Assessment of Welfare Status of Bushmeat Traders in the Post-Ebola Era in Kwara State, Nigeria

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Abstract

Bushmeat enterprise is an activity with the potential to improve household livelihood. However, the Ebola virus disease outbreak in Nigeria in 2014 altered the business. This study assessed the welfare status of 134 bushmeat traders in three agro-ecological zones in Kwara State, Nigeria. This study used the descriptive design. The purposive sampling technique in the selection of respondents and the stratified random sampling in selecting the markets from the zones were used. The proportion of bushmeat sellers in each market determined the number of respondents selected per zone. Descriptive statistics, FGT (Foster, Greer, and Thorbecke) index and a multiple regression model were the tools of analysis. The results revealed that majority of bushmeat sellers were female, constituting 59.7% of the population. The mean per capita expenditure of the household was ₦14,004, and breakdown of the consumption expenditure showed that food represents the highest share (28.53%). The FGT index revealed that 35.8% of the sampled bushmeat traders were poor. Determinants of welfare status of traders were their total household size, years of experience, income from bushmeat sales, and revenue from other sources. This study suggests measures needed to improve the welfare status of bushmeat traders in the study area considering the effect Ebola outbreak had on their well-being.

Keyword: expenditure, household, income, livelihood, well-being

Introduction

The utilization of wildlife has essential livelihood benefits in tropical places worldwide. According to the Department of Environment, Fisheries and Rural Affairs (2006), wild animal meat is often called bushmeat particularly in Africa where the forest is called "bush" and the animal from the bush is called "bushmeat". Nasi et al. (2008) stressed that bushmeat plays a special role in preserving the cultural identity of the indigenous people, acquiring animal parts as cultural artifacts, for personal adornment and for hunting trophies, which is still a widespread practice throughout tropical forest regions and the rest of the world.

Bushmeat also remains a primary source of animal protein for the majority of forest families (Wilkie et al., 2005), and constitutes a significant source of revenue (Milner-Gulland et al., 2003). Bushmeat currently provides up to 80% of the protein and fat needs in the rural communities (Nasi et al., 2008).

Although bushmeat hunting is illegal in most countries, the bushmeat trade has been viewed as a success story, exemplifying the self-reliance, self-sufficiency, and resilience of rural people of developing countries. The intrinsic qualities of wildlife resources have helped the bushmeat trade to develop in the West-Central Africa. The evolution of bushmeat as an essential food source as well as an income generating resource to the people throughout the rural region is evident (Brown & Williams, 2003). The human population escalates resulting to increased poverty. Hence, a growing number of people are becoming dependent on bushmeat and the income opportunities from the trade (Nasi et al., 2008). Rural hunters obtained the most profit while chop bar owners trade to the public the most bushmeat, indicating the importance of business to the rural economy (De Merode et al., 2004).

Beyond the consumption of bushmeat as a popular delicacy, the recent time has seen to the advocacy against the indiscriminate consumption of red meat for health reasons. This situation has therefore placed bushmeat, being mostly lean meat, at a vantage point to serve as a healthier substitute in satisfying animal-source protein requirement for many people in Nigeria which has therefore led to increased demands in bushmeat by the populace. However, the demand for bushmeat was jeopardized following medical assertions regarding the attendant health risk attached to the consumption of these meats most notably arising from the campaign during 2013-2014 Ebola epidemic in some West African countries.

The Ebola outbreak of 2014, which is the largest Ebola outbreak in history, took 4,950 lives with a total of 13,260 cases as of 12 November 2014. Bushmeat handling and the manner of consumption were links to the outbreak (Centers for Disease Control and Prevention [CDC], 2014). Nigeria had an outbreak of Ebola Virus Disease with the arrival of an infected air traveler at Lagos international airport on July 20, 2014 (Shuaib et al., 2014; Fasina et al., 2014). Subsequently, the outbreak occurred at Port Harcourt. However, Nigeria was able to curtail the dreaded virus and eventually, World Health Organization (WHO) declared Nigeria Ebola virus disease-free on October 20, 2014, after the reported cases were down to 20, including eight deaths, after which no new cases occurred for 42 days.

According to literature, certain bushmeat such as bats, monkeys, swines are common carriers of the Ebola virus which subsequently get transmitted to humans through contact with such infected animals most especially when there are no proper handling processes in place (Food and Agriculture Organization of the United Nations, 2014; Muyembe-Tamfum et al., 1999; Onishi, 2014; Shuaib et al., 2014; World Bank, 2014). The poor handling of infected bushmeat carcasses and their public consumption caused the Ebola-Zaire outbreak in Congo in

2003, the deadliest of the four Ebola virus strains. The outbreak killed 114 out of the 128 infected people (Rizkalla et al., 2007). The detection of Ebola infection after the outbreak occurred through the handling of infected bushmeat in the rainforest. The situation implies that increased hunting and trading of bushmeat escalate the possibility of Ebola infection (Peeters et al., 2002). However, knowledge of the possibilities of contacting the virus through the handling or consumption of infected bushmeat which cannot be identified by the human eyes has translated into generalized caution in the consumer's demand for these commodities. Moreover, the wide advocacy for the avoidance of bushmeat due to the threat some of them pose regarding the spread of Ebola virus served as a further deterrent. Individuals would rather abstain from bushmeat largely rather than segregate the few established animals considering one cannot completely rule out contact with other animals in the forest due to increased vulnerability.

Surveys of bushmeat markets across Nigeria showed that smaller mammals dominate the general trade, with rodents such as the grasscutter or greater cane rat (*Thryonomys swinderianus*) being the most frequently sold and consumed bushmeat species (Cowlishaw et al., 2005). This situation brings about pertinent effects that stand to reduce the income of bushmeat sellers in every part of Nigeria. The evidence of this outbreak stopped but becomes an issue of great veneration towards providing an alternative means of living by the traders.

Ebola outbreak presents a daunting problem in Nigeria because it suddenly turned bushmeat selling to both a costly and risky business venture. Most of the time, these bushmeat sellers keep standing on the road for hours without patronage by the buyers which invariably indicates a downturn in the market demand for their products. According to Maiangwa (2013), inadequate or low income is one of the major problems facing the market sellers by which they find it difficult to cater for their family's basic needs.

This research is therefore carried out to assess the welfare of bushmeat traders in the post-Ebola era in Kwara State, Nigeria. The specific objectives were to describe the socioeconomic characteristics of bushmeat traders in the study area, carry out an analysis of the consumption expenditure of the respondents, profile and analyze the poverty status of bushmeat traders, and to examine the determinants of welfare status of bushmeat traders in the study area. This research is based on the income or expenditure-based approach to welfare measurement.

According to Ellis (1998), livelihood systems may include farming activities and income, non-farming activities and sources of income, off-farm activities, non-income related activities, non-activity related sources of revenue. About sustainability, Chambers & Conway (1992) claimed that a livelihood comprises the capabilities, assets (including tangible and intangible resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base.

Welfare, on the other hand, refers to the economic well-being of an individual, group, or economy. It is the availability of resources and presence of conditions required for reasonably comfortable, healthy and secure living. Welfare, in this study, is therefore based on the premise of measuring poverty level of respondents and taking the index as related to welfare status of individuals. There is a linkage between welfare and livelihood system since the earning ability of individuals in a society is directly dependent on the livelihood system they are involved, and their level of income is determining largely their ability to access the basic and underlining requirements that determine their welfare status.

During and after the 2014 Ebola crisis, there was a wide campaign against bushmeat consumption following identification of certain animals, which live in the wild, as being carriers

of the much dreaded Ebola virus. The campaign however largely took on an approach that almost totally ruled out consumption of all kinds of bushmeat in a bid to stay completely off the likely risk. The implication of this situation was observable in terms of decline in sales turnover of bushmeat sellers. This study is justified by the fact that there is a large number of individuals involved in activities related to hunting and trading of bushmeat in Nigeria. These individuals have been flung out of employment as a result of the 2014 Ebola outbreak while the more fortunate ones have experienced a decline in demand for their products which has affected their trading operation and business incomes. There is, therefore, the need to assess how bushmeat traders have been affected by the Ebola crisis to map out strategies that will assist the stakeholders. Carrying out this study will give rise to outcomes which would be essential to market operators, policymakers, future researchers, and the government by providing information essential to formulating policies that will bring about efficiency in the marketing of bushmeat in Nigeria. These interventions are relevant considering the contribution of this sector to income levels and invariably improved livelihoods of people engaged in the bushmeat-related trading activities and these are pointers to the importance of sustainability in the trade. This research work was conceptualized as shown in Figure 1.

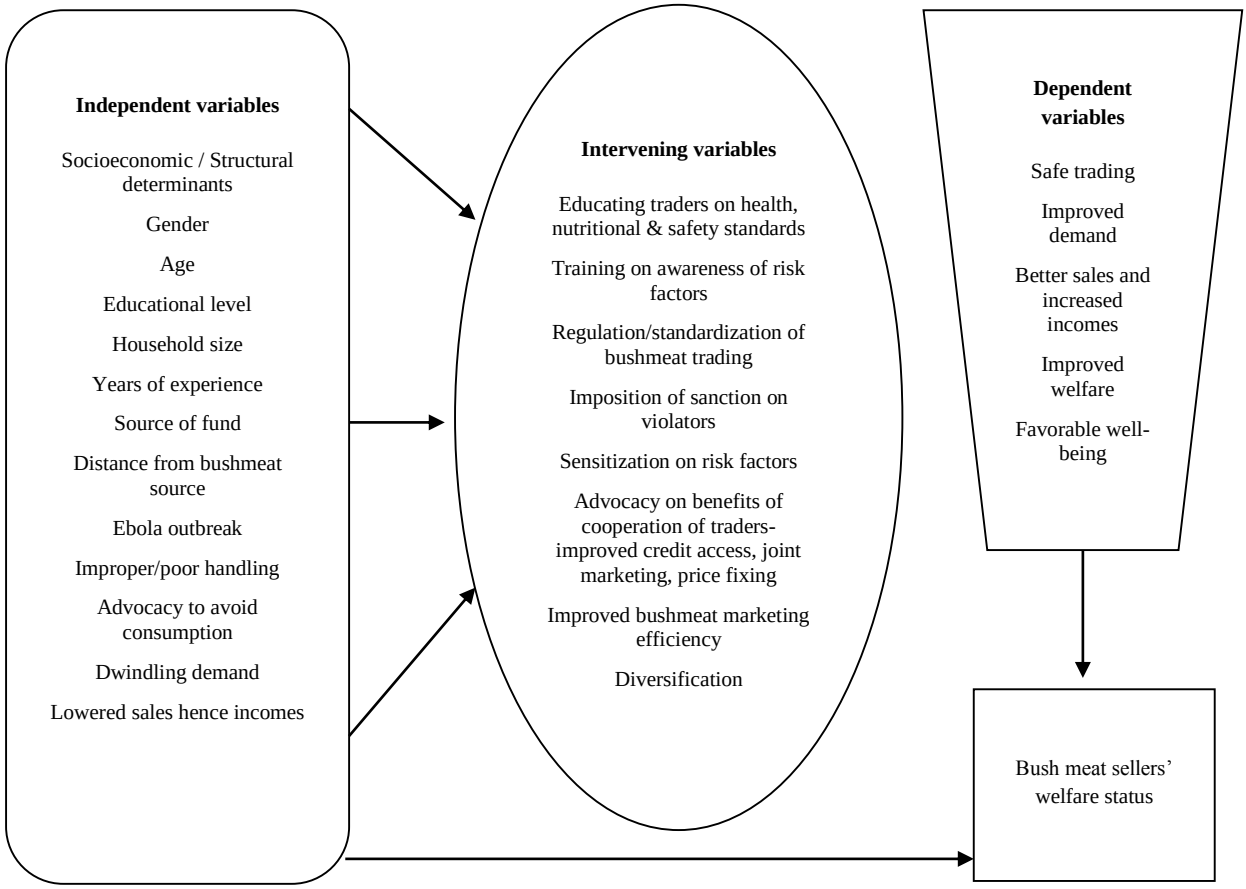

Figure 1. Conceptual framework (authors' design) on the assessment of welfare status of bushmeat traders in the post-Ebola era in Kwara State, Nigeria.

Materials and Methods

Study area

Kwara State, Nigeria was the study area (Figure 2). The geographical location of the state is between latitude 7^0 20$^{'}$ and 11^0 05$^{'}$ north of the equator longitude 2^0 5$^{'}$ and 6^0 45$^{'}$ East of the prime meridian (Ogunlade et al., 2009). There were 16 Local Government Areas in Kwara State. It has a total population of about 2,371,089 million and covers a total land mass of 32,500 square kilometers out of which 75.3% is cultivable (National Population Commission, 2010). Mainly, the area has dry and wet seasons. The dry season runs from the months of November to April. During this period of the year, the state can experience the largest volume of bushmeat hunting (Kwara State Diary, 2010).

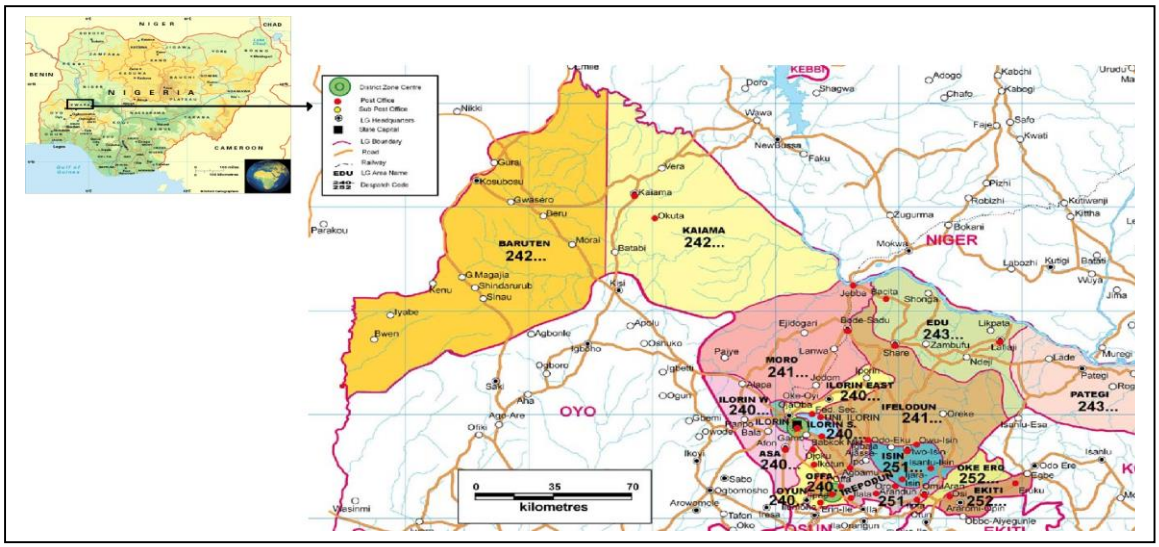

Figure 2. Map of Kwara State, Nigeria (Source: https://www.google.com.ph).

The Kwara State Agricultural Development Project identified four main agro-ecological zones based on the ecological characteristics, cultural practices, and the administrative convenience of the project. Zone A comprises the Baruten and Kaiama Local Government Areas. Zone B includes Edu and Patigi Local Government Areas. Zone C composes the Asa, Ilorin East, Ilorin South, Ilorin West and Moro Local Government Areas. Zone D consists of Ekiti, Ifelodun, Irepodun, Isin, Offa, Oke-Ero and Oyun Local Government Areas.

Sampling procedures and sampling size

The population for this study comprised the bushmeat traders in the three agro-ecological zones of Kwara State. This study employed a three-stage sampling technique in the selection of respondents. Firstly, the authors purposively selected the respondents in Zone B, Zone C, and Zone D due to the presence of high profile bushmeat traders in the areas. Secondly, the selection of markets from the zones employed the stratified random sampling technique. Markets in each of the zones were stratified based on the frequency of operating the markets which were daily, bi-weekly, weekly and fortnightly. One market was drawn from each of the four strata for the three zones to give a total of 12 markets. The third stage involved the selection of bushmeat sellers in each of the selected markets based on the proportion of bushmeat traders in the

markets, drawing from the list of all bush meat sellers in the market as compiled by the researchers, giving a total of 134 sample size (Table 1).

Upon interviewing, each of the final respondents was duly informed that the survey was mainly for academic research and was enlightened on their rights not to participate and also to withdraw from participation in the study at any point they so wish. The prior consent of the participant traders was sought and received as they appended their signature to the ethical consideration as indicated on the questionnaires.

Table 1: Proportion of bushmeat traders per agro-ecological zone.

Zones	Proportion of Bushmeat Sellers
Zone B	40
Zone C	70
Zone D	24
Total	**134**

Analytical techniques

The authors used the descriptive statistics such as the frequency counts and percentages to describe the socioeconomic characteristics of the respondents that include gender, age, marital status, the level of education, household total, and years of business experience. The FGT and multiple regression models were the tools used for analysis.

Model specification:

The authors calculated the per capita expenditure by dividing the total household expenditure by the number of people within the household:

$$Per\ Capita\ Expenditure = \frac{Total\ Household\ Expenditure}{Number\ of\ Household\ Member} \quad \text{(i)}$$

The summation of all the household per capita expenditure for the sampled households is the total household's per capita expenditure. The mean per capita expenditure was calculated by dividing the total per capita cost by the total number of households surveyed:

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$$MPCHHE = \frac{Total\ per\ capital\ expenditure}{Total\ Number\ of\ Household\ in\ the\ Sample} \quad \text{(ii)}$$

From this mean of per capita household expenditure, two lines of the standard of living were drawn: the straight poverty line which is equivalent to two-thirds of the average per capita cost of the family, and the core poverty line which is equal to one-third of the average per capita household expenditure.

The FGT measure of poverty

The measure proposed by Foster, Greer and Thorbecke (FGT) (1984) was the basis for poverty analysis. The use of FGT measure has to define the poverty line, calculated from disaggregated data on consumption expenditure. Shown below is the mathematical formula to determine the FGT measure:

$$P\alpha\ (x; z) = \frac{1}{N}\sum_{i=1}^{q}\left(\frac{Z-Yi}{Z}\right)^{\alpha} \quad \text{(iii)}$$

Where: x = the total consumption expenditure; N = the total number of individual in reference population; q = the number of persons below the poverty line; Yi = the per capita consumption expenditure of household I; α is the version degree and considers the value of 0, 1, 2. When α = 0, Pα = the poverty headcount ratio (incidence); α = 1, Pα = the normalized poverty gap (depth); α = 2, Pα = poverty severity; Z = the poverty line calculated from predetermined and well-defined standard of income and value of consumption. The use of a relative defined the household as poor with others in the same venture or economy. Two third of the mean per capita income was used as the straight poverty line while one-third was the line for extreme poverty. The three categories of poverty line identified were: 1) Extremely poor (EP) - those spending $<^1/_3$ of MPCHE; 2) Moderately poor (MP) - those whose income lies between one-third and two-third of the poverty line i.e. $^1/_3$; and 3) Non-poor (NP) - these are sellers whose income is above two-third of the poverty line.

Multiple regression analysis

The four functional forms in the regression model analysis were tried to obtain the one that best fits the data. These functional forms are linear, exponential, semi-logarithmic and double logarithmic functions as shown:

Linear function:

$$Y = b_0+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6+b_7X_7+b_8X_8+b_9X_9+\varepsilon i \quad \text{(iv)}$$

Exponential function:

$$LnY = b_0+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6+b_7X_7+b_8X_8+b_9X_9+\varepsilon i \quad \text{(v)}$$

Semi-log-function:

$$Y=Inb_0+b_1InX_1+b_2InX_2+b_3InX_3+b_4InX_4+b_5InX_5+b_6InX_6+b_7InX_7+b_8InX_8+b_9InX_9+\varepsilon i \quad \text{(vi)}$$

Double-log-function:

$$LnY=Inb_0+b_1InX_1+b_2InX_2+b_3InX_3+b_4InX_4+b_5InX_5+b_6InX_6+b_7InX_7+b_8InX_8+b_9InX_9+\varepsilon i \quad \text{(vii)}$$

Where:

X_1= Sex
X_2= Age
X_3= Level of education
X_4= Source of fund
X_5= Distance from bushmeat source
X_6= Income from bushmeat sales
X_7=Income from other sources
X_8= Total household
X_9= Years of experience

Results and Discussion

Socioeconomic profile of the respondents

Table 2 shows the socioeconomic profile of the respondents. At the year 2015 when this research was carried out, the official exchange rate of the US Dollar to Nigerian Naira was $1: ₦ 199.203. The majority of the bushmeat traders were women. The finding is similar to the result of Soaga et al. (2014) in Abeokuta, Ogun State in Southwest Nigeria and Takoradi, Ghana (Mendelson et al., 2003). However, the result does not conform to the finding of the study in Ondo State in Nigeria indicating the dominance of men in bushmeat marketing (Bifarin et al., 2008). In this study, the result suggests that bushmeat selling is a women-dominated activity. Women were more at risk and vulnerable than men in dealing with the stressors in livelihood but in some situations, women may be more innovative in their individual and collective responses and may have the more social capital to draw on (Shackleton et al., 2014) and invite more buyers. In the post-Ebola time in Nigeria, bushmeat trading became a risky business due to the possibility of human exposure to zoonotic infection (Bachand et al., 2012).

Table 2. Socioeconomic profile of the respondents.

Variable	Category	Frequency	Percentage
Gender	Men	54	40.3
	Women	80	59.7
Age (years)	≤ 20	2	1.5
	21-30	26	19.4
	31-40	43	32.1
	41-50	33	24.6
	51-60	14	10.4
	>60	16	11.9
Marital status	Single	45	33.6
	Married	75	56.0
	Divorced	10	10.0
	Widowed	4	0.4
Educational level	No formal	4	3.0
	Primary	42	31.3
	Secondary	55	41.0
	Arabic	33	24.6
Household total	≤ 5	67	50.0
	6-10	64	47.8
	11-15	2	1.5
	16-20	1	0 .7
	>21	0	0
Years of experience	≤5	17	12.7
	6-10	34	25.4
	11-15	46	34.3
	16-20	14	10.4
	21-25	6	4.5
	26-30	12	9.0
	31-35	1	0.7
	36-40	3	2.2
	>41	1	0.7

Source: Field Survey, 2015

The dominating age group of bushmeat traders was 31-40 years with the mean age of 40.72 years. The finding was similar to the result of Soaga et al. (2014). The fact that respondents were in their working years could be an advantage as they are more likely to be active. Market traders require the tremendous amount of work to involve in the active and risky trade route of the bushmeat commodity chain to capture a large per capita share of the market. In the study of Bifarin et al. (2008), those groups engaged in trading are active and energetic given the tedious and the precarious nature of the work. In particular, bushmeat traders should require energy to sell meat to the chop bars that are the largest group of vendors that obtain the highest bushmeat sales to the public (Cowlishaw et al., 2005). Hence, being active and having a high productivity associated with age could also translate to higher earnings from the bushmeat business activity. In the post-Ebola era in Nigeria, the risky business of bushmeat trading due to possible exposure to the disease requires traders who are active and cautious to mitigate the risk.

About 56% of the respondents in this study were married. The finding is in line with the results of Soaga et al. (2014) and Subramanian (2012). The high percentage of married people is an indication that a larger proportion of the respondents have some form of family commitments that may likely keep them in the business for lack of job mobility or out of the need to fend for themselves and their dependents. The result also indicates that the profit derived from the bushmeat business could have supported the needs of the household that comprised 6-10 members in almost 50% of the bushmeat traders in this study. Bifarin et al. (2008) also showed that married traders were engaged in bushmeat selling because the business could generate enough income for their family sustenance. The finding of this study indicates that in the post-Ebola era in Nigeria after the 2014 outbreak, households were dependent upon the income derived from bushmeat trading to sustain the basic needs of the family.

Most bushmeat traders had the secondary education while the lowest percentage of the respondents had no formal education. In the findings of Soaga et al. (2014), most of the bushmeat traders had primary education, a situation indicating low literacy level. Although the bushmeat activity does not require any formal education because older and experienced bushmeat sellers informally just pass down the activity to new traders, the literacy level has an indirect influence to a large extent on the managerial ability of the business owner. In particular, bushmeat marketers with high literacy level keep proper records that may positively impact on their marketing management skills (Bifarin et al., 2008). In the study of Soaga et al. (2014), traders may have poor record keeping and found it difficult to estimate their sales, but they could vividly recall the cost of each animal sold despite the massive volume, the reason they opted not to receive the formal education.

Better educated sellers can also have the capacity to understand, appreciate, and respond to market trends. Education can also enhance their potential to process information and make the best out of any situation more importantly in minimizing zoonotic disease risks in bushmeat trading. The increased trading of bushmeat escalates the likelihood of human exposure to this deadly zoonotic Ebola disease (Peeters et al., 2002). Awareness of the risk of disease infection associated with bushmeat contact may have an impact on the activity of bushmeat sellers. In the study of LeBreton et al. (2006), a high proportion of traders reported perceiving a risk of disease infection may act immediately to avoid higher risk activity. Hence, education may also be a determinant in safe trading through enhanced awareness. However, Subramanian (2012) showed that formal education did not significantly affect their knowledge of zoonotic disease transmission in Sierra Leone in West Africa. It also appeared that education level may have

influenced income opportunities but could not affect the bushmeat trading frequency (Subramanian, 2012).

About half of the bushmeat sellers in this study had 6-10 members of their individual household while exactly 50% of the vendors had five or less members. The household number may determine the extent of sellers' dependence on bushmeat trading as their means to support their family. It can affect the welfare of the sellers since they need to ensure that they have adequate income from the bushmeat business for their family. As poverty increases due to the escalating human population, people are becoming dependent on bushmeat and the revenue opportunities from the trade (Nasi et al., 2008). With the Ebola outbreak of 2014 linked to the handling and consumption of bushmeat (CDC, 2014), market traders found difficulty to cater to the family's needs due to low income as bushmeat market declined (Maiangwa, 2013).

More than 50% of the respondents had 1-20 years of experience in the bushmeat activity while the remaining number had above 40 years of experience. The result implies that there is an inverse relationship between the level of education and experience in bushmeat marketing. Thus, respondents with high expertise in the bushmeat activity are more likely to have less educational attainment and vice versa. In the study of Soaga et al. (2014), illiterate and semi-illiterate people who were more experienced in the business dominated the trade arena. This study also found that 61% of the respondents were not members of cooperatives.

Consumption expenditure of the respondents

Table 3 provides the breakdown of consumption expenditure of the bushmeat traders. The mean per capita expenditure of the household was ₦14,004 and analysis of the consumer spending showed that food represents the highest share. Coad et al. (2010) also showed that majority of purchases made by women were of food. The result implies that more of the expenditure was for feeding the household proving that bushmeat constitutes a significant source of revenue (Milner-Gulland et al., 2003). Notably, the household food consumption covers purchased food and "own food", which refers to that unsold bushmeat consumed by the family. Hence, in addition to profit, another benefit derived from bushmeat trading was protein consumption (Soaga et al., 2014; Jayeoba et al., 2013; Wilkie et al., 2005) when households consume the unsold bushmeat. The study of van Vliet et al. (2015) showed that poorer urban households consume bushmeat more frequently than wealthier households. Hence, bushmeat serves not only an income source but also as food for the family (Brown & Williams, 2003).

Education of children was the highest expenditure for non-food expenses of the households. The rest of the consumer spending was for the other non-food expenses such as clothing, savings, investments, health and Medicare, transportation, and rent. The non-food expenditures also include information technology, communication equipment as well as insurance, domestic help, fuel, and light.

Table 3. Consumption expenditure of the respondents.

Expenditure category	Consumption expenditure	%Consumption expenditure
Food expenses	15589.55	28.53
Non-food expenses		
Clothing	2312.71	5.86
Savings	7116.49	12.58
Investments	3529.85	6.46
Health and Medicare	1902.99	3.48
Education of Children	13022.39	23.83
Transportation	4297.761	6.86
Rent	1985	1.00
Other Non-Food Expenses	6876.87	11.39
Total		**100.00**

Source: Field Survey, 2015

Poverty profile of the bushmeat sellers

Mean Per Capita Household (MPCHHE) expenditure was used to develop the poverty line. Based on the straight poverty line, the bushmeat traders are classified as poor if their consumer spending is less than ₦9382.68 with other household expenditure if their consumption spending is higher or equal to ₦9382.68. Hence, any household in the study area with per capita expenditure greater than or equal to ₦9382.68 is considered to be non-poor while any family with per capita expenditure below N9382.68 is poor. The core poverty line or $^1/_3$ of MPCHHE in this study was ₦4621.32. Hence, the bushmeat traders in the study area with per capita monthly expenditure greater than ₦4621.32 but less than ₦9382.68 are moderately poor. Bushmeat sellers in the study area with per capita monthly expenditure below ₦4621.32 are extremely poor.

Table 4 presents the frequency distribution of the respondents by their poverty classification. The poverty table shows that the highest percentage of the bushmeat traders in this study was non-poor with per capita monthly expenditure equal to or greater than ₦9382.68. The study also revealed that that the lowest percentage of the total bushmeat sellers was below the core poverty line and was extremely poor. The classification indicates that this particular percentage of bushmeat traders could not spend more than ₦4621.32 a month to buy the necessities of life. Despite the small number of poor bushmeat traders in this study, this result supports the finding of Davies (2002) that the poorest individuals often are highly dependent on bushmeat trading.

The FGT index result showed that 35.8% of the sampled bushmeat traders were poor and could not attain the minimum standard of living. Putting this proportion in perspective with the poverty rate in Nigeria, the result has shown a worsened situation as compared to the national average of 33.1% poverty rate in year 2012/2013. This rate was based on the $1.25/day poverty line used in calculating the poverty rates per capital from the General Household Survey (GHS) panel between 2012 and 2013 as reported by the World Bank.

Poor bushmeat traders were those having a monthly consumption below the poverty line of ₦9382.68. The considerable number of poor bushmeat sellers in Kwara State in the post-Ebola era in Nigeria shown in this study requires immediate attention and livelihood alternatives could be an option (van Vliet, 2011; Warnock, 2013). The reduction in income of traders may be due to less bushmeat supply for market resulting from wildlife decline making the trade unsustainable (Moro et al., 2014; Brashares et al., 2004; Bowen-Jones et al., 2003). The fall of bushmeat market could also be the effect of the Ebola outbreak of 2014 (CDC, 2014) as Maiangwa (2013) stressed.

Table 4. Poverty classification.

Income	Frequency	Percentage
Non-Poor	86	64.2
Moderately Poor	39	29.1
Core Poor	9	6.7
Total	**134**	**100.0**

Source: Field Survey, 2015

Table 5 shows the poverty incidence, depth, and severity of the bushmeat sellers. The impact of poverty that indicates the number of bushmeat sellers with consumption expenditure below the poverty line is 36%. The depth of poverty which shows the percentage of consumer spending required to bring each household of the bushmeat traders below the poverty line up to the poverty line is 14%. The severity of poverty among the bushmeat traders in the study area is 10%. The severity of poverty shows the spread of the poor around the average poor.

Table 5. Poverty incidence, depth, and severity of respondents.

Respondents	Incidence (P_0)	Depth (P_1)	Severity (P_2)
Bushmeat traders	0.36	0.14	0.10

Source: Field Survey, 2015

Factors influencing welfare status

Table 6 presents the results of the four functional forms of the regression model as well as the factors influencing the welfare status of the bushmeat traders in the study area. The double log was selected as the lead equation based on the number of significant variables and the highest R^2 value, thus provides the line of best fit. The R^2 value of 0.772 indicates that 72.2% of the observed variations in the factors influencing the welfare status of the bushmeat traders were due to the included or independent variables. In this study, the significant variables that influenced the welfare situation of the bushmeat traders were the total household size, years of experience, income from bushmeat sales, and income from other sources.

Table 6. Factors influencing welfare status.

Variable	Linear		Exponential		Semi-log		Double log+	
	Coefficient			Standard error	Standard error	Coefficient	Coefficient	Standard error
Sex	-362.876 (-0.277)	1308.682	0.031 (0.385)	0.80	-222.385 (-0.129)	1725.158	0.145 (1.450)	0.100
Age	-42.431 (-0.477)	88.989	0.001 (0.156)	0.005	-1649.145 (-0.498)	3312.693	0.027 (0.141)	0 .192
Level of Education	212.981 (0.259)	823.903	0.073 (1.438)	0.050	605.150 (0.307)	1970.169	0.178 (1.557)	0.114
Source of Income	-2835.379 (-1.343)	2110.547	-0.122 (-0.941)	-0.129	-3202.709 (-1.139)	2811.576	-0.133 (-0.817)	0.163
Distance from Source	5.184 (0.939)	5.522	0.000 (1.117)	0.000	296.629 (0.637) ***	465.429	0.023 (0.865)	0.027
Income from Bushmeat sales	0.109 (1.656)	0.066	1.244E-005 (3.087) ***	0.000	2344.325 (1.890) *	1240.460	0.253 (3.522) ***	0.072
Income from other Sources	0.131 (1.813) *	0.072	7.870E-006 (1.776) *	0.000	4733.690 (3.459)***	1368.403	0.272 (3.428) ***	0.079
Total Household size	-1860.232 (-7.739)***	240.380	-0.148 (-10.082)***	0.015	-12107.171 (-13.287) ***	911.231	-0.829 (-15.704) ***	0.053
Years of Experience	85.773 (0.778)	110.300	0.006 (0.840)	0.007	4186.144 (3.432) ***	1219.751	0.246 (3.483) ***	0.071
Constant	22217.505 (4.373) ***	5080.255	9.437 (30.335) ***	0.311	-42026.302 (-2.207) **	19045.468	4.472 (4.053) ***	1.103
R^2	0.470		0.583		0.712		0.772	
Adjusted R^2	0.432		0.553		0.685		0.751	
Standard Error of Estimate	6761.770		0.41407		5224.765		0.30268	

***, ** and * = Figures significant at 1%, 5% and 10% significant levels respectively
+ = lead equation
The figures in bracket are the t-ratios
Source: Computation from field survey data, 2015.

Total household size has a negative and statistically significant influence on welfare. Because of the large family, by implication, the bushmeat traders would have many dependents to take care of, thereby increasing their household per capita expenditure. The finding suggests that a bushmeat trader with a larger family would channel more of his income to consumer food spending, which further affects welfare. The result also implies a lower well-being in bushmeat trade with larger household size. The escalating human population leads to increased poverty (Nasi et al., 2008), hence, results from this study are significant to consider for planning the possible actions to address the issue.

The years of experience has a positive influence on welfare. The result implies that the longer the respondents engage in the bushmeat market activity, the better the health is likely to be. The improvement could arise from the fact that the experience in bushmeat sales enhances acquisition (Soaga et al., 2014) and development of relevant skills in the trade. Likewise, the years of experience having a positive influence on welfare may be linked to the fact that traders may derive more economic benefits from the business based on their knowledge of the business, expertise, and skills acquired over the years in the trade. This situation may give traders an advantage regarding the marketing of bushmeat such as to obtain higher returns which will translate into more incomes thereby impacting on their welfare in a way.

The income from bushmeat sales had a positive and significant effect on the welfare status of the respondents. Hence, increased income from bushmeat sales of the respondents would lead to a rise in their level of well-being. Bushmeat trade contributes to household income (Valsecchi & do Amaral, 2010) and increasing their profit can improve their welfare. The income from other sources also had a positive and significant effect on the welfare status. In

essence, the finding would help to generate increased revenue for the traders thereby increasing their welfare status.

Conclusion and Recommendations

The socioeconomic profile of bushmeat traders influenced their welfare status in the post-Ebola era in Kwara State, Nigeria. In a risky and tedious bushmeat trading, married women in their working years with secondary education and trading/business experience, have sustained the activity to provide adequate income for food and education that the household needs as well as other non-food expenses. Total household size, years of experience, income from bushmeat sales, and income from other sources that significantly influenced the welfare of bushmeat sellers dictated the per capital expenditure of bushmeat traders. Those sellers classified as non-poor could have been surviving comfortably after the 2014 Ebola outbreak in Nigeria, but there was also a considerable percentage of sellers classified as poor whose welfare status needs improvement.

Government and development agencies should organize sensitization programs for bushmeat traders to improve their standard of living. Formulation of policies to reduce the cost of processing equipment incurred by the bushmeat traders can increase the profit derived from the business. Giving orientation to the traders on the advantage of joining a cooperative society may enable them to become active members and enjoy various benefits such as credit facilities, price fixing, joint marketing, and other forms of assistance. Providing the traders credit for financing their operations at the right time with reduced interest rate can promote their daily market sales.

Since bushmeat availability is largely determined by the extent of game hunting that is paradoxical to the campaign for wildlife conservation, there is a need then for a review of policies geared towards regulations in hunting in Nigeria. The policy change needs to be committed to ensuring sustainability both in the trading activities of bushmeat sellers while not relegating sustainability in the supply of such animals in the wide.

Following the downturn of activities in bushmeat trading as a result of the 2014 Ebola crisis, there is a need for diversification in incomes for the sect involved in the business such as to support themselves from other jobs rather than struggle with the dwindling revenues from the bushmeat trading activities. Government at all levels can assist through job creations such as to employ more of these under-employed individuals that in turn will upgrade their welfare based on incomes from new job activities.

Policymakers should put in place offices meant to take charge and further strengthen the regulation of activities of these bushmeat traders. These agencies are expected to take ownership concerning health and nutritional regulations of bushmeat by ensuring traders meet specified standards as against the current situation where sellers and buyers freely trade the meat without any form of assertion as to the fitness of such meat for human consumption. Such regulatory bodies in conjunction with awareness and campaign advocating consumption of the beneficial, nutritional and safe bushmeat will go a long way in boosting trading of bushmeat in Nigeria once again thereby impacting on the income level and invariably welfare of stakeholders who are in that line of business.

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