their life when the compulsory education no longer affects them. The results however do not agree with that of Mubi *et al.*, (2012) who reported similar findings in Mubi South L.G.A., Adamawa State Nigeria but agrees with the findings of Wakili (2006), who reported more cattle marketers with formal education in Gombe State, Nigeria.

Source of cattle for slaughter

The source of cattle for daily slaughter and sale are from outside Abeokuta and some are from outside Abeokuta as shown in table 1 above. Only 16 respondents get their cattle from Abeokuta while 25 respondents get theirs from outside the Abeokuta metropolis. This represents 39 and 61 percent respectively. This implies that majority of beef sold within the Abeokuta metropolis is transported from elsewhere because cattle herding and rearing is not part of the common economic activities of states within the Southern hemisphere of Nigeria. This result agrees with the findings of Tibi *et al.*, (2010) who reported that cattle is produced in the northern part of Nigeria and transported to the south where it is scarce and command a higher price comparatively.

Average quantity of cattle butchered daily

From table 1 above, result shows that only 2 respondents butchered two cows (500 kg) daily while 5 respondents butchered at least one cow (250 kg) every day. As many as 18 respondents butchered one quarter of a cow (62.5 kg) daily and 16 respondents butchered half a cow (125 kg) every day. In percentage terms, only 5 percent butcher two cows daily while 12 percent butchered one cow daily.

Table.1 Socio economic characteristics of respondents.

Parameters	Frequency	Percentages
Age of Respondents		
less than 30 years	6	14,63
Between 30 and 40 years	15	36,59
Between 41 and 50 years	12	29,27
Above 50	8	19,51
Total	41	100.00
Sex of respondents		
Male	36	87,80
Female	5	12,20
Total	41	100.00
Marital Status		
Married	35	85,37
Widowed	4	9,76
Divorced	2	4,88
Total	41	100
Tribe		
Yoruba	28	68,29
Hausa	10	24,39
Other	3	7,32
Total	41	100
Family Social Status		
Household head	37	90,24
Dependent	4	9,76
Total	41	100
Educational Status		
Primary Education	34	82,93
Secondary Education	5	12,20
No formal Education	2	4,88
Total	41	100
Source of Cattle for Slaughter		
Within Abeokuta	16	39,02
Outside Abeokuta	25	60,98
Total	41	100
Average Quantity of beef butchered daily		
Quarter cow (62.5kg equivalent)	18	43,90
Half cow (125kg equivalent)	16	39,02
1 cow (250kg equivalent)	5	12,20
2 cows (500kg equivalent)	2	4,88
Total	41	100
Average Quantity of beef sold daily (Kg)		
1 - 62.5	21	51,22
62.6 -125	13	31,71
126 – 250	5	12,20
251 – 500	2	4,88
Total	41	100,00

Source: Computed from Author's survey data, August 2020

Table.2 Sanitation of Abattoirs/markets.

Type of abattoir Traditional	Markets Allah dey market Aladesanmi
Automated	Odo-eran market
Water Facility	
Borehole	Allah dey market
Pipe borne water	Odo-eran market
Well water	Allah dey market Aladesanmi
Nearby streams	Odo-eran market

Source: Computed from Author’s survey data, August 2020

Table.3 Transport cost and price of cattle (per kg).

Variables	NGN (₦)	US\$ (\$)
Price of a matured cow (250kg)	200.000	525.61
Retail price per kilogram (kg)	2.000	5.26
Unofficial payments at a checkpoint	1.500	3.94
Average transportation cost of a matured cow by vehicle	7.500	19.70
Average transportation cost of a matured cow by motorcycle	4.000	10.51

Note: Number of checkpoints varies by distance and local authorities decisions

Source: Calculated from CNB and computed from Author’s survey data, August 2020

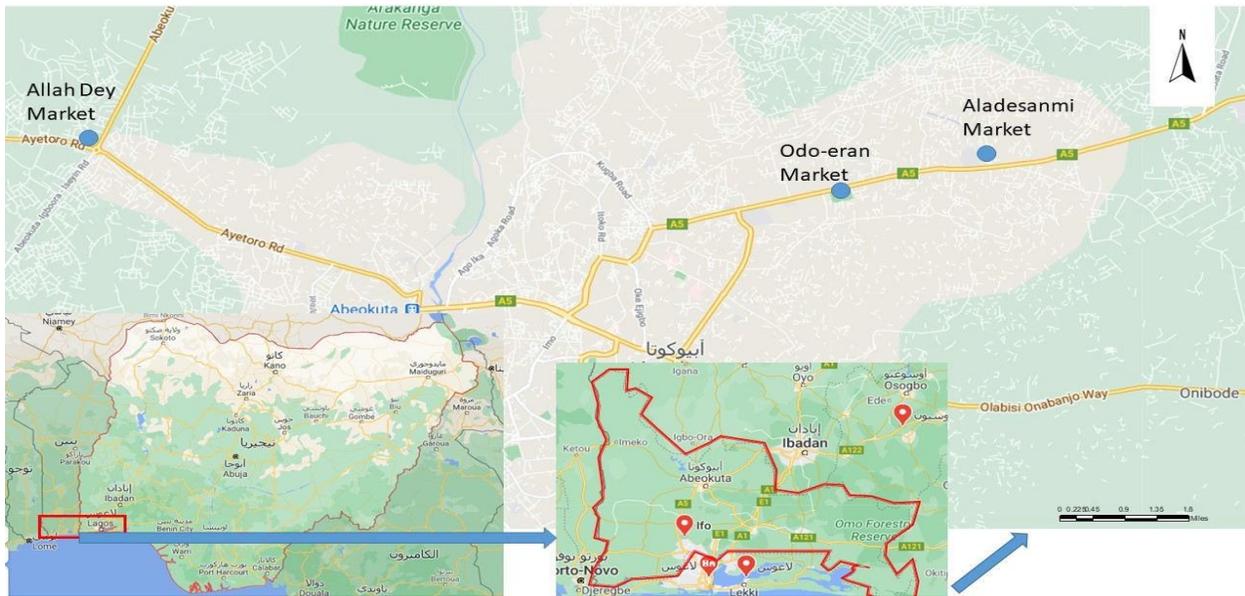
Table.4 Sources of cattle, Transportation means, Number of checkpoints and Respondents.

Cattle sources outside Abeokuta	Transport means	Number of checkpoints	Number of respondents
Ilesha	vehicle/motorcycle	5 to 10	4
Bariba	vehicle/motorcycle	5 to 10	3
Madiguru	vehicle/motorcycle	5 to 10	3
Budomusa	vehicle/motorcycle	5 to 10	2
Saki	vehicle/motorcycle	5 to 10	2
Owdo	vehicle/motorcycle	5 to 10	3
Iseyin	vehicle/motorcycle	5 to 10	4
Ibariba	vehicle/motorcycle	5 to 10	1
Igboora	vehicle/motorcycle	5 to 10	2
Niger	vehicle/motorcycle	5 to 15	1
Total of respondents			25
Cattle sources within	NA	NA	
Abeokuta			
Olodo	NA	NA	4
Allah Dey Randa market	NA	NA	8
Dodo	NA	NA	4
Total of respondents			16

Note: Number of checkpoints varies by distance and local authorities decisions.

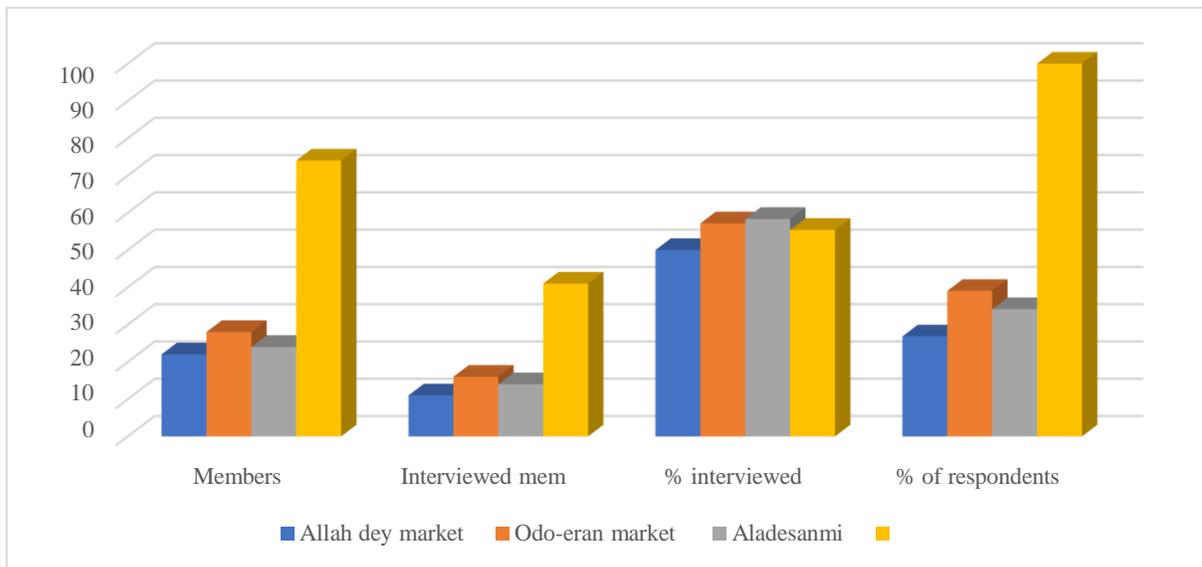
Source: Computed from Author’s survey data, August 2020

Fig.1 Map of Abeokuta showing the three sample markets



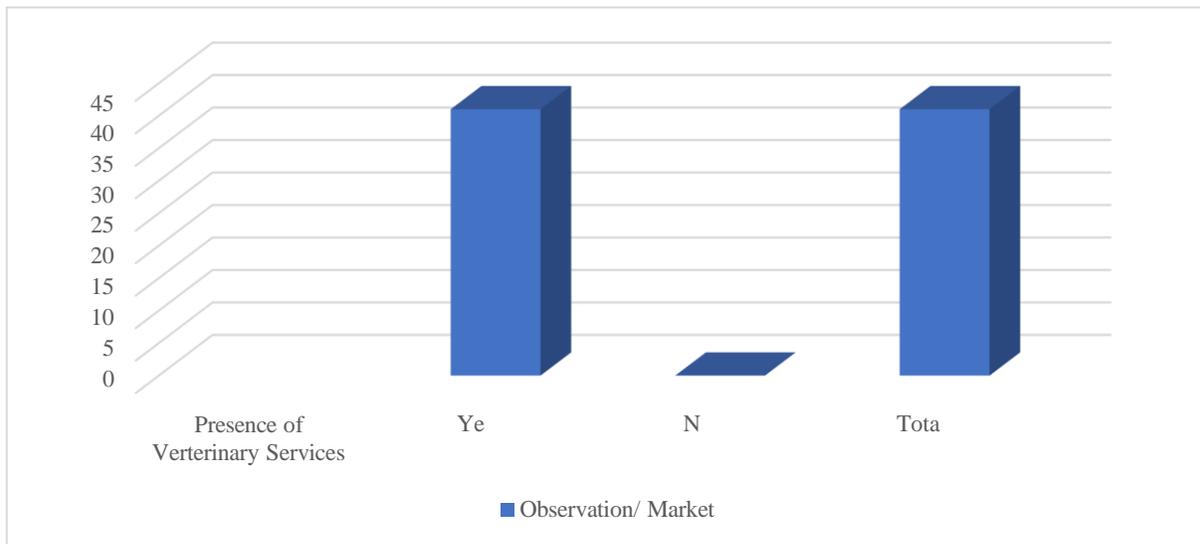
Source: Author's design from google maps

Fig.2 Distribution of Respondents across the surveyed market.



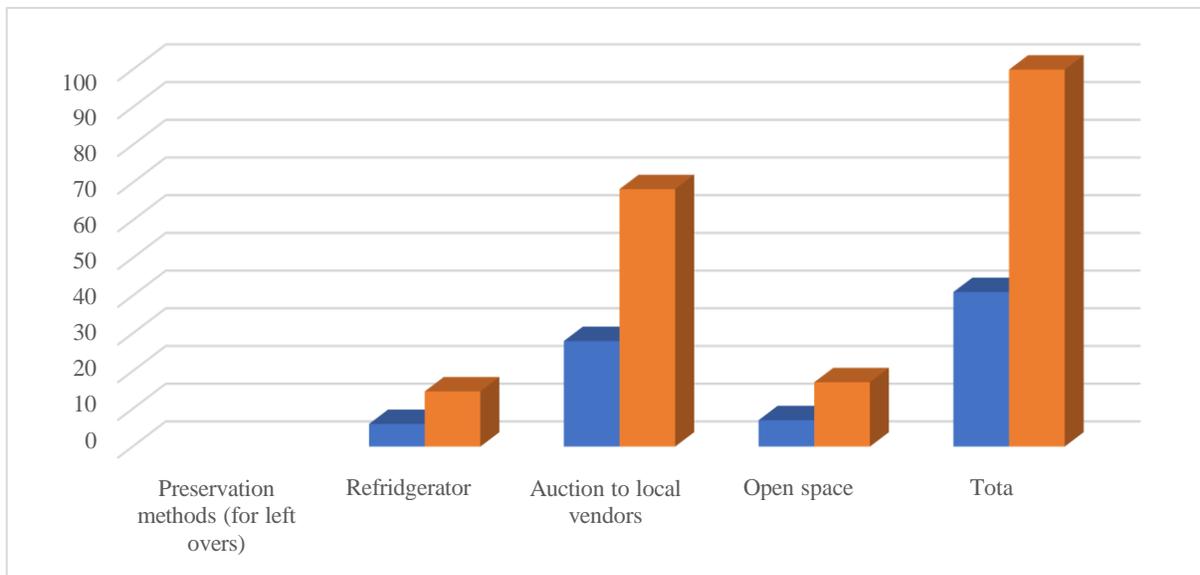
Source: Computed from Author's survey data, August 2020

Fig.3 Presence of veterinary experts at abattoir/market



Source: Computed from Author’s survey data, August 2020

Fig.4 Preservation methods of leftovers.



Source: Computed from Author’s survey data, August 2020

Furthermore, 44 percent butchered one quarter of a cow while 39 percent butchered half a cow. From discussions with focus groups, some marketers have developed a scheme of combined financial resources to maintain themselves in beef marketing. This means that four marketers combine their resources and butcher a cow daily which they will share equally among themselves to have one quarter each. The same corporation is true for two people combining their resources to butcher one cow and share half apiece between themselves.

Average quantity of beef sold daily (kg)

Result from the questionnaire survey as shown in table 1 above suggests that 21 respondents, representing 51 percent sold from 1 to 62.5 kg of beef daily while 13 respondents, representing 32 percent sold from 62.6 to 125 kg on daily average.

Furthermore, 5 respondents which represents 12 percent sold 126 to 250 kg on daily average while 2 respondents representing 5 percent sold 251 to 500 kg on daily

average. This result also supports the findings of Tibi *et al.*, (2010) that average beef sold by marketers vary between half a cow to 3 cows daily and it depends on factors like the number of customers, quality of beef and the price offered.

Quality Control Assessment of the Abattoir/Market

This area will include the observation and percentage representation of quality controllers presence before and after beef slaughter and preservation methods for leftovers on daily basis.

Result from figure 2 above shows the observation and percentage frequency of the presence of veterinary inspectors before and after the slaughter of a cattle.

All the 41 respondents agreed that veterinary representatives from the Ogun State Veterinary Association always inspect the cattle before slaughter and again inspects the beef before sales to the final consumers. This result is supported by Adebawale *et al.*, (2019) who concluded that mass education across ogun state has positively reflected on hygiene practices among beef marketers and butchers.

However, this result contradicts findings of O.A. Fasae and M.O. Bakara (2016) and also debunks the conclusive result of Charity *et al.*, (2019) which concluded that the hygiene practices in beef marketing within Nigeria is below Codex Alimentarius recommended standard of FAO/ WHO and furthered that veterinary inspectors often neglect their roles or are compromised by beef marketers to ignore bad quality beef in the market. Difference in these conclusions can be attributed to questionnaire instruments and affiliation of the respondents to the veterinary representatives.

The survey also assessed the preservation methods by beef marketers in the sample markets. Figure 3 above reveals that three distinct methods are used to preserve beef leftovers as follows; kept in refrigerator, auctioned to local vendors or kept in open space.

From figure 3 above, 6 respondents which represents 15 percent confirmed that their beef leftovers are kept in a freezer for onward sales on the following day.

Furthermore, 28 respondents which represents 68 percent agreed that their leftovers are auctioned to local vendors while only 7 respondents representing 17 percent confirmed that their leftovers are kept in an open space.

Sanitation and infrastructural capacity of abattoirs/markets

The result in this section will focus on the type of abattoirs in each of the observed markets, means of water supply and accessibility for the marketers and butchers.

Sanitation of the abattoirs and markets was also assessed during this survey and this was examined based on the availability of basic amenities like access to water and type of abattoir in each of the sample market locations. From table 2 above, result shows that both Allah dey market and Aladesanmi market have traditional abattoirs and only Odo-eran market has an automated abattoir. In like manner, Allah dey market has borehole and water well as the main source of water for both the abattoir and the market. Aladesanmi market relied entirely on water well for source of water while Odo-eran market remain the only one with pipe borne water and also have access to nearby stream.

Price and Transportation cost of cattle

Result in this section explains the price of a matured cattle, the retail price of beef per kilogram, the transport cost of a matured cattle from source to points of sale, the number of checkpoints from source to Abeokuta markets, unofficial payments at checkpoints. It further identifies the sources of cattle both outside and within Abeokuta metropolis with corresponding respondents.

Table 3 above shows that the wholesale price of a matured cow weighing 250 kilograms costs 200,000 naira (NGN) which is equivalent to 525.61 United States Dollars (US\$).

The table also shows the retail price of beef per kilogram in the Abeokuta metropolis to be 2,000 naira (NGN) which is equivalent to 5.26 United States dollars (US\$). According to the world's largest cost of living database that compares prices indexes globally (Numbeo), the retail price per kilogram for beef meat in Nigeria is 4.06 US\$ and thus shows that beef price per kilogram in Abeokuta is rather expensive. This high cost is apparently due to the cost of transportation and unofficial payments at checkpoints between the source of cattle production to Abeokuta metropolis. It can be shown from the table above that each check point collects 1,500 NGN, an equivalent of 3.94 US\$. Furthermore, table 3a above shows both the means and the average cost of transportation of a matured cow from

the sources of production to Abeokuta. By vehicle, each matured cow costs 7,500 naira and 4,000 naira by motorcycle representing 19.70 USD and 10.51 USD respectively. Table 4 above shows the sources of cattle brought to the Abeokuta metropolis, the means by which cattle is transported, estimated number of checkpoints and corresponding respondents. It shows that 25 respondents buy their cattle from outside Abeokuta and only 16 respondents buy their cattle within Abeokuta. This implies that marketers prefer to buy their cattle from outside Abeokuta metropolis, despite the unofficial payments at checkpoints and the transport cost. This implies that cattle prices in the north and other areas are relatively cheaper than in Abeokuta.

From the table above, information about means of transportation and number of unofficial checkpoints are not available because the cows are bought within Abeokuta. The number of corresponding respondents is only 16 which implies that the price of a matured cow within Abeokuta is relatively expensive. Discussions with focus groups did confirm that the marketers that buy their cattle within Abeokuta are mostly from the older age bracket who lack the strength and mental fortitude to undertake long distance journey to sources outside the Abeokuta metropolis.

The beef marketing in the three sample markets were characterized by youthful aged men with low level of formal education, inadequate sanitary and infrastructural facilities, ineffective presence of veterinary representatives which has led to poor quality beef marketing within the study area. Furthermore, unofficial payments at checkpoints between northern Nigerian and the study area in the south has contributed to increase transport cost which in turn has resulted to high price of beef in the Abeokuta metropolis. Thus, it is recommended that veterinary representatives receive adequate training for their job that will ensure corrupt free and effective inspection of cattle before slaughter, improve or replace traditional abattoirs with automated ones, ensure better water supply to the abattoirs and markets and implement adult literacy program for the youths engaged in the business. Further to the above, it is recommended that the respective authorities address the issue of unofficial payments at checkpoints, reduce the number of checkpoints on the road and ensure lower transport cost in order to lower the price burden on the final consumer of beef in the Abeokuta metropolis.

Finally, the Nigerian Government should ensure that butchers and beef marketers comply with existing

Federal regulations regarding the implementation of standard sanitation procedures. It is also recommended that government and state actors need to provide basic infrastructural facilities and effectively implement robust policies aimed at quality control and market prices from the butchers and marketers.

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