

## Marketing Perspective of Smoked Catfish by Consumers in South-West Nigeria

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### ABSTRACT

Catfish consumption is increasingly becoming popular among Nigerians. With the rate of growth in population, demand is likely to be on the increase in the future. This paper determined the marketing perspective of smoked catfish (*Clarias gariepinus*) by consumers in South West Nigeria. A Multistage sampling procedure was used for data collection. Three States in South West were randomly selected for the study. A total of 300 respondents were sampled. Descriptive statistics and Tobit model were the statistical tools used for the analysis. The result revealed that there was a high level of smoked catfish acceptance (92.6%) and consumption (88.3%) in the study area. Considering the factors that actually influenced the quantity of smoked catfish consumed, the result showed that consumers' income (0.0018671) and household size (0.2691329) had positive and statistically significant influence (at 5%, respectively) on the quantity of smoked catfish consumed. There was a negative relationship between higher educational level and fish consumption (-0.3855556), which was significant at 10%. Since household size, level of income and male headed household (0.5373099), which was significant at 1%, all influenced consumption of smoked catfish, it is therefore expected that smoked catfish will be a lucrative business in south west Nigeria..

**Keywords:** catfish; consumers; consumption; marketing; perception; quality

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### INTRODUCTION

Fish is an essential source of food and relatively cheap source of animal protein to many people across developing nations, especially Nigeria. People in some communities in various regions and states in Nigeria derived their livelihood from fishing and related activities as a result of their closeness to oceans and seas. Fish is an important part of the diets of people in these regions. It has been reported that fish consumption accounts for about 35% of animal protein consumption in Nigeria and this could mean that fish farming is a vibrant and dynamic commercial sector in Nigeria, ripe with investment and employment opportunities (USAID, 2014).

Data shows that Nigeria produced about 968,283 metric tons of fish in 2012 (Shehu, 2014). Despite this high level of fish production in Nigeria, the demand for fish is still higher than what the supply in the market could meet up with. According to USAID (2014), consumer demand in Nigeria was reported to be 2.66 million metric tons which was met only in part by imports of about 740,000 metric tons that same year. Fish ranked second to wheat in the total food imported into Nigeria between years 2006-2010 with an average annual value of N113.63 billion

(Vaughan *et al.*, 2014). This shows how thousands of the Nigerian populace derive their livelihood directly from activities related to fish procurement, distribution or consumption.

Furthermore, the average fish consumption in Nigeria is placed at 9.8 kg/caput (USAID, 2010); this is still far from meeting the World Health Organisation (WHO) recommendation of 15 kg/caput fish consumption. With the rate of population growth in Nigeria, demand is likely to be on the increase for the consumption of fish in the future. The reasons for particular food choices are complex and diverse and food consumption, like any other complex human behaviour, is influenced by many interrelating factors. According to Furst *et al.* (1996) and Olsen (2001) such factors include food quality aspects (such as flavour, texture, odour) and characteristics of the individual (such as personality, preferences, attitudes, perceptions, knowledge). Consumers' preferences and interests are always of the foremost importance to aquaculturists, leading to an improvement of aquacultural techniques and producing food, which is considered by the consumer as attractive and acceptable. In this view, the fish consumer constitutes a major link

between the supply and demand. The knowledge of consumers' preferences might increasingly contribute in the improvement of the terms of production, fish distribution and the quality of their processed products (Garnier *et al.*, 2003).

Different types of fish are consumed in Nigeria, among which include: Senegal jack (*Caranx senegallus*), Marine catfish (*Arius mercatoris*), Alexandria's pompano (*Alectis alexandrines*), Mud catfish (*Clarias gariepinus*), Bonga fish (*Ethmalosa fimbriata*) and Baraccudas (*Sphyraena afria*). Mud cat fish consumption is increasingly becoming popular among Nigerians. It can be consumed in different ways. Due to its perishability, many preservative methods are employed to extend its shelf life in Nigeria. Such methods include freezing, drying, smoking, etc. However, smoking is the most common and practicable method of preservation (Eyo, 1992). This is due to the fact that it is affordable and improves the organoleptic properties of the final product. Smoking is practised by rural and urban dwellers. In preserving fish by smoking, water activity is lowered to the point where the activity of spoilage microorganisms is inhibited (Okonta *et al.*, 2005; Akinola, 2006).

Processors of smoked fish adopt different handling methods which have effect on the quality of the final product. According to Eyabi-Eyabi (2000) and Omojowo *et al* (2008) salting, addition of vinegar as well as the type of wood used for the smoking fire have significant contribution to the quality of smoked fish. Other methods that may contribute to the quality of smoked fish include method of harvesting and killing the fish, duration of holding the fish before smoking, type of oven. It is therefore important to obtain information on consumers' perspective of fish quality as this would assist processors to meet their demand.

In view of the above, this paper therefore seeks to answer the following questions:

- i. What are the socio-economic characteristics of smoked catfish consumers?
- ii. What is the level of smoked catfish consumption among the respondents?
- iii. What is the perception of people towards smoked catfish?
- iv. What are the criteria considered before buying smoked catfish?
- v. What are the factors that determine the consumption of smoked cat fish?

The broad objective of the study is to determine marketing perspective of smoked catfish (*Clarias gariepinus*) by consumers in south west Nigeria. Specifically, the study sought to:

- i. determine the socio-economic characteristics of smoked catfish consumers;
- ii. determine the consumption pattern of catfish among the respondents;
- iii. determine the perception of people about smoked catfish;

- iv. examine the criteria being considered by the respondents before purchasing smoked catfish; and
- v. determine the factors that contribute to consumption of smoked cat fish..

## METHODOLOGY

### *Study Area*

The study was conducted in South West Nigeria, made up of six states, namely: Ekiti, Lagos, Ogun, Ondo, Osun and Oyo states. The region has a land mass of 76,852 square kilometers and a population of about 27.7 million (Nigeria Bureau of Statistics, 2010). The south-west region is dominated majorly by Yoruba tribe.

The weather conditions vary between the two distinct seasons in Nigeria; the rainy season (which usually starts in March and ends around November) and the dry season (usually between November-February). During the dry season, the region experiences harmattan which is associated with dust, cold, dry winds from the northern deserts. Male and female, both old and young are involved in fishing activities in the region. Although, women are more involved in processing and marketing of the product; while men are into the production and harvesting of fish. Traditionally, men paddle canoe (mostly in the coastline) to harvest fish. Lately, production of cat fish through culture system is becoming popular in the region.

### *Sampling procedures*

Multistage sampling procedure was used for data collection. Three (3) South West states, namely: Ogun, Ondo and Osun were selected using random sampling method for the study. Then, there was purposive selection among communities where catfish was regularly smoked and marketed in order to get adequate respondents. A total of 100 respondents were randomly sampled across the selected communities in each of the state. 300 questionnaires were administered in all the three states, out of which 19 questionnaires were found not useful for analysis due to missing data. The questionnaire was partitioned into three basic sections: socio-economic characteristics; their smoked catfish consumption pattern as well as the factors considered in purchasing the product.

### *Analytical technique*

Descriptive statistics was employed to measure the socio-economic characteristics, consumption and perception of smoked catfish by the respondents, while Tobit model was used to determine the factors that contributed to smoked catfish consumption by the respondents. Some of the variables such as sex (male = 1, female = 0), age, marital status, secondary occupation, consumption, etc. were coded as dummy variables (1, and 0 if otherwise). The respondents whose smoked catfish consumption is insignificant, that is, those that consumed smoked catfish once-in-a-blue-moon were censored to 0. Shazam statistical package, version 9, was used to run the data to generate results.

Tobit model is specified as:

$$Y_i^* = X_i\beta + e_i$$

Where  $e_i = N(0, \sigma^2)$

$Y_i^*$  = latent variable that is observed for values greater than 0 and censored otherwise.

The observed  $Y$  is defined by the following measurement equation:

$$Y_i = \begin{cases} y^* & \text{if } y^* > 0 \\ 0 & \text{if } y^* \leq 0 \end{cases}$$

$$Y_i = Y_i^*$$

Traditionally, if we parameterize  $\mu$  as  $X_i\beta$ , this will give us the likelihood function for the Tobit model as:

$$L = \prod_i^n \left[ \frac{1}{\sigma} \phi \left( \frac{Y_i - X_i\beta}{\sigma} \right) \right] d_i \left[ 1 - \phi \left( \frac{X_i\beta}{\sigma} \right) \right]^{1 - d_i}$$

where;

$Y_i$  = observable choice or outcome

$X_i$  = independent variable ( $X_1, X_2 \dots X_n$ )

$\beta$  = coefficient of independent variables

$d$  = dummy indicator variable that equals 1 if  $y > 0$

$\sigma$  = variance of the of estimate

$\Phi$  = standard normal probability distribution function

## RESULT AND DISCUSSION

### Socio-economic characteristics of the respondents

Table 1 below shows the socio-economic information of the respondents. Majority of the respondents (35.2 %) belonged to the age range of 26-35 years, followed by the people in the age range of 36-45 years (24.6 %) while those who were less than 18 years were in the minority. This age distribution reflects that a good percentage of the sampled population are smoked catfish consumers and this could contribute significantly to improving health status among the larger percentage of working group in the society. The result also shows that 54.8 % of the respondents were male while about 45 % were female. This could mean that a good percentage of household heads are more interested in consuming smoked catfish and this could positively influence the entire family members into consuming smoked catfish. Parents, especially the household heads, are more influential in modifying the diet of children in the family and thus, this may have influence in encouraging the children in the family to consume smoked catfish (Jennifer *et al.*, 2007; EUFIC, 2016)

The marital status distribution of the respondents' shows that majority (62.6 %) of the respondents were married; about 35 % were single while 2.2 % were either divorced or widowed. About 53.4 % of the respondents had household size range of 4-6; with 34.2% and 12.5% possessing 1-3 and above 6 household sizes, respectively. It could therefore be deduced that smoked catfish is more popular among the married people and who could possibly have an average household size of 4-6 in the study area.

Considering the educational background of the respondents, majority of them (69.4 %) had tertiary education; 14.2 % had secondary education and 4.6% of the respondents had no formal education. The educational background might be an indication that the people of south-western Nigeria are well educated. This

view is also supported by Huang (1994) and Madu (2013) as Leonard Madu concluded that the people of the south west Nigeria are very significant in Nigeria's business and commerce, politics and also predominate the media and legal professions in Nigeria.

More than 74 % of the respondents were Christians, about 22 % practised Islam while 3.2 % practise other forms of religions. This may indicate that consumption of smoked fish is most rampant among Christians than other religions. It may also mean that food taboo has the most impact among traditional worshippers.

The socio-economic distribution of the respondents further shows that about 43 % of them were public/civil servants; about 22 % were either traders/artisans or render some other form of services in business world while about 35 % were students. This distribution could be an indication that all classes of the society are interested in the consumption of smoked catfish in the southwest region of Nigeria.

The income distribution of the respondents shows that about 14 % of the respondents earned less than ₦10,000:00k per month. Majority of the respondents (about 53 %) earned between ₦10,000.00k and ₦60,000.00k, while very few (8.8 %) earned between ₦150,001.00k and ₦250,000.00k. It was observed that income did not vary evenly along with educational background of respondents.

### Respondents' perception and consumption of smoked catfish

Table 2 below shows the respondents' perception and consumption of smoked catfish in the study area. About 88.3 % of the respondents consumed smoked catfish in the study area while 12% did not. Thus, there was a high level of smoked catfish acceptance and consumption in the study area. The mode of consumption differed as most of the respondents who consumed catfish (36.3 %) preferred it in pepper soup form while 32.4 % of the respondents preferred to consume it in the smoked form while 1.8 % of the respondents were indifferent.

**Table 1:** Socio-economic characteristics of the respondents.

Socio-Economic Characteristics	Frequency	Percentage
<i>Age distribution</i>		
<18	2	0.7
18-25	60	21.4
26-35	99	35.2
36-45	69	24.6
46-55	36	12.8
56-65	15	5.3
<i>Total</i>	<i>281</i>	<i>100</i>
<i>Sex distribution</i>		
Male	154	54.8
Female	127	45.2
<i>Total</i>	<i>281</i>	<i>100</i>
<i>Marital status distribution</i>		
Single	99	35.2
Married	176	62.6
Divorced	3	1.1
Widowed	3	1.1
<i>Total</i>	<i>281</i>	<i>100</i>
<i>Household size distribution</i>		
01-Mar	96	34.2
04-Jun	150	53.4
Above 6	35	12.4
<i>Total</i>	<i>281</i>	<i>100</i>
<i>Education background distribution</i>		
No formal education	13	4.6
Primary education	20	7.1
Secondary education	40	14.2
Tertiary education	195	69.4
Adult education	13	4.7
<i>Total</i>	<i>281</i>	<i>100</i>
<i>Religion distribution</i>		
Christianity	209	74.4
Islam	63	22.4
Traditional	5	1.8
Others	4	1.4
<i>Total</i>	<i>281</i>	<i>100</i>
<i>Primary occupation distribution</i>		
Public/Civil servants	121	43.1
Trading/Business/ Artisan	62	22.1
Students and others	98	34.8
<i>Total</i>	<i>281</i>	<i>100</i>
<i>Income distribution(₦)</i>		
<10,000	39	13.9
10,000-30,000	75	26.7
30,001-60,000	72	25.6
60,001-90,000	33	11.7
90,001-120,000	27	9.6
120,001-150,000	8	2.8
150,001-180,000	17	6
180,001-250,000	8	2.8
>250,000	2	0.7
<i>Total</i>	<i>281</i>	<i>100</i>

**Table 2:** Consumption/perception of catfish by respondents.

Consumption/Perception	Frequency	Percentage
<i>Consumed smoked catfish</i>		
Yes	248	88.3
No	33	11.7
<b>Total</b>	<b>281</b>	<b>100</b>
<i>Preferred form of consumption</i>		
Boiled	62	22.1
Pepper soup	102	36.3
Smoked	91	32.4
Fried	21	7.5
Indifferent	5	1.8
<b>Total</b>	<b>281</b>	<b>100</b>
<i>Acceptability by household</i>		
Yes	260	92.6
No	21	7.5
<b>Total</b>	<b>281</b>	<b>100</b>
<i>Present smoked catfish as gift</i>		
Yes	211	75.1
No	70	24.9
<b>Total</b>	<b>281</b>	<b>100</b>
<i>Attraction to smoked catfish</i>		
Sweet aroma	80	28.5
Rich source of nutrient	59	21
More delicious	81	28.8
Storage quality	39	13.9
Indifferent	22	7.8
<b>Total</b>	<b>281</b>	<b>100</b>
<i>Smoked catfish is more</i>		
<i>Nutritious</i>		
Strongly agreed	90	32
Agreed	70	24.9
Strongly disagree	25	8.9
Disagreed	47	16.7
I do not know	49	17.4
<b>Total</b>	<b>281</b>	<b>100</b>
<i>Preferred processing method</i>		
Oven drying	102	36.3
Smoking Kiln	109	38.8
Charcoal pot	38	13.5
Sun Drying	26	9.3
Indifferent	6	2.1
<b>Total</b>	<b>281</b>	<b>100</b>
<i>Average quantity purchased in a month (kg)</i>		
<1	98	34.9
01-Mar	108	38.4
04-Jun	36	12.8
07-Oct	12	4.3
>10	12	4.3
Never purchased	15	5.3
<b>Total</b>	<b>281</b>	<b>100</b>

Majority of the respondents (92.6 %) revealed that smoked catfish was acceptable to the members of their household. Smoked catfish consumers constitute an important link between supply and demand. The knowledge of the consumer preferences might therefore play important role in the production and distribution of smoked catfish.

About 75 % of the respondents accepted they had either purchased or could purchase smoked catfish as a gift to either friends or families. This again indicates a good acceptability of smoked catfish in the south west Nigeria.

Major factors that attracted consumers to purchasing smoked catfish were found to be the 'sweet aroma that exudes from smoked catfish'(28.5 %), 'rich source of nutrient'(21 %), 'good delicious taste that comes with smoked fish' (28.8 %) and 'better storage quality' (13.9 %) . Only 7.8 % of the respondents were indifferent to the attractive factors associated with smoked catfish.

When considering the perception of the nutritional value of the smoked fish, a good number (32 %) of the respondents 'Strongly agreed' while some (24.9 %) others 'Only agreed' that smoked catfish is better in nutritional quality than the fresh catfish. This high level of knowledge could be associated with the educational status of the respondents in the study area. The result further showed that about 25.6 % of the respondents 'totally disagreed' that smoked catfish was of better nutritional quality than fresh catfish while a few others (17.4 %) of the respondents did not actually know any information about the nutritional quality of smoked catfish.

Table 2 further shows that 38.8 % of the respondents preferred smoking kiln as a means of processing catfish while about 36 % actually liked it oven dried, and only 2.1 % were indifferent about how catfish was being processed. Those indifferent only desired to eat smoked catfish. An average of 1-3 kg and 4-6 kg of smoked catfish were purchased and consumed monthly by most of the respondents who represented 38.4 % and 12.8 %, respectively. This shows an indication that smoked catfish will be a huge success if it can be taken as a business as there is potential good market for the product. About 35 % of the respondents consumed less than 1 kg per month while only few respondents (5.3 %) had never purchased smoked catfish as some claimed that they do not like how it tasted. A similar research carried out in the United States indicated that 13 % of the survey respondents decreased their consumption of sea foods during the previous two years, because of the change in lifestyle and taste (Wessells *et al.*, 1996). Also, in a research conducted by Kreider *et al.* (1993) in Delaware-US, taste was the most frequent reason given by respondents (42.3 %) who did not consume fish and sea foods. Thus, 5.3 % of the respondents who did not consume smoked catfish would not have any major impact on the marketability of the product in the study area like it would have caused if the percentage was as high as the similar study in Delaware, US.

### **Criteria being considered by the respondents before purchasing smoked**

The extent to which certain attributes of catfish influenced respondents' decision to purchase is shown in Table 3. Attributes such as aroma (56.2 %), skin condition (59.4 %), level of dryness (84.7 %), and packaging (51.2 %) were desirable factors that most respondents considered during purchase of smoked catfish. Hence, it is advisable that the potential producers and/or marketers of smoked catfish take cognizance of these factors in order to obtain high acceptability of their products by the consumers. On the other hand, majority of the respondents were not really interested in considering factors such as skin colour of the smoked fish (55.6 %), body rigidity (61.2 %), body consistency of the smoked fish (63 %) and the fish belly puffiness (74.7 %). Also, majority of the consumers were neither interested in the source of the smoked catfish nor cared about the National Foods Drugs Administration and Control (NAFDAC) registration number before they placed their order of smoked fish. Again, all these can be considered a great advantage for any potential investor in smoked catfish as they have less to worry about to attain consumers' satisfaction.

### **Factors influencing the quantity of smoked catfish consumed by the respondents**

Considering the factors that actually influenced the quantity of smoked catfish consumed by the respondents per month, the results in Table 4 shows that consumers' income (0.0018671) and household size (0.2691329) had positive and statistically significant influence (at 5%, respectively) on the quantity of smoked catfish consumed, suggesting that improved income and increases in household size could substantially raise consumption of smoked catfish in south-west Nigeria. This study is in line with Amao and Ayantoye (2014); Mafimisebi (2012); Musaba and Namukwambi (2011); Amao *et al* (2006) and Delgado *et al.* (2003) who found positive influence of increase in household size and income on fish consumption in their respective studies as well as Dalhatu and Ala (2010) who established positive relationship between household fish consumption and household size. Ali-ud-din Khan and Ahmad (2014) in their study on income and consumption generally concluded that the level of income and household size both had positive influence on level of consumption and this study is in concordance with that. The findings of this study contradicts Cengiz Sayin *et al.* (2010) who established negative/insignificant relationship between income and household size on the level of fish consumption. Table 4 further shows that there was a negative relationship between higher educational level and fish consumption (-0.3855556), which contradicts Ali-ud-din Khan and Ahmad (2014) findings that increase in level of education had a positive influence on consumption. This suggests that higher formal educational attainment may induce negative incentive towards smoked catfish consumption in southwest Nigeria.

**Table 3:** Attributes of smoked catfish affecting purchase

Attributes	Frequency	Percentage
<i>Aroma</i>		
Yes	158	56.2
No	123	43.8
<i>Total</i>	<i>281</i>	<i>100</i>
<i>Skin condition</i>		
Yes	167	59.4
No	114	40.6
<i>Total</i>	<i>281</i>	<i>100</i>
<i>Level of dryness</i>		
Yes	238	84.7
No	43	15.3
<i>Total</i>	<i>281</i>	<i>100</i>
<i>Packaging</i>		
Yes	144	51.2
No	137	48.8
<i>Total</i>	<i>281</i>	<i>100</i>
<i>Skin colour</i>		
Yes	125	44.5
No	156	55.6
<i>Total</i>	<i>281</i>	<i>100</i>
<i>Body rigidity</i>		
Yes	109	38.8
No	172	61.2
<i>Total</i>	<i>281</i>	<i>100</i>
<i>Body consistency</i>		
Yes	104	37
No	177	63
<i>Total</i>	<i>281</i>	<i>100</i>
<i>Belly puffiness</i>		
Yes	71	25.3
No	210	74.7
<i>Total</i>	<i>281</i>	<i>100</i>
<i>Source of catfish</i>		
Yes	109	38.8
No	172	61.3
<i>Total</i>	<i>281</i>	<i>100</i>
<i>NAFDAC registration number</i>		
Yes	41	14.7
No	240	85.4
<i>Total</i>	<i>281</i>	<i>100</i>

*Source: Field Survey, 2014*

This finding is contrary to our expectation; this is because appreciation of the nutritive values of foods has been shown to be positively related with higher educational attainment.

The position of this paper is not to marginalize or downplay the significant role of education in improving food (fish) consumption. It might be thinkable that with higher level of education beyond the secondary school, nutritional knowledge may drive food (animal protein) consumption away towards consumption of other types of fish or animal protein sources. Some of the studies that have found positive relationship between level of

education and fish consumption include Dalhatu and Ala (2010) and Amao *et al.* (2006) and those that have established insignificant/negative relationship include Gebrezgabher *et al.* (2015) and Mafimisebi (2012), among others. None of the coefficients of state-level dummies is statistically significant; suggesting that the qualitative (spatial) differences in the consumers place of residence is unlikely to substantially influence consumption of smoked catfish among the consumers. The study also revealed that the gender (male) specificity of the consumer would have little influence on smoked catfish consumption.

**Table 4:** Tobit regression on factors influencing the quantity of smoked catfish consumed by the respondents per month.

Variable	Coefficient	Robust			
		Std. Error	T-Ratio	P> t	[95% Conf. Interval]
Household size	0.2691329	0.11959	2.25**	0.025	0.0336738; 0.504592
Income (₦)	0.0018671	0.00094	1.99**	0.048	0.0000167; 0.0037174
Secondary Education dummy	-0.2316601	0.28301	-0.82	0.414	-0.7888785; 0.3255583
Tertiary Education dummy	-0.3855556	0.23125	-1.67*	0.097	-0.8408659; 0.0697548
Age range 31 to 45	-0.2828767	0.20062	-1.41	0.16	-0.6778657; 0.1121123
Age ≥45	0.0274807	0.26539	0.1	0.918	-0.4950361; 0.5499976
Sex (Male) dummy	0.5373099	0.15264	3.52***	0.001	0.2367742; 0.8378456
Marital status (single) dummy	0.2486610	0.19600	1.27	0.206	-0.1372448; 0.6345667
Religion	0.0418194	0.17145	0.24	0.807	-0.2957432; 0.379382
Occupation (civil servant) dummy	0.1442914	0.17674	0.82	0.415	-0.2036912; 0.4922739
Ogun state (dummy)	-0.3123081	0.25835	-1.21	0.228	-0.8209718; 0.1963555
Osun state (dummy)	-0.2562524	0.26782	-0.96	0.34	-0.7835576; 0.2710529
Ondo state (dummy)	-0.0299263	0.27835	-0.11	0.914	-0.5779726; 0.5181201
Constant	1.106266	0.41003	2.7	0.007	0.2989603; 1.913571
Sigma	1.213596	0.06722			1.081248; 1.345943

Source: Computed from Field survey, 2014

Note: \*\*\* = Significant at 1%, \*\* = Significant at 5% and \* = Significant at 10%

## CONCLUSION

It could be drawn from this study that smoked catfish is highly popular among the people of south-west Nigeria as good percentage of respondents preferred smoked catfish to any other form of processing due to its high nutritive value. The level of dryness of the smoked catfish and the packaging strategies of the smoked catfish by the farmers/marketers also played significant roles in the sales of smoked catfish in the study areas. The significance of packaging is in consonance with Adebo and Toluwase (2014) which recommended that there is need for research focus on packaging of smoked catfish for value addition in order to improve the marketability of the product. Since household size, level of income and male headed household all influenced the consumption of smoked catfish, it is therefore expected that smoked catfish will be a lucrative business in the south-western Nigeria. It is necessary to encourage those in the business through micro-credit scheme to improve on packaging technology which could enhance the marketability of the product and relevant law enforcement agents should ensure strict Good Manufacturing Practice among smoked catfish processors since majority of consumers never care about the endorsement of the product by government agency such as NAFDAC before consumption.

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