

Estimating The Determinants Of Consumer Safety During Fresh Beef Marketing In Ekiti State

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Abstract

The paper dealt with determinants of consumer safety during fresh beef marketing. Specifically the social economic characteristics of beef sellers. Predictor of food safety were examined. Primary and secondary data were used to accomplish the objective of the study. Multi- stage random sampling technique was used to select respondents for the study. Data collected were subjected to descriptive and inferential statistics such as ordered legit regression. Result indicate that predictors of food safety were availability of beef marketing regulation Beef inspection Refrigeration Cleaning of slabs Presence of beef association Market sanitation .Use of sterilized tool Proper covering of beef displayed for buyers avoidance of contamination by hand touch, customers in touching the beef, other occupation age sex marital status ,education and marketing experience of respondents. Beef marketing was profitable in the study areas but food safety has increasing effect on cost thereby decreasing profit

Keywords; Beef, Marketing, Consumer Safety, Ekiti

INTRODUCTION

The demand for beef is increasing worldwide despite the negative publicity that red meat is carcinogenic to people of certain age. In Nigeria where six people goes to poverty family every minute beef is an expensive source of protein given the persecution of Fulani tribe which account for the bulk production of cow in Nigeria. A kilograms of fresh beef attracts about five United State dollars in Ado market in Ekiti State even when the quality and quantity is not guaranteed (Abiola and Olowoyo 2021). Beef provides a highly desirable eating experience in developed countries and, increasingly, in developing countries. The sustainability of beef production has different meanings in the various geographical and socio-economic regions of the world. Natural resources including land mass and uses, rainfall and access to livestock feed, and the robustness of the economy is the major determinant of the perception of beef sustainability (Stephen, Takafunmi and Paul, 2018). Notable differences exist across countries in the production and marketing of beef because of variation in factors such as natural resource availability, climate, population size, traditional culture and degree of economic development including industrial and technological developments. FAS/USDA (2020) reported that United

States is the largest producer of beef in the world followed by Brazil & the European Union. The United States, Brazil and the European Union produce roughly 51% of the world's beef. The United States produces nearly 21% of the world's beef. Brazil produces 17% of the world's beef.

According to government estimates, Nigeria, consumes 360,000 tonnes of beef each year, accounting for half of all West Africa. In per-capita terms, consumption is low compared with advanced economies, but it is growing fast, and expected to quadruple by 2050. (NBS, 2020). With over 200 million people and an emerging middle class, Nigeria is witnessing a boom in demand for meat that offers potential but also risks for the semi-nomadic herders.

Beef is considered as the most readily available source of animal protein consumed by humans. It is a highly perishable product because it contains sufficient nutrient needed to support the growth of microorganisms (Huda, 2016). Poor processing, unclean slaughtering slabs, abattoirs, point of sales and transportation during marketing of fresh meat predisposes human to contamination from multiple sources (Nel et al., 2014; Yusuf, 2018). Thus, if beef is not immediately utilized or preserved after processing, it spoils.

The muscle tissue of healthy living cow is free from microorganisms (Yusuf, 2018). Most often, the skeletal muscle, associated fat and other tissues, are usually affected other edible tissues such as organs, hence, the need for highest level of safety practices to avoid contamination. There are various ways of beef contamination, but the most common among them are through touching and checking, vehicles used for transportation and exposure of fresh beef on floor. In Africa and most especially Nigeria, Cow itself is a source of contamination. Several cows slaughtered are not subjected to pre-slaughter status assessments. Some cattle with cough, zoonotic diseases found their ways to slaughter house, consequently to human mouth and stomach thereby causing terrible sickness. Beef as a source of protein turn out to be a source of food poison

The production, distribution and marketing of good quality raw and processed beef including cow products are the major preoccupation of the beef marketers. This involves not only calling meat from the culled animals but also the handling, storing, preserving, processing, distributing and marketing of beef in wholesome condition (Obanu, 2010).

The extraction of beef from the culled animals is achieved in the abattoirs, slaughter houses, slabs and other killing grounds (Obanu, 2010). Abattoirs, slaughter houses and slabs are the key-points where the beef marketers could have control over the conversion of animals to beef. So to ensure hygienic and quality beef, standard abattoirs should have qualified personnel, state-of-the-art equipment, lairage, adequate water supply, good drainage and efficient sanitation system. The floors should be cemented, while roofs should be done to detract birds and insects, trees and bushes should be absent (Ikeme, 2010). The design should be such that will ensure correct sequence of operation that encourages efficiency while discouraging contamination and cross-contamination (Igwe, 2015).

The standard sequences for conversion of animals to meat include lairage rest/ante mortem examinations, immobilization, killing, evisceration, postmortem examination, cutting-up and

storage/processing/marketing. Good sanitation and safety practices are necessary requirement in the practice of beef marketing. Therefore, in a bid to ensure an effective safety mechanism, beef marketers are supposed to be registered by the controlling authority for hygienic slaughtering and inspection of animals, processing, effective preservation and storage of meat products for human consumption (Alonge, 2011).

According to FAO, (2012), proper meat inspection should be carried out regularly and the resulting waste materials are thus suitably handled to remove any potential danger or meat-borne infectious agents reaching the public or contaminating the environment. These are easily achieved in most developed countries unlike in developing countries. Since most developing countries paid little attention to the meat inspection and safety practices in meat marketing, there is need to gain more insights on the economic evaluation of the safety practices of beef marketers in Nigeria. The extent to which these safety practices are been put to use by beef marketers and the level of compliance with the principles of safety practices laid by the authority in Ekiti State are the major concerns of this research.

Statement of Problem:

There is a great concern on how most marketers handle beef in an unacceptable and unhygienic manner which indirectly predisposes consumers to different health issues. Beef consumption which should enrich human body with its content, thereby create problems to consumers because of poor handling by beef marketers.

Food-borne diseases have caused a significant morbidity and mortality around the world. World Health Organization (WHO) reports that 18% of children aged below 5 years old in developing countries die due to diarrhea globally.

Meanwhile, food contamination from raw beef is an important source of food-borne disease outbreaks or food poisoning due to improper beef handling. Such contaminations often occur when food that does not require cooking such as salad is prepared on the same chopping board that has been used to prepare raw beef without adequate washing.

Most often, Beef marketers are a major cause of meat contamination. Beef-borne disease outbreaks reported in the United States for instance were associated with mishandling; with 79% from commercial or institutional establishments and 20% from homes (Niyonzima, 2013). Another report indicated the presence of *Escherichia coli* and *Staphylococcus aureus* on the hands of beef marketers while multi-drug resistant *Staphylococcus aureus* has been isolated from meat being sold for human consumption (Yemisiet al.,2011).

Currently, there about 200 million people live in Nigeria. Beef consumption amounted to 380 000 tons in 2014 and is projected to grow up to 1.3 million tons by 2050 (Adesina, 2014). Meat market has a poor infrastructure in Nigeria (Abdullahi & Hassan, 2016). Slaughter of livestock and fresh meat trade is concentrated in the public open markets without packing and refrigeration, resulting in a significant reduction in the quality and shelf life. Means of transporting fresh beef from the abattoir to different sales or marketing outlets is another major

challenge. Most often, fresh beef are exposed and conveyed by motorcycles, this can predispose it to serious air contaminations.

There are several regulations by the controlling agencies in Nigeria to ensure proper hygienic handling of meat by the marketers, but can we say this is applicable on papers? can we say the beef marketers comply with these regulations? What are the constraints and socio-economic effects of this on the beef marketers? To solve these problems of the meat marketing and effort to provide a mass public access to high-quality meat at a reasonable price becomes the major concern for the researchers.

However, this research attempt to beam searchlight on the economics of safety practices used by the beef marketers in Ekiti State.

Research Questions:

- What are the socio economic characteristics of fresh beef marketers?
- What are the level of compliance of marketers to safety regulations in the State..
- What are the cost implications of safety practices in the study area
- What are the effect of beef safety practices/regulations on the income of the beef marketers?

Objectives of the Study:

The main objective of this study is to examine the determinants of safety practices of fresh beef marketers in Ekiti State. While the specific objectives are to:

- Describe the socio economic characteristics of fresh beef marketer
- Determine the level of compliance of marketers to safety regulations in the State..
- Estimate the cost implications of safety practices in the study area
- Determine the effect of beef safety practices/regulations on the income of the beef marketers.

Justification of the Study:

Due to the prior knowledge on contamination of beef originating from Slaughterhouse, there were attempts to identify the sources of meat contamination in order to stop further contamination and prevent new outbreaks originating from the same source.

Despite the fact that, the International Food Management agencies have provided guidelines on safe handling procedures such as HACCP {Hazard Analysis and Critical Control Point} and Good Manufacturing Practices, the safety practices among beef marketers in most developing countries particularly Nigeria remain largely unknown. Most studies conducted were based on beef handlers in the restaurants, Quality Aspects of fresh and refrigerated beef, processed food establishments without any documented report on beef marketers' safety practices. (Rayee and Khandi, 2013), (Adil, 2014). Cases of food poisoning due to contaminated meat have been on the rise in recent years, hence the need to evaluate the safety practices among beef marketers in Ekiti State.

Therefore there is a need to investigate the safety practices on beef marketers to form a guiding framework for government and policy makers in understanding the level of safety practices by beef marketers. The study will also enlighten stakeholders and members of the public on safety practices by beef marketers, as this will guide them in ensuring that purchased beef should be properly and adequately handled to prevent contaminations and so as to guaranty safety.

METHODOLOGY

The study area is Ekiti State, Nigeria. Ekiti State has a total land area of about 5,887.890km². It has a population of about 3,190,093 (NPC 2014). The State has two climatic seasons, a raining season, from April to October and a dry season, from November to March. It has a total annual rainfall of about 1400mm (Oluwatayo 2008) and a temperature range of between 21 °C and 28 °C. The State has tropical rainforest vegetation in the South and a derived savannah in the Northern parts. The population is predominantly farmers (Adebayo 2013). Ekiti State has a tropical climate with high temperature all year round and with two distinct seasons tropical climate. The Agriculture (crop farming) forms the base of the overall development thrust of the area, both arable and cash crops are grown. They are also rearing different livestock such majorly goat, sheep, ram, cattle are reared by herd men in which they derived meat for both commercial and consumption purposes.

Ekiti State has sixteen (16) Local Government Areas (LGAs) and divided into three political zones Ekiti Central, Ekiti North and Ekiti South. Ekiti Central zone consists of Ado, Efon, Ekiti West, Ijero and Irepodun / Ifelodun LGAs, Ekiti North zone consists of Ido/Osi, Ilejemeje, Ikole, Oye and Moba LGAs and Ekiti South zone consists of Ekiti East, Ekiti South West, Emure, Gbonyin, Ikere and Ise/Orun Local Government Area.

Ekiti State Map Showing Areas of Local Government of Consideration

Map Of Ekiti State



* Headquarter of Local Government

■ State Capital



Represents Area of consideration

Source: Nigeria Muse,2010

A multi-stage sampling technique was employed in this study. There are sixteen {16} Local Government Areas in Ekiti State. The stage one involved purposive selection of three

Senatorial Districts of the State; Ekiti North, Ekiti Central and Ekiti South. In the second stage, there was random selection of three {3} Local Government Areas, from each of the Senatorial District giving a total of Nine {9} Local Government Areas. Third stage involved random selection of three {3} towns/ Villages from each local Government Areas selected. Fourth stage involved purposive selection of three markets where beef marketers were found from the towns and villages selected. The final stage involved proportionally sample of 30% of beef marketers across the selected markets giving a total number of 190 beef marketers that was used for this study. This method was adopted by (Odegbade et al, 2018).

Sampling Procedure:

| Senatorial DISTRICT | Local Government Areas | Towns /Villages/Markets | Sample frame No of beef marketers | No of beef marketers to be sampled at 30% | |
|----------------------------|-------------------------------|--------------------------------|--|--|-----------|
| Ekiti North | Ikole | Ikole | 36 | 11 | |
| | | Iyemero | 14 | 4 | |
| | | Temidire | 10 | 3 | |
| | | Sub Total | | 60 | 18 |
| | Ido- Osi | Ido | 30 | 9 | |
| | | Ayetoro | 14 | 4 | |
| | | Usi | 11 | 3 | |
| | | Sub Total | | 55 | 16 |
| | Oye | Oye | | 28 | 8 |
| | | | | 18 | 5 |
| | | | | 12 | 4 |
| | | | | 58 | 17 |
| Ekiti Central | Ado | Oja Oba | 60 | 18 | |
| | | Shasha | 55 | 17 | |
| | | Mojere | 15 | 5 | |
| | | Sub Total | | 130 | 40 |
| | Irepodun/Ifelodun | Igede | 25 | 8 | |

| | | | | | |
|-------------|--------------------|------------------|------------|------------|-----------|
| | | Iworoko | 17 | 5 | |
| | | Iyin | 13 | 4 | |
| | Sub Total | | 55 | 17 | |
| | Ijero | Ijero | 45 | 14 | |
| | | Iloro | 15 | 5 | |
| | | Ipoti | 11 | 3 | |
| | Sub Total | | 71 | 22 | |
| Ekiti South | Ikere | Oja Oba | 43 | 13 | |
| | | Oke Osun | 35 | 11 | |
| | | Aba Ebira | 12 | 4 | |
| | | Sub Total | | 90 | 28 |
| | Ise | Ise | 25 | 8 | |
| | | Oraye | 15 | 5 | |
| | | Aba Adeja | 8 | 2 | |
| | | Sub Total | | 48 | 15 |
| | Ekiti South West | Ilawe | 25 | 8 | |
| | | Igbara-Odo | 19 | 6 | |
| Ogotun | | 10 | 3 | | |
| | Sub Total | | 53 | 17 | |
| | Grand Total | | 620 | 190 | |

Source: Ekiti State beef Association, 2020.

Primary data was used for this study. Primary data was collected directly from beef marketers with the use of questionnaire and interview schedule. Information on socio-economic characteristics of beef marketers, safety measures used, source of water, mode of transportation, hygienic safety practices, beef marketer association, government regulations and other relevant information were sourced. A combination of various analytical tools were used in this study. These include; Descriptive Statistics, Budgetary Analysis, Gross Margin Analysis, and Ordered Legit Regression

To analyze factors determining the level of compliance of marketers to safety regulations/practices in the study area ordered logit regression was used. To start with, statements on how marketer's compliance with the safety practices were designed using Likert rating scale for the respondents to choose as appropriate in the study area. The 5-point rating scale includes: 'Strongly Agree' (SA) = 5; 'Agree' (A) = 4; 'Undecided/Indifferent' (U) = 3; 'Disagree' (D) = 2 and 'Strongly Disagree' (SD) = 1. The mean score of the respondents base on the 5-point LRS was computed using the interval scale of 0.50. The upper cut-off point was determined as $3.00 + 0.50 = 3.50$; the lower limit as $3.00 - 0.50 = 2.50$. On the basis of this, mean scores below 2.50 (i.e. $MS < 2.50$) was ranked Low Compliance; those between 2.50 and 3.49 were considered as Moderate Compliance, while mean scores that are greater than or equal to 3.50 (i.e. $MS \geq 3.50$) were considered to have High Compliance. Following Green (2000), Enete and Amusa (2010) and Fatuase and Ajibefun (2014), the dependent variable of the ordered probit regression was the three ordered categories: High Compliance = 3, Moderate Compliance = 2 and Low Compliance = 1. The ordinal logit model is built around a latent regression.

$$\text{Let } y^* = \beta'X + \varepsilon_i \dots\dots\dots (1)$$

Where y^* is the underlying latent variable that indexes the level of contributions of respondents to safety compliance decision making, X is a vector of parameters to be estimated and ε is the error term. The latent variable exhibits itself in ordinal categories, which could be coded as 0,1,2,3,...,j. the response of category j is thus observed when the underlying continuous response falls in the j th interval as:

$$\begin{aligned} Y = 0 & \text{ if } y^* \leq 0 \\ & = 1 \text{ if } 0 > y^* \leq \delta_1 \\ & = 2 \text{ if } \delta_1 > y^* \leq \delta_2 \\ & = 3 \text{ if } \delta_2 > y^* \leq \delta_3 \\ & \cdot \\ & \cdot \\ & \cdot \\ & \cdot \\ & = j \text{ if } \delta_{j-1} \leq y^* \end{aligned}$$

which is form of consoring, with the δ 's being unknown parameters to be estimated with β . The explanatory variables were:

X_1 = Availability of beef marketing regulation (Yes=1, No =0)

X_2 = Medical Examination of beef (Yes = 1, No = 0)

X_3 = Beef inspection (Yes = 1, No = 0)

X_4 = Refrigeration of leftover (Yes =1, No=0)

X_5 = Cleaning of slabs (Daily = 1, Once a week =0)

X_6 = Presence of beef association (Yes=1, No=0)

X_7 = Market Sanitation (Yes=1, No = 0)

X_8 = Use of Sterilized Tool (Yes = 1, No = 0)

X_9 = Proper covering of Beef displayed for buyers (Yes =1, No= 0)

X_{10} = Practice of not allowing Customers in touching the Beef (Yes = 1, No =0)

X_{11} = Other occupation (yes =1, otherwise = 0)

X_{12} = Age of the respondents (years)

X_{13} = Sex (male =1, female = 0)

X_{14} = Marital status (married =1, otherwise = 0)

X_{15} = Education (number of years spent in school)

X_{16} = Household size (numbers)

X_{17} = Experience in beef marketers (years)

The Cost Implication of Beef Safety Practices of the Respondents: Gross Margin Analysis was used to determine the cost incurred on the safety practices.

$$GM = TR - TVC \dots \dots \dots (i)$$

Where, GM = Gross margin per month (₦) of the respondents, TR = Total Revenue per month (₦) amounted from the sales of beef,

$$GR = Q * P \dots \dots \dots (ii)$$

$$\text{Net Returns} = GR - TC$$

$$BCR = GR / TC$$

Where:

GR = Gross Revenue (₦) where

Q = Quantity of beef slaughtered (kg)

P = Price per kg of beef (₦)

TC = Total Cost

BCR = Benefit to cost ratio

Determine the Effect of Beef Safety Practices/Regulations on the Income of the Beef Marketers.

Two-Stage Least Squares Model

The Two-Stage Least Squares (2SLS) model was used to examine the effect of beef safety practices on the income of the marketers in the area (objective six). The model is well known for endogeneity problems. This procedure estimates the 2SLS by using fit models that include

instrumental variables. According to Nagler (1999) and Kmenta (2011), 2SLS provides consistent estimate of a regression equation when controlled experiments are not possible. The 2SLS model is comprised of the following two linear regression models.

$$y = X_{ex}\beta_{ex} + V_{en}\beta_{en} + e = X\beta + e$$

$$V_{en} = X_{ex}\theta_{ex} + X_{iv}\theta_{iv} + E = Z\theta + E$$

Where:

n = sample size

y = $n \times 1$ vector of dependent variable (net farm income)

X_{ex} = $n \times k_{ex}$ matrix of exogenous regressor variables

X_{iv} = $n \times k_{iv}$ matrix of instrumental variables

V_{en} = $n \times k_{en}$ matrix of endogenous regressor variable (output in kg)

β_{en} = $k_{en} \times 1$ vector of endogenous regressor parameters

β_{ex} = $k_{ex} \times 1$ vector of included exogenous parameters

$\beta = \begin{bmatrix} \beta_{ex} \\ \beta_{en} \end{bmatrix}$: $(k_{ex} + k_{en}) \times 1$ Vector of parameters

$$X = (X_{ex}|V_{en})$$

$$Z = (X_{ex}|V_{iv})$$

θ_{ex} = $k_{ex} \times k_{en}$ matrix of parameters

θ_{iv} = $k_{iv} \times k_{en}$ matrix of parameters

$\theta = \begin{bmatrix} \theta_{ex} \\ \theta_{iv} \end{bmatrix}$: $(k_{ex} + k_{iv}) \times k_{en}$ matrix of parameters

e = $n \times 1$ vector of errors

E = $n \times k_{en}$ matrix of errors

The 2SLS estimator of β is \mathbf{b} given by

$$\mathbf{b} = \{X'Z (Z'Z)^{-1}Z'X\}^{-1}X'Z(Z'Z)^{-1}Z'y$$

$$\text{var}(\mathbf{b}) = S^2\{X'Z(Z'Z)^{-1}Z'X\}^{-1}$$

Where

$$S^2 = \frac{E_{ss}}{(n - (k_{ex} + k_{en}))}$$
 the mean squared error

Where

$$E_{SS} = \sum_{t=1}^n u_i^2$$

Explicitly, the model was written as:

$$Y_i = \alpha_{10} + \beta_{11}X_{1i} + \beta_{12}X_{2i} + \beta_{13}X_{3i} + \dots + \beta_{1k}X_{ki} + u_i$$

$$X_{1i} = \alpha_{20} + \beta_{21}Y_i + \beta_{22}Z_{2i} + \beta_{23}Z_{3i} + \dots + \beta_{2k}Z_{ki} + v_i$$

Now, first equation was substituted into the second equation as:

$$X_{1i} = \alpha_{20} + \beta_{21}(\alpha_{10} + \beta_{11}X_{1i} + \beta_{12}X_{2i} + \beta_{13}X_{3i} + \dots + \beta_{1k}X_{ki} + u_i) + \beta_{22}Z_{2i} + \beta_{23}Z_{3i} + \dots + \beta_{2k}Z_{ki} + v_i$$

The dependent variable (Y) was regressed on the exogenous and endogenous (but not the instrument) variables. The endogenous variable (V_{en}) becomes the dependent variable in the first stage regression equation, which is the output (quantity) of beef marketed in the area. Each is regressed on all exogenous and instrument variables. The predicted values from these regressions replace the original values of the endogenous variables in the second stage regression model. The exogenous variables (X_{ex}) were included in both the first and second stage regression models. They were not correlated with the random error values in the second stage regression. The variables were socioeconomic factors and safety practices/regulation factors, while the instrument variables (X_{iv}) were the membership of association and market availability.

The explanatory variables were:

X_1 = Beef Odour (Yes = 1, No =1)

X_2 = Colour (Yes = 1, No =0)

X_3 = use of glove (Yes = 1, No =0)

X_4 = Pest control (Yes = 1, No =0)

X_5 = Use of Marketing Apron (Yes = 1, No =0)

X_6 = Marketing Environment (hygienic = 1, Non-hygienic = 0)

X_7 = Status of slaughter slab (clean = 1, unclean = 0)

X_8 =Packaging (well packaged =1, not packaged =0)

X_9 =Transportation (Man power =1, Machinery =0)

X_{10} = Age of the respondents (years)

X_{11} = Sex (male =1, female = 0)

X₁₂ = Marital status (married =1, otherwise = 0)

X₁₃ = Education (number of years spent in school)

X₁₄ = Household size (numbers)

X₁₅ = Experience in beef marketers (years)

X₁₆ = Membership of association (Yes = 1, No =0)

X₁₇ = Market availability (Yes = 1, No =0)

RESULTS AND DISCUSSION

Socio-Economic Characteristics of the Beef Marketer

Age of Respondents:

The result presented in the Table 1 represents the cross tabulation of the age group, gender with their respective villages and local government area. In this study, the age of beef marketers varied between a minimum of 18 years and a maximum of 58 years. The youngest beef seller who was a male found in Oja Oba Ado Ekiti, while the oldest beef seller who was also a male found in Oke Osun in Ikere township, Ekiti state . Also, majority of the beef markers were male in the study area. This was possible because beef marketing business in Africa and Nigeria in particular involves physical activities like struggling and wrestling to control the cattle, using sticks and robes when slaughtering. The business is full of risk and hazards. In addition, the Northern Muslims, which form the largest population of the beef marketers, do not allow their wives to go out for such hard business, as reported by Fenn (1977) and Auwal (2005).

The mean age was 38 years, which simply implies that beef seller in the study area were still in their economically active period of their lives. Significantly, this will improve their marketing efficiency. This is in consonance with Emokaro and Egbodion (2014) who reported that most the people involved in beef marketing were averaged aged men who are vibrant and energetic and can positively influence marketing. Also, the marketers have the probability of tracking their consumer behaviour, and adapt to the needs of the consumers since they are in their active age and they usually have contact with the users, which is also in consistence with (Dauda et al., 2018) in a study with cattle marketers.

As shown in the Table, the majority (49% and 66%) of the marketers were between the ages of (21-30) and (31-40) years, respectively. This constituted the higher percentage of the respondents in (Oja Oba and Abattoir) districts of Ado Local Government area of Ekiti State.

Marital Status of the Respondents:

The result in the Table 2 showed that majority (65.70%) of the respondents were married, about 22.10% of them were single, 8.40% were divorced while about 3.70% were widowed. Majority of the married beef sellers were male (55.30%), while about 10.40% of them were female. This is because a married marketer or seller has more responsibilities in terms of taking care of consumption needs of family and that of himself, unlike a single person whose income is for his maintenance and consumption only. The use of informal insurance measures in

managing risk is of more importance to a married/widowed marketer who may not like to take chances in his business to avoid failure. Omoare et al. (2015) and Oyediran et al. (2016) explained that marriage is an institution that confers responsibilities on individuals that are involved to take care of their families and participate in other communities' activities. As shown in the Table, beef marketers at Oja Oba and Abattoir district of Ado Local Government area of Ekiti State were mostly married.

The result presented in the Table is a cross tabulation of the respondent marital status, gender with their respective villages and local Government area.

Religion of the Respondents:

In this study, the respondent's religion was presented in the Table 3. The results revealed that majority (82.70%) of the beef sellers were Muslims, whereas 71.60% of the Muslims were male while about 11.10% of them were female. Also, about 13.20% of the respondents were Christians, whereas 13.20% of the Christians were male and there was no Christian female. The traditional worshipers were about 4.20% of the respondents. This is quite possible because of their tribal status which indicated that, most of them are well known for Islamic religion. This is evident that, when it is time for the normal 5-time prayers, the entire market remains quiet and stands still. The few Muslims would be sighted in groups here and there, waiting. They are the people always acting at the background unable to take decisions of their own for fear of intimidation and if they do not dance to the tone, they would be frustrated out of the business in no time.

Education level of the Respondents:

Formal education is a widely known avenue for improving knowledge and rate of skill acquisition formal education is also important in business because it determines the level of adoption of innovation and new technologies.

The Table 4 presents the educational qualifications of beef marketers in the study area. The results indicate that majority (98.40%) of the beef marketers had primary education and above, while only 2.10% of them had no formal education. It was further revealed that about 86.40% of the marketers who had primary education and above were male while 11.60% were female. This implies that the marketers had minimum level of education that could enable them to adopt modern marketing practices, which will help them adopt the necessary safety practice put in place to ensure quality of their beef and also transformation agenda despite the fact that they are aging. Education is very important for effective and efficient marketing. Higher educational status of marketers accelerates information dissemination, learning and skill acquisition to develop, maintain and sustain the necessary safety marketing practices. The finding conforms with the result of Mubi et al. (2012) that educational level influenced marketing efficiency.

The table below shows the result of educational status of each district. Majority (18% and 17%) of beef marketers in (Oja Oba and Abattoir) Ado Local Government area respectively had access to formal education.

Household size of the Respondents:

Household size is the number of people who live under the same roof as their main residence, and for a group, either share at least one meal a day or share the same accommodation.

The results in the Table 5 showed that beef marketers' household size varied between a minimum of 1 person and a maximum of 13 persons per house. The results further revealed that majority (69%) of the respondents had a household size of 12 people and above, about 16% of them had a household between 1 and 3 people, nearly 34% of them had between 4 and 6 people, about 31% of the respondents had between 7 and 9 people, while the remaining 40% of the beef marketers had between 10 and 13 people. The average household size was 10 persons per house. This finding reveals that beef marketers in the study area have large household size. This is in line with the finding of Ajani, Onwubuya and Nwalieji (2012), who reported that the large family size constitutes the family labour which most of the respondents rely upon to carry out their marketing process. Likewise, the findings of Ogundele and Okoruwa (2016) showed that livestock marketers have large family size. However, the mean household size of 10 individuals was beyond the national average of 5 reported by National Bureau of Statistics (NBS) (2015). High number of household size could be due to the fact that beef marketers in the study area practice polygamy and having large household size is a source of pride and a compelling force to more output by the household head. Ogunniyi and Oladejo (2011) reported that respondents with large family size assure marketers of extra helping hands in their ventures. The findings also revealed that beef farmers in Ado Local Government are of Ekiti State had the highest household size, while Ise Local Government area had the Least household size.

Years of Experience of the Respondents:

Experience in marketing determines the rate of his exposure to risks and use of risk management strategy. A seller who has spent many years in market have more experience (due to his exposure to risks and use of informal insurance measures in managing risks) than a marketer who have spent less time in marketing business. The result in the Table 4 showed that beef marketer experience varied between a minimum of 1 years and a maximum of 40 years. the result further revealed that majority (61.50%) of the respondent having years of marketing experience between 1-10 years.

As shown in the table below, the distribution of the beef marketers according to their experience shows that about 61.50% of them had between 1-10 years' experience, 31.60% of them had between 11-20 years of experience, about 4.70% had between 21-30years experience, while only 2.10% of the beef seller had above 31 years of experience in beef marketing. The respondent had an average experience of 10 years in beef marketing. By implication, the business seems to be a profitable one, since nobody will spend several years in an unprofitable enterprise. This also implies that, many of the beef marketers have been in the business for a long period of time and it is a true reflection of their ages as majorities are youths. The result also shows that beef marketers have put appreciable years into beef marketing business activities which can translate to better management and marketing strategies,

The maximum years of marketing experience was observed to be 31-40 years in Igbara Odo, ESW Local Government area of Ekiti State.

Primary Occupation of the Respondents:

The primary occupation of the respondents in the study area varied from beef marketing, civil servant, artisans and other occupation. According to the Table 6, the number of the respondents who depend on beef marketing alone in the study area was (91.1%), out of which 79.50% were male sellers and 11.50% were female sellers. About 1.10% of the respondents' primary occupation was civil servant. The results further revealed that about 6.80% of the respondents were artisans, which is their primary occupation. Agriculture is the mainstay of the people living in the rural areas and so farming and marketing is the major occupation in the rural areas. As a result, high income variability of marketers which is attributed to the risks they routinely face, some of these marketers were engaged in multiple job holdings to ensure steady flow of income into their household. The highest number of marketer (31) who primarily engaged in beef marketing was observed in Ado Local Government area of Ekiti State, followed by Ikere Local Government Area (25), while the least was observed in Ise Local Government area. The highest number marketers who were artisans (3) was found in Ijero Local Government area of Ekiti State. While, only (2) marketers who was civil servant was found in Oye Local Government area of Ekiti State.

Determine the level of Compliance of Marketers to Safety Regulations in the State.

Table 23 presents the estimates of the parameters of ordered logit regression on factors determining the level of compliance of marketers to safety regulations. The overall goodness of fit as reflected by Prob > Chi2 (0.0276) was good and desirable. Threshold parameters D1 and D2 showed that the three categories in the response were indeed ordered.

The coefficients of X_1 , X_5 , X_6 , X_7 , X_{10} , X_{11} , X_{14} , X_{15} and X_{17} variables (Availability of Beef Marketing Regulation, Cleaning of slabs, Presence of beef association, Market Sanitation, Practice of not allowing Customers in touching the Beef, Other Occupation, Marital Status, Education, and Experience of beef Marketing) were positive in determining the level of compliance meaning that a unit increase in any of their values will likely increase the level of compliance with the safety regulations in the area. While the following variables; X_3 , X_4 , X_8 , X_9 , X_{12} , X_{13} and X_{16} (Beef Inspection, Refrigeration of leftover, Use of sterilized tool, Proper covering of beef displayed for buyers, Age of the respondents, Sex and Household size) had negative coefficients meaning that a change in their values will increase the chance of determining the level of compliance of marketers to safety regulations in the area.

It was also observed that X_1 , X_4 , X_5 , X_6 , X_7 , X_{12} , X_{14} , X_{16} , X_{15} and X_{17} (Availability of Beef Marketing Regulation, Refrigeration of leftover, Cleaning of slabs, Presence of beef association, Market Sanitation, Age of the respondents, Marital Status, Household size, Education, and Experience in beef marketing) were statistically significant in influencing the level of compliance of the beef marketers to safety regulations.

Availability of Beef Marketing Regulation: The coefficient of X_1 was positive and significant at 5% level. This means that availability of beef marketing regulation will likely increase the level of compliance by 11.0% compare with when it is not available.

Refrigeration of leftover: The coefficient of refrigeration is negative but significant at 5% level. This implies that practicing refrigeration as safety will likely reduce the level of compliance by 56.6%.

Cleaning of slabs: Cleaning of slab is statistically significant at 1% level and positive in determining the level of compliance to safety regulations in the area. This means that cleaning the slab daily will likely increase the level of compliance by 17.0% compare to the weekly cleaning of the slab.

Presence of beef association: The coefficient of the presence of beef association is positive and significant at 5% level in affecting the level of compliance meaning that belonging to a beef association will increase the level of compliance by 25.6%.

Market Sanitation: The coefficient of market sanitation is positive and significant at 5% in influencing the level of compliance to safety regulation. This can be interpreted as the more market sanitation is practiced the more the level of compliance with the magnitude of about 90.0%.

Age: Age of the respondents is negative in influencing the level of compliance but statistically significant at 1% level. This implies that as the marketer is getting older, the level of compliance is reduced by 16.1%.

Marital Status: The coefficient of marital status was significant at 10% and also positive in influencing the level of compliance. This means that being married will likely increase the level of compliance by 54.3%.

Education: Education is positive and significant at 10% in influencing the level of compliance meaning that additional year spent in school will likely increase the level of compliance by 35.3% in the area.

Beef Marketing Experience: Beef marketing experience had positive coefficient and highly significant at 1% level in influencing the level of compliance in the area. This means that as the year of beef marketing increase, the more the likelihood of being compliance to the safety regulations in the beef marketing by 38.1%.

Table 2: Result of ordered logit regression model

| Explanatory variable | Coefficient | P- value |
|---|--------------------|-----------------|
| Availability of beef marketing regulation | 0.1076** | 0.020 |
| Beef inspection | -0.3331 | 0.430 |
| Refrigeration | -0.5662** | 0.044 |
| Cleaning of slabs | 0.1695*** | 0.001 |
| Presence of beef association | 0.2562** | 0.040 |

| | | |
|---|------------|-------|
| Market sanitation | 0.9003** | 0.013 |
| Use of sterilized tool | -0.2907 | 0.815 |
| Proper covering of beef displayed for buyers | -0.4195 | 0.368 |
| Practice of not allowing customers in touching the beef | 0.1964 | 0.540 |
| Other occupation | 0.1899 | 0.430 |
| Age | -0.1614*** | 0.001 |
| Sex | -0.4232 | 0.370 |
| Marital status | 0.5428* | 0.060 |
| Education | 0.3528* | 0.055 |
| Household size | -0.5582** | 0.050 |
| Experience | 0.3805*** | 0.009 |
| D1 | 2.402** | |
| D2 | 4.066** | |

Log likelihood = -189.53; LR Chi2 (16) = 16.37; Prob.>Chi2 = 0.0276; Pseudo R² = 0.4140; ***significant at 1%, **significant at 5%, *significant at 10%

Cost implication on safety practices

Table 23 indicated the cost implications of safety practices of beef marketer in the study area. The result further revealed a total cost of ₦5,611.31 was incurred on safety practices by the beef marketers in the study area. Refrigeration cost takes the largest (42.8%) of all the cost incurred on safety practices. This is due to high cost of power in running the refrigerator. Also, inspection cost takes the second largest cost (19.0%) of the cost incurred on beef safety practices, and cost of transporting beef from the market to cold room accounted for about 16.5% of the cost incurred on beef safety practices. The result further revealed that a beef seller made an average daily sale of 15.2kg, which accounted for about ₦30,400.00 returns. Also, revenue of ₦10,000 was made by a beef marketer after beef safety has been practiced by the marketer. Therefore, a net return of ₦4,388.69 was accrued, indicating that practicing safety in beef marketing also attract profit in the study area. The benefit cost ratio was computed to be 1.8. This implies that for every one naira spent by a beef marketer that comply with the safety practices will realize about ₦1.80k, ceteris paribus. The higher the benefit cost ratio the better for the investment because a benefit cost ratio of 1 means that the business is neither making profit or making loss but just break even while benefit cost ratio of greater than 1 means that the business is making profit and less than 1 means the business is making loss. The result from this study showed that complying with safety regulations in beef marketing was profitable in the study area.

Table 3: Cost Implication of Safety Practices:

| Items | | | | Amount (N) |
|----------------------------------|-----------|----------------------|-------------------|-------------------|
| Inspection | | | | 1068.90 |
| Market place | | | | 385.20 |
| Beef Transportation to cold room | | | | 924.10 |
| Packaging | | | | 316.8 |
| Slab Cleaning | | | | 62.10 |
| Apron | | | | 276.31 |
| Sanitation | | | | 175.8 |
| Refrigeration | | | | 2,402.1 |
| Total | | | | 5,611.31 |
| Revenue | Kg | Selling Price | Amount (N) | |
| Average daily sales | 15.2 | 2000 | 30,400 | |
| Sales after Safety Practices | 5 | 2000 | 10,000 | |
| Profit | | | | 4,388.69 |
| Benefit Cost Ratio (BCR) | | | | 1.8 |

Source: Field Survey, 2021.

Conclusion

Despite the various constraints experienced in the study area, beef marketing was identified as a profitable venture, the results revealed an average gross margin of N39,228.00 with benefit cost ratio of 2.3. Hence, the profit margin can be improved if consideration is geared towards addressing all the identified constraints that tends to increase the marketing cost and thereby causing losses to the industry. High transportation and refrigeration cost including, contingency, inadequate capital, inadequate structures, inadequate market information, association and Government dues, buying of stolen animals and fluctuations in demand were identified as problems faced by the marketers.

It has been shown in this study that beef is mainly marketed in Ekiti State by married, fairly educated and experienced male marketers still in their active age of production.

Also, safety beef practices used by the beef marketers to ensure proper beef hygiene and quality beef production by the marketers such as, use of gloves, refrigerator, frequent cleaning of their

market point and frequent changing and cleaning of their apron, use of clean water, and the likes encouraged more customers patronage which in return increases revenue generated.

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