WILLINGNESS TO PAY FOR SAFE BEEF CONSUMPTION IN KONTAGORA LOCAL GOVERNMENT AREA OF NIGER STATE, NIGERIA

Oseghale[1*] A. I., S. Akinsola[1], T.O Olarewaju [2]

[1] Department of Agricultural Economics and Farm Management, Federal University of Technology, P.M.B. 65, Minna, Niger State.
[2] Department of Forest Economics and Extension Services, Forestry Research Institute of Nigeria, P.M.B.5054, Jericho Hills Ibadan, Oyo State

*Corresponding Author's E-mail: itodine.agatha@futminna.edu.ng, GSM: 08033641643

ABSTRACT
This study assessed the willingness to pay for safe beef consumption in Kontagora, Niger State. Primary data was collected from 100 respondents selected through multi staged sampling technique. Data were analyzed using descriptive statistics, contingent valuation and the Probit regression model. The results showed that the average age of the respondents was 46years with income less or equal to ₦50, 000. The result of the Probit regression showed that education, household size and percentage expenditure on beef increased the probability of paying for safe beef while age and maximum amount to pay had negative effect on the probability of paying for safe beef. The study recommended that safe beef in the study area should be sold at a price less or equal to ₦2, 000 and that beef consumers in the study area should be educated more on the need to eat safe beef so as to increase their willingness to pay.

KEYWORDS: Consumption, Safe, Beef, Contigent valuation, Kontagora

INTRODUCTION
Meat is one of the food necessary for human existence and it plays a very vital role in the growth and development of humans as meat products are rich sources of nutrients (Pereira and Vicente, 2013). It is highly nutritious and contains amino acid that are in form of protein and group B vitamins (particularly riboflavin, niacin), calcium, phosphorus and ash (Adetuji and Rauf, 2012). In Nigeria, 88.9% of the food commonly consumed by households consist of meat, fish and animal products and it is the fourth most commonly consumed food group after grains and flours (97.2%), oils and fats (96.8%) and vegetables (96.7%) (National Bureau of Statistics (NBS, 2016; Olumide and Carlos 2017). According to Food and Agriculture Organization beef is the third largest produced meat in the world and it is the most sold meat after poultry (FAO, 2014). World beef production is estimated at about 60 million tonnes carcass weight equivalent (CWE), growing at an average of 1.7% annually (USDA, 2014).

The meat industry in Nigeria is faced with some challenges such as sanitation problems of abattoirs, sales of meat in open market spaces (close to dirty water drainage facilities and refuse disposal sites). This could be attributed to inadequate planning of market and abattoirs, presence of illegal abattoirs and private slaughter rooms, inadequate water supply and lack of monitoring and enforcement of regulation (Iyiola and Oni-Ojo, 2013) and Mande (2011) stated that dirty abattoirs and slaughter houses was one of the most difficult public health problem.

Food safety as defined by the FAO/WHO is the assurance that food when consumed in the usual manner does not cause harm to human health and well-being (WHO, 2002). Food safety issues concerning beef extends from the health and treatment of the live animal, through to slaughtering and final processing into beef and other products sold to the consumers. Most beef consumers in Nigeria are uninformed about the quality of beef they consume because of the absence of standard and quality labels (Ehirim *et al.*, 2013). Verbeke and Ward (2006) suggested that information about beef quality can be communicated to consumers through labels and beef certifications. The high consumption of meat globally has necessitated the need for meat safety since unsafe meat exposes consumers to potential hazards. Therefore this study assessed consumers' willingness to pay for safe beef in Kontagora LGA of Niger State, Nigeria.

METHODOLOGY
Study Area
The study was carried out in Kontagora. Kontagora is located between longitude 5.47^{0}E and latitude

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10.4^{0}N. It has a tropical climate with an average temperature of 26.20c. April is the warmest month of the year with the average temperature of 29.3^{0}c, and August having the lowest average temperature of 24.3^{0}c. It has an annual rainfall of about 1533mm.

Method of data collection

Primary data were collected through the use of questionnaire. The questionnaire was used to obtain information that had to do with the socio-economic characteristics and willingness to pay for safe beef from the beef consumers.

Sampling method

Multistage sampling technique was employed in order to draw the sample for this study. In the first stage 5 areas including Federal college of education, Government Residential Area phase II, Tunga wawa, Rafin gora and Kanfaniwaye were purposively in order to have a representation of the low, medium and high income levels. In the second stage systematic sampling was used to select 20 respondents from each of the areas making a total of 100 respondents.

3.4 Method of data analysis

Descriptive Statistics

Descriptive statistics such as mean frequency count, percentages, pie and bar charts respectively were used to describe the socio-economic characteristics, level of awareness of safe beef and willingness to pay for safe beef of the meat consumers in the study area. A three point rating scale of not aware (1) aware (2) Indifferent to aware (3) was also used to ascertain the level of awareness of consumers about safe beef consumption.

Willingness to Pay

Contingent valuation method was used to elicit consumers' willingness to pay for safe meat consumption while the probit regression analysis was used to determine the factors that influenced consumers' willingness to pay for safe beef. The model is stated as;

$Y=F(X_1, X_2, X_3, X_4, X_5, X_6, X_7, U)$

Y= Willingness to pay for safe beef meat (₦ /kg)

X_1=maximum amount willing to pay (₦ /kg)

X_2= monthly income (₦)

X_3= gender (male =1 and female =0)

X_4= age (years)

X_5=marital status (married =1 and 0 otherwise)

X_6=family size (no. of persons)

X_7= years of education (years)

X_8 = % expenditure on meat

U=error term

RESULTS AND DISCUSSION

The main tenet of this study was to assess consumers' willingness to pay for safe beef consumption in Kontagora, Niger State. The result in Table 1 revealed that, 34% of the respondents were aged between 31 and 40years with a mean age of 46years. This implies that the study area was dominated by moderately aged who may be at higher risk of having health challenges due to beef consumption hence inclusion of unsafe beef in their diet makes them more vulnerable. This finding is in corroboration with Angul and Gil (2007) but in disagreement with Ehirim *et al.*, (2013) who stated that the mean age of safe beef consumers in Delta State was 28years, an indication that youths who understood the implications of health risks associated with unsafe food consumption dominated the study area. 51% of the respondents were female. This suggests that females may be the major determinants household food consumption and safety. This corroborates the finding of Mimi *et al.* (2010) and Ehirim *et al.* (2013) who stated that women dominated the study area and are particularly concerned about safety issues of the food their family members consume, but it is in disagreement with Xu and Wu (2010) who stated otherwise. The maximum household number is within a range of 1-5 (64%), with a mean of 4. This is an indication that the study area was made up of small households. This finding is in agreement with Angul and Gil (2007), however, Nnamdi (2010) revealed that the maximum household number was within a range 6-10 (46%), with an average mean household size of 9.

Table 1 also showed that, majority (67%) of the consumers had formal education (primary, secondary or tertiary) with secondary school having the highest percentage of 40%. This indicates that most of the meat consumers in the study area were literate, signifying that consumers in the study area may be aware of the disadvantages of unsafe meat consumption.

Furthermore, table 1 showed the distribution of respondents by income. Majority (72%) of the respondents earned ₦50,000 or less. This is an indication that beef consumers in the study area were low income earners. However, only about 2% of the respondents earned ₦200,000 and above. This is in line with Akerele *et al.* (2010) who found that the average monthly income among *kilishi* consumers in Sokoto North-West, Nigeria was of ₦16, 971.98.

Willingness to Pay for Safe Beef Consumption

Table 2 revealed that majority (56%) of the consumers in the study area were aware of meat safety. Therefore, they may be willing to pay for safe meat knowing the implications of unsafe meat consumption. Consequently, it becomes rational for the consumers to be positive about paying for safe

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beef so as to prevent the harmful effects of consuming contaminated beef. Ehirim *et al.* (2013), also reported that a higher percentage of the beef consumers in Delta State were aware of the advantages of consuming safe meat and the likely risks involved in the consumption of unsafe food product.

Consumers in the study area were willing to pay for safe meat as indicated by 84.0% of the respondents (Table 2). This is probably because they were aware of the risk involved with unsafe meat consumption and they may be concerned about their health issues. This is however not surprising because majority of the consumers were educated. This study corroborates with Iyiola and Oni-Ojo (2013) who reported that consumers were willing to pay for quality product if the meat industry would involve itself in advanced practices like packaging, labelling and so on, but in disagreement with Angul and Gil. (2007) who observed, that even though consumers were more aware of food safety issues, about 72.5 % of them were not willing to pay a premium for labelled beef (packaged). Also, table 2 showed that, 27% of consumers in the study area were willing to pay between ₦ 500-1000 per kg for safe meat as against ₦800 which is the normal price of 1kg of meat sold in the open market in the study area, with a mean amount of ₦ 2000. This is implies that beef consumers in the study area were willing to pay a price over 100% higher than the price beef was sold in the market. This confirms the study of Xu and Wu (2010) who reported that consumers who had a knowledge of the health risks associated with quality impaired food items were more likely to pay for certified food.

Factors Influencing Willingness to Pay for Safe Beef

Table 3 shows the factors that influenced willingness to pay for safe beef in the study area. While education, household size and expenditure had positive and significant effect on willingness to pay, age and maximum amount to pay had negative effect on WTP.

This implies that beef consumers with higher education had a higher probability of paying for safe beef than those without education. That is, an increase in education by a year will increase the probability of paying for safe beef by 2.1% (4). This may be explained based on the premise that education enhances level of awareness. This is similar to Akinbode *et al.* (2012) who also found that education had positive effect on willingness to pay for safe street food in Southwest Nigeria. Also, the positive coefficient of household size signifies that households with more number of people had a higher probability of paying for safe beef. This could be because large households may have different sources of income and therefore higher household income. This however, depends on the composition of the household. Likewise, a percentage increase in the expenditure on beef will increase willingness to pay by 1.1%.

On the other hand, the coefficient of age was negative. Implying that older respondents are likely to pay less for safe beef consumption. This could be because, older people may be aware that they should consume less meat. Therefore, there is probability that they substitute beef with other protein sources instead of paying extra for beef. More so, the youths are more exposed and should be more attracted to well package beef. This finding disagrees with Obi-Egbedi *et al.* (2017) who reported that age had positive effect on willingness to pay for safe beef in Oyo State. In addition, an increase in in the maximum amount to pay by a naira will decrease the probability of paying for safe beef by 2.7%. This follows the theory of demand which states that there is an inverse relationship between the price of a commodity and its demand. This finding is in line with Akinbode *et al.* (2012) who also reported that maximum bid price had a significant but negative influence on willingness to pay.

CONCLUSION AND RECOMMENDATIONS

This study assessed the willingness to pay for safe beef in Kontagora LGA of Niger State. Based on the findings of this study, it can be concluded that beef consumers in the study area were aware of unsafe beef and were therefore willing to pay for the consumption of safe beef. However, this was influenced by education, household size, and percentage expenditure on beef, age and maximum amount to pay. Thus, the study recommended that beef sellers in the study area can venture into the sales of well packaged beef, however, the price of the beef should not exceed ₦2000/kg. Also, the people of Kontagora should be educated about the advantages involved in consumption of safe meat so as to increase their willingness to pay.

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Table 2 : Socio-economic Characteristics of Beef Consumers in the Study Area

Description	Frequency	Percentages
Age		
Less than 21	1	1.0%
21-30	22	22.0%
31-40	34	34.0%
41-50	31	31.0%
51-60	9	9.0%
Greater than 60	3	3.0%
Mean	46	
Gender		
Male	49	49.0%
Female	51	51.0%
Household Size		
1-5	64	64.0%
6-10	29	29.0%
11-15	6	6.0%
16-20	1	1.0%
Mean	4	4.0%
Educational Level		
No Formal Education	33	33.0%
Primary	14	14.0%
Secondary	40	40.0%
Tertiary	13	13.0%
Income(₦/month)		
1000-50000	72	72.0%
51000-100000	16	16.0%
101000-150000	7	7.0%
151000-200000	3	3.0%
Above 200000	2	2.0%
Mean		

Source: Field Survey, 2015

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Table 2: Willingness to pay for safe beef

Description	Frequency	Percentage
Consumers awareness of safe beef		
Aware	56	56.0%
Not Aware	9	9.0%
Indifferent	35	35.0%
Willingness to pay for safe beef		
Yes	84	84.0%
No	16	16.0%
Willingness to Pay (₦)		
1-500	25	25.0%
501-1000	27	27.0%
1001-1500	9	9.0%
1501-2000	13	13.0%
Greater than 2000	16	16.0%
mean	2000	

Source: Field Survey, 2015

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Table 3. Factors Affecting Willingness to pay for Safe beef in the Study Area

Variables	Coefficient	Z-values
Age	-0.08	-3.00***
Education	0.12	3.04***
Household size	0.27	2.81***
Gender	0.29	0.79
Income	-0.81	-0.66
Max amount to pay	-0.01	- 2.09**
Expenditure	0.15	4.08***

Log likehood = -32.9327
LR Chi- Square =72.72***
Prob> chi-square =0.0000
Pseudo R^2 =0.5247

Table 4. Marginal effect

Variables	Marginal effect
Age	-0.1496
Education	0.0210
Household size	0.0485
Maximum amount to pay	0.0274
Expenditure	-0.0011

Source: Field Survey, 2015

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REFERENCES

Adetunji, M. O. and Rauf, M.O (2012). Analysis of Household Demand for Meat, in Southwest, Nigeria. *Global Journal of Science Frontier Research Agriculture & Biology (12) 1 Version 1.0 Global Journals Inc. (USA)* Online ISSN: 2249-4626 & Print ISSN: 0975-5896.

Akerele D., Akinbode S.O. and Dipeolu A.O. (2010). Willingness to pay for the Safety of *Kilishi* in Sokoto, Nigeria. *Journal of Agricultural and Food Information.* 11:330-339.

Akinbode S. O., Dipeolu A. O. and Okojie L. O. (2012). Estimating consumers' willingness to pay for safety of street foods in South-west Nigeria. *Nigerian Journal of Agricultural Economics (NJAE)* 3(1): 28 – 39

Angul, A. M., and Gil, J. M, (2007). Risk Perception and Consumer Willingness to Pay for Certified Beef in Spain. *Food Quality and Preference* 18: 1106–1117.

Ehirim, N.C., L.O.E. Nwauwa, and E.E. Ikheloa. 2013. Determinants of consumer preference for safe beef in Delta State, Nigeria, *Wudpecker Journals of Agricultural Research*, 2(3): 073-079.

Food and Agriculture Organisation (FAO), (2014). World Food Outlook. Accessed at http://www.fao.org/ag/againfo/themes/en/meat/background.html.

Iyiola O. and Oni-Ojo E.E. (2013). Attitudes toward Service Innovations in Red Meat Industry and its Consumption Effects on Nigerian Consumers. *Developing Country Studies.* 3(9): 39-49

Mande. B., 2011.Policy Guidelines on Market and Abattoir.tsaftarmuhalli.blogspot.com/2011/

Mimi L., Alias R. and Mohammed R. (2010). Consumer Perception towards Meat Safety: Confirmatory Factor Analysis. *International. Journal of Economics and Management* 4(2): 305 – 318.

National Bureau of Statistics (NBS), (2016). LSMS - Integrated Surveys on Agriculture General Household Survey Panel 2015/2016. Nigerian National Bureau of Statistics.

Nnamdi C. (2010). Determinants of consumers' Preference for Safe Chicken Consumption in Imo State, Nigeria. *Researcher,* 2(12) http://www.sciencepub.net/researcher.

Obi-Egbedi, O., Ahmed, J., & Israel, J. M. (2017). Consumers' Willingness to Pay for Safe Beef In Ibadan-North Local Government, Oyo State, Nigeria. *Archives of Business Research, 5(*6): 18-28.

Olumide A and Carlos E.C. (2017). Household Demand for Meat in Nigeria. Selected Paper prepared for presentation at the Southern Agricultural Economics Association's 2017 Annual Meeting, Mobile, Alabama, February, 4-7 2017

Pereira, P. M. C. C and A. F. R. B Vicente. (2013). Meat Nutritional Composition and Nutritive Role in the Human Diet. *Meat Science,* 93: 586-592.

Verbeke, W. and R.W. Ward (2006). Consumer interest in information cues denoting quality, traceability and origin: an application of ordered probit models to beef labels, *Food Quality and Preference,* 17(6): 453-467.

World Health Organization (WHO), (2002). Global Strategy for Food Safety, Genera WHO.

Xu, L. and L. Wu (2010). Food safety and consumer willingness to pay for certified traceable food in China, *Journal of Science, Food and Agriculture,* 90: 1368-1373.

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