Determinants of consumers' Preference for Safe Chicken Consumption in Imo State, Nigeria

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Abstract: The need to improve the economic value of chicken sold in the market and the health condition of most consumers in Imo State requires that consumers' preference for quality chicken product be enhanced. This study estimated the level of confidence consumers of the product have built on the safety nets provided by NAFDAC and isolate the factors affecting the preference for safe chicken demand in Imo State. Data for the study were obtained from 80 consumers of the product across the three zones of the state using a multi-stage sampling technique. Study analyses were based on simple descriptive statistics, cross tabular analysis and logit regression estimates. The result showed that school curriculum education process and informal source of information are the major sources of information of chicken safety net. While the former source may not expose the recent cause of safety crisis, the later source is unorganized unguided by facts and very contagious, leading to market instability if found untrue. Consumers prefer personal assessment to safety through good sanitary condition and the use of food labels. Though there is an increasing preference for food safety in the state, consumers patronizes open market system despite its unorganized safety habits and lack of improved technology to facilitate confidence for reliable safety of the product. The open market lacks NAFDAC standard and offers cheap services to most consumers. It was very surprisingly to find that consumers' level of education, bid amount for safety and the number of safety information sources have an inverse relationship with the probability that a consumer will make preference for safe product. Education and the number of safety information sources performed otherwise because of cost implication of safety nets. Consumers cannot afford the cost of safe chicken in the areas despite their level of education. Consumers' most times compromise food safety. Again, it was found that increasing the consumers' age, income and household food expenditure will improve the chances of preference for safe chicken products in the area. The study therefore, recommends a technological enhancement and acquisition of storage facilities such as refrigerators and oven with constant power supply to preserve the product at all times, strict daily check of the product by NAFDAC, and affordability of safety services by the consumers in the state.

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Introduction

Economic development does not only center on eradication of poverty among the people but a change in people's orientation and accepting positive ideas on living standards. The attitude to safety especially that concerning food should be of paramount concern (Lawley et. al. 2008). Food safety is a public health issue, which ensures that ingested food substance is organized around a risk free condition. Chicken product possesses high quality when the organoleptic properties such as maximum life weight, absence of breast blisters, absence of broken wings or bones, colour and appearance are ensured as well as free from pathogenic contaminants. Lawley et al. (2008) and Ehirim et al (2007), noted that food safety is an important attribute to consumers as he has the right to safety. Consumers therefore, should naturally build in safety interest without persuasion. Food safety attribute is a natural factor that should encourage sustainable health, and economic development (Ehirim et al., 2007). Improving food safety habits depends on the social and economic disposition of the consumers (Loureiro and Umberger, 2003). In most developing nations, food safety is compromised due to poor socio-economic disposition such as illiteracy and poverty status of the people (Ehirim et. al., 2007). Preference for safe chicken products is mostly influenced by the income status of the consumers and demographic characteristics. Although high level of formal education attainment is expected to enhance the demand for a high quality product, as high level of education improves the level of human development and offers good awareness about food safety to an individual (Ehirim et al., 2007), most consumers despite their level of education cannot afford regular food supply, hence, the idea of food safety is often ignored and preference for such food can increase without due course to safety.

The indifference attitude by some consumers to food safety in the state is facilitated by

information asymmetry. In developed world for instance, daily information about commercial food safety status is announced and every household becomes a stakeholder to safety as bad foods are quickly withdrawn from the market. FSA (2008) announced that London has designed a risk based inspection programme for commercial food premises. This is done to reduce health risk occurrence associated with public food system in London. The same system offers a route to the removal any food unit that fails to meet with the standard. Nigerian food vending system with its centralized safety agency, hardly disseminate daily food safety information except at a near health crisis period or emergency. This may be due to poor information technology and declining attitude toward policy implementation in Nigeria. The deplorable sanitary condition of food vending outlets in most Nigeria open markets where majority of the consumers afford their daily food is enough to account for this problem. The poor information dissemination and attitude to food safety of most food suppliers in the society results to a high safety risk to consumer in the state.

The need for safety and the intricacies of the safe food supplies coupled with the juggled roles of food safety agencies in Imo State, which lead to consumers' indifference about safe chicken consumption in the state have called for this study. Consumers make most of their food demand from the open market or registered food joints only when their income increases. This study therefore wants to estimate consumer interest on safe chicken consumption and isolate the factors that will enhance their preference for safe chicken consumption in the state. It tested the null hypothesis that socio-economic and attitudinal variables of the consumers are common determinants of preference for safe chicken consumption in the state. The study is relevant in improving the performance of chicken suppliers in the state, and assisting the consumer protection agencies in manipulating the major variable in sensitizing consumers on safety consciousness as well as enhancing commercial food vending in the marketing system.

2.0 Theoretical Frame work

Food safety embodies high quality food free from pathogenic contaminants (Lawley et. al., 2008) and food becomes unsafe when its value in terms of colour, taste and appearance depreciates or it becomes unfit for consumption. Lack of safety in food can be traced to the production or distribution/handling processes of the food. Nwufor (2004), pointed out that poor handling during distribution of agricultural product can create a path way for disease penetration into the food. Mechanical injuries with outdoor exposure of processed food to harsh environmental condition can accumulate a load of pathogens and disease condition in food, which may cause health problems to the consumers. In other words, the bad distribution device of most food in Nigeria account for high rate of food poising and unhealthy food crisis among the people. Akunyeli (2007), opined that most developing nations like Nigeria have a high percentage of consumption of sub-standard food. The growing concern of food poising occurring as a result eating out or at home results from poor handling (Nwufor, 2004), lack of cleanliness and inadequate temperature control (FSA,2008). Ehirim et al. (2007), emphasized on the changing the attitude of fish consumers' in Bayelsa State of Nigeria through increasing food safety awareness by the Consumer' Protection Council and the use of sever sanctions to control suppliers of fish products in the state who failed to meet the food standard of the country.

The National Agency for Food and Drug Administration and Control ([1]NAFDAC) is the major agency in Nigeria. NAFDAC undertakes the strict compliance of registration of food, drugs, cosmetics and medical advice to the people, complies with standard specification, regulation and guideline for production, importation, exportation and sales distribution of foods and drugs as well as conduct test for standard products. The agency has Consumers Protection Council (CPC), Standard Organisation of Nigeria (SON), Association of Food Beverages, Tobacco Employees of Nigeria (AFBTE) and Consumers Association of Nigeria as stake holders. It has so far created awareness to Nigerian consumers of agricultural products and drugs about need to make safe food and drugs demand from the market. It has since extended this campaign to China, Pakistan, Indonesia and Egypt with a strong back up from its collaborators such as; World Health Organization (WHO), United State Food and Drugs Administration (USFDA) and Codex Alimentarius Commission of Food and Agricultural Organization (CACFAO) (Akunyeli, 2008). The safety agencies in the state adopt the use of print and electronic media, warning codes, impounding the sub-standard chicken products, seizure and outright closing of the food vending outlet to enforce safety attitude to food suppliers in the sate (SON, 2004 and CPC, 2004).

[1] NAFDAC is poised with establishing a standard for food and drugs, controls the importation and exportation of these products and it is headed by Prof. (Mrs) Dora Akunyeli

Despite these efforts by the agency concern, the level of awareness of food safety to some households in Imo State is still very poor as the method of processing, sales and distribution of these products in most commercial food premises of the state is disdainful and does not encourage rapid economic development.

Most chicken products are displayed in open trays that expose them to environmental hazards and contaminants such as bacteria pathogen cisteria (Lawley, 2008). The poor handling of chicken products comes in different forms and dimension. The bad foods are hardly discarded and the unsold ones are not preserved at the required temperature. Food suppliers who can afford the these storage devices may not be registered with Consumers protection Councils who monitors the standard of food displayed for sale on daily basis while a good number of them that are registered can afford to manipulate the safety net to maximize profit without been checked. The action makes the consumers to base their preference for safety on the labels and NAFDAC numbers placed on the food rather than safety nets they are paying for. Studies have shown that some regularized food vending units that got registered with the Consumers' Protection Council are most times not affordable to low income citizens of the country. Ehirim et al., (2007), opined that even among the educated elites in Bayelsa State, there is low willingness to pay for safety nets in fish rather demand for fish from an open market takes a greater lead despite its poor sanitary condition.

Methodology

The study was conducted in Imo State. The state is located in the rainforest zone of Nigeria between latitude 4^0 45' and 7^0 15' North of Equator and Longitude 6 50' and 7^0 25' East of Greenwich. The state occupies a land area of 5,100sq Kilometers lying between the lower River Niger and upper and middle Imo River from where it drew its name. Imo State is bounded on the east, west north and south by Abia, Anambara, Enugu and River State respectively (Ogbonna, 2000). The area has a humid climate with a rainfall range of between 1990 to 2200mm and mean temperature of above 20^0 (Ijioma and Arunsi, 1990). Imo State has 27 local Government areas classified into senatorial zones, which include Owerri, Okigwe and Orlu zones (Ogbonna, 2000).

A multi-stage sampling technique was used to obtain data from 80 chicken consumers across the three zones of the state.

The local government areas located in the urban areas of the three zones were selected due to the large markets for chicken product they accommodated and the presence of registered commercial eateries in them. Again, the areas selected have a heterogeneous group of consumers whose income levels are different but patronizes the same market. The areas selected are Owerri Municipal Council, Orlu and Okigwe local government areas. 40 consumers of chicken product were randomly selected and interviewed from each of the local government areas using a well structured questionnaire. A total of 120 questionnaires were distributed to the consumers between July and December 2007. However, only 80 responses were found useful for the study.

The questionnaire was structured using clear imageries of both open market display of chicken products and a close door food joints such as Mr. BIGGS, which has its labels and NAFDAC approved trade marks on the food. This makes an identification of source of the product easy for consumers. The open market source is another commercial vending unit still under the control of NAFDAC but enjoys minimal supervision as the products do not have easy identification of the source of origin. It is assumed that consumers are at a higher health risk by making preference for the products from that source. The use of imageries was developed by Okojie (2006). It guided the consumers in making preference base on their choice or willingness to pay for safety or not.

Data analyses were performed using simple statistical tools, contingency tabular analysis and dichotomous logit model. The consumers' socio-economic characteristics such as age, sex, income level, educational level etc. were described using simple descriptive statistics while the estimates of association between the consumers' attitude to safety nets captured by the level of confidence a consumer has build on each or group of safety measures and the safety nets by the commercial food unit as well as Consumers Protection Council to food safety were estimated using cross tabulation (contingency analysis). The determinants of consumers' preference for food safety were isolated using a dichotomous logistic estimation. Loureiro and Umberger (2003) noted that this model is suitable for choice response of either "Yes" or "No" in an experiment. The probability that a "yes" response will be made by a consumer is an indication that the consumer will prefer to buy his chicken product from a safe unit as shown in image (1) rather than not having it at all. Otherwise the consumer has no preference and the probability that a "no" response is made is certain. No consumer will have a Yes and at the same time No response at the same time as this problems were removed by discarding the faulty questionnaires.

The probability that a consumer shows a "Yes" response is expressed as;

$P_i = f(P_{ref}) = 1/ 1+ \ell^{Pref}$ 1

Where P_i is the probability that a consumer will make a certain response "Yes" for safe food as shown in image (1), given some factors that influences this preference. A chance of making a "No" by a consumer by preferring image (2), has the probability expressed as;

$1- P_i = 1/ 1+ \ell^{-Pref}$ 2

The choice of answering yes or no is dependent on the ratio of yes to no response and this is expressed as

$P_i \div 1- P_i = 1/ 1+ \ell^{Pref} / 1+ \ell^{-Pref}$ 3

Taking natural logarithm of both sides equation 3 can be modified

$\text{Log} \left[P_i \div 1- P_i \right] = P_{ref} = X_i \beta$ 4

Equation 4 is the odd ratio in favour of a "Yes" response expressed as a linear function X_i . Where Xi , are the subjective factors that determine the level of preference for safe chicken demanded as shown in image (1). These factors can be socio-economic or consumers attitudinal factors but must have effect on the probability that the consumer must make a safe preference or not. They include, consumers age (years), level of formal education (years), level of income (in naira), amount food expenditure (in naira), The bid amount for a unit kilogramme of the product (in naira), House hold size (nominal value), Number of information channels (nominal value), and level of interest on safety nets by the consumer (dummy: Yes = 1 and otherwise =0). B_i is a confirmable vector. The consumers' income level and amount voted for food expenses were ranked so as to fit into logit estimation perfectly. For income level, below N10,000 is given as 1, while an income of N10,000 but less than N30,000 is given a scale of 2. Income below N50,000 and N80,000 and above N80,000 were given a scale of 3,4 and 5 respectively. In the same way, food expenditure were classified as; less than N1,000, N1000 to N5000, N5100 to N10,000 N10,100 to N15,000 and N15,100 to N20,000 as 1,2,3,4 and 5 respectively.

Result and Discussion

(i) Socio-economic Characteristics of Chicken Consumers in Imo State Nigeria

The socio-economic features of the respondents are shown in table 1. The result revealed that majority (33.8 percent) of the respondents with mean household size of 9 is between 31 to 40 years and a mean age of 41 years.

This implies that the respondent in the area are mainly young people and very active. The age distribution falls among the category that can adopt new innovation and they are capable of taking risk. However, few about than 13 percent of the total respondents are above 60 years. The implication of this age distribution is that the issue of adopting a safety net among this group of respondent is not a question persuasion but out of self will as the consumers are old enough to make preference that satisfy the utilities. The result further revealed that 46.3 percent of the respondents have acquired more than secondary education or diploma certificate. Over 37 percent have acquired university or post graduate degrees in the area. Few respondents of less than 20 percent have primary school education or no formal education at all. The relative high proportion of chicken consumers who have very high level of formal education imples that safety attitude should be high and very contagious in the area. Furthermore it was revealed in the study that low income group of about 43 percent who earn less than N30,000 per month dominated the area and about 26 percent earn even less than N10,000 per month. Few respondents of about 16 percent can earn above N80,000 per month. The poor income category with relatively higher household size may have a negative impact on the preference for chicken product not to talk of safety package. It implies that rather than going for safety nets, consumers can settle down with the open market products that may lack this measures or cheaper alternatives.

(ii) Food Safety Information Sources in Imo State Nigeria.

The result in Table 2. showed that the source of food safety information to consumers in the state. It could be deduced from the result that over 90.0 percent of the respondents must have got enough information or knowledge of food safety from the formal education acquired in school. This is consistent with findings in most safety survey that education facilitates knowledge, interest and better attitude towards food safety. More than 72 percent got from informal sources in addition to other sources.

Table 1. Distribution of Consumers according to their Socio-economic Features in Imo State

Variable	Frequency	Relative Frequency
Age		
21-30	19	23.8
31-40	27	33.8
41-50	15	18.8
51-60	9	11.2
≥ 61	10	12.5
Total	**80**	**100.0**
Level of Formal Educational		
Non Formal Education	2	2.5
Adult Education	3	3.8
Primary Education	8	10.0
Secondary Education	20	25.0
Diploma/Certificate Education	17	21.3
University/Higher Diploma Education	16	20.0
Post Graduate Education	14	17.5
Total	**80**	**100.0**
Income Level		
N1,000 < Income ≤ N10,000	21	26.3
N10,000 < Income ≤ N30,000	34	42.5
N30,000 < Income ≤ N50,000	12	15.0
N50,000 < Income ≤ N80,000	13	16.2
Income > N80,000	80	100.0
Total		
House Hold Size		
1-5	11	13.8
6-10	46	57.5
11-15	13	16.2
> 15	10	12.5
Total	**80**	**100.0**

Source; Field Survey 2007. **(+)** Multiple Response

Table 2. Sources of Food Safety Information in Imo State, Nigeria

Variables	Frequency	Relative Frequency
Source of Information for Safety Nets		
Lectures (From Public Health/Consumer Protection Agencies)	17	21.3
Electronic media (Visual/Audio)	42	52.5
News Papers and Magazine	26	32.5
School ([2]Curriculum) Education	72	90.0
Informal Source (Friends/ Relatives)	58	72.5
Total	**215**$^{+}$	-

Source: Field Survey 2007. **(+)** Multiple responses

[2] School curriculum development implies that food safety education is build into formal education curriculum. It is taught at different stage of child is education and at each stage, a child is educated on some safety nets depending on his level

This source could be made of rumors or unguided and unrefined information from friend and relatives. It could lead to poor market development especially when the information is not true. In case of chicken products, few months ago, Consumers were warned about the existing avian influenza and the need to stop temporarily, the consumption of chicken until remedies were made. However, the demand for the product dropped but gradually took a gradual increasing turn afterwards (Onyeagocha et al. 2007). Few respondents can obtain food safety information or knowledge from lectures, seminars and workshops organized by public health officers and consumers protection agencies. This is contrary to NAFDAC claims that awareness on safety of food and drug usage among Nigerian has gained enough attention (Akunyeli, 2008). The low turn out of participants on the consumers side for this lecture series could be the mode of disseminating information. Most times the venue for this lecture is mostly in the federal capital territory and few consumers from the state are given invitation wills majority cannot afford the high cost of traveling to Abuja for the conference. The communiqué is usually release to the general public through electronic media. Over 52 percent of the respondent obtains safety information through the electronic media. This poor development could be attributed to lack of electronic and technical device that aids the information dissemination of information to the people. The result might show a better performance compared to a similar study in the rural area as the technical faults is more obvious in the rural areas that the urban areas where this study was centered. The implication of this poor information about food safety in the state is that a little food crisis due to chicken consumption will affect a lot of people before remedies can come because a lot of people will die out of ignorance about the food status. The school curriculum information is good but might not give the latest research which requires immediate attention. Again, the unrefined informal information may not explain exactly the existing food problem that requires immediate attention in the sate.

(iii) Consumer Attitude towards Safety Net in Chicken Products in the State

The result in Table 3 is the frequency of consumers obtained from the associating level of consumers' confidence with some safety nets of commercial food marketing system in Imo State. The result showed that there is a high personal assessment of food safety nets by the consumers' themselves than the safety nets build by the food protection agencies. About 81.5 and 82.5 percent of the consumers have high confidence that a good sanitary condition and appearance, smell, colour and texture of the chicken product respectively showed evidence of safety when there is no quality test conducted to ascertain the level of safety in the food. Though there is a high rate of confidence on the use of food labels, NAFDAC trade marks and numbers as safety net of chicken products with over 72.5 percent of the respondents indicating their interest, more than 64 and 60 percent of the respondents are neither confident in safety information from NAFDAC nor production history, pedigree, high quality processing and distribution devices employed by the commercial food units.

Table 3 Distribution of Consumers According to the their level of Confidence on safety Nets

Variables Safety Net/Measure Applied	Level of Confidence of Safety Nets Yes	No	Indifference	Total
(i) Good Sanitary Condition of the Food Display Unit	65 (81.5)	13 (16.3)	2 (2.5)	80
(ii) The appearance, smell, colour and texture of the food	66 (82.5)	12 (15.0)	1 (1.3)	79
(iii) Periodic check and safety Information form NAFDAC	28 (35.0)	42 (52.2)	10 (12.5)	80
(iv) Availability of the Production History of the Bird	12 (15.0)	58 (72.5)	9 (11.3)	79
(v) The use of Labels, NAFDAC Trademarks and Numbers	58 (72.5)	16 (20.0)	6 (7.5)	80
(vi) Standard Processing and Distribution Device for Chicken	32 (40.0)	44 (55.0)	4 (5.0)	80
(vii) Consumers Food/Health Insurance scheme	8 (10.0)	70 (87.5)	2 (2.5)	80

The reason could be due to lack of records, additional production cost it might introduce per unit kilogramme of the product. Others may be skeptical about this trend because less quality products dominate the entire market despite the information, warnings and high classical processing technique of chicken processing, distribution and sales in the area. Low technological improvement in food processing can be the major cause of this problem. The result further showed that the consumers are not protected by food insurance risk or that it may not have come to their knowledge. More than 87.5 percent of the respondents do not have confidence on consumers' food and health insurance scheme as a measure of safety in chicken consumption. It is suggested that commercial chicken sales units should build in insurance policy in the marketing system to stand compensation incase of any health risk suffered by chicken consumers in the area.

(iv) Determinants of consumers' Preference for Safe Chicken Consumption in Imo State

Table 4, is the logistic estimate of the factors that account for the probability that a safe food will be preferred by a consumer rather than not having it at all. The Chi Square value is quite high and greater than the tabulated value at 1 percent. The log likelihood estimate is about ---- and the co-efficient of determinants is about 0.762.

Table 4. Logistic Estimates

Variable	Unit	Logit (Parameters) Estimate Co-efficient	t-values
Constant		35.686	1.974
(Standard Error)		(18.082)*	
Consumers Age	**Years**	0.698	3.659
(Standard Error)		(0.1907)***	
Level of Formal Education of the Consumer	**Years**	-1.258	2.347
(Standard Error)		(0.536)**	
Level of Consumers' Income	**Scale**	28.421	2.01
(Standard Error)		(14.140)**	
Household Expenditure on food Only	**Scale**	0.927	3.651
(Standard Error)		(0.0254)***	
The Bid Amount	**Naira**	-1.469	1.952
(Standard Error)		(0.766)*	
Household Size	**Nominal**	-1.658	0.848
(Standard Error)		(1.956)	
Information Sources about Food Safety	**Nominal**	-6.476	1.098
(Standard Error)		(5.896)	
Level of Interest on Food Safety Nets	**Dummy**	42.113	0.865
(Standard error)		(48.672)	

Source: Computer Analyzed Result 2007

This implies that the included variables have a strong explanation to variation in probability that safe food can be paid for instead of not having it at all. The null hypothesis that the socio-economic and attitudinal variables of the consumers do not have any significant effect on the preference for safe chicken consumption in the state is thus rejected. In that case, the alternative hypothesis is accepted. The level of interest on food safety nets, number of information sources and household size do not have any significant explanation to consumers' preference for safety.

Surprisingly, consumers' level of education, bid amount for safety and the number of safety information sources have an inverse relationship with the probability that a consumer will make preference for safe product. Education and the number of safety information sources performed otherwise because of cost implication of safety nets. Consumers cannot afford the cost of safe chicken in the areas despite their level of education. They can therefore compromise food safety in most cases due to sever poverty. The result further showed that consumers level of age, level of formal education acquired, level of income, and household expenditure on food have significant effect on their preference for safe chicken in the state. This implies that increasing the age, income and household food expenditure will improve the chances of preference for safe chicken products in the area. This result is consistence with Ehirim et al (2007) findings that consumers' income increases with the probability of safety choice while educational level may not.

Conclusion and Recommendations

The need to improve the economic value of chicken sold in the market involves setting a high quality standard of the product. The quality standard of chicken product for commercial activities continues to fall as producers' compromise safety for profit maximization in the state. There is no profit per se as the marketing system continues to collapse. This study estimated the attitude consumers to safety nets of commercial chicken products and also isolated the factors that can improve the preference for safe chicken demand in the state. It was found that information sources about food safety nets are mostly from school curriculums and informal sources. While the former may lead to delay in information about the current out of food safety crisis, the later can destroy the market for chicken especially when the information is not true or near true situation. This is because of contagious attribute of informal source of information especially when it comes from friend and relatives. More also, Personal food safety assessment and food labels are preferred as safety net in most cases but improved technology in safety assessment by NAFDAC agencies can assist consumers to make underground assessment of food safety, thus build a strong confidence in available safety nets organized by NAFDAC and other food safety agencies. Surprisingly, consumers' level of education, bid amount for safety and the number of safety information sources have an inverse relationship with the probability that a consumer will make preference for safe product. Education and the number of safety information sources performed otherwise because of cost implication of safety nets. Consumers cannot afford the cost of safe chicken in the areas despite their level of education. They can therefore compromise food safety in most cases due to sever poverty. Again, it was found that increasing the consumers' age, income and household food expenditure will improve the chances of preference for safe chicken products in the area. Base on these findings, the study recommended that

- The technological enhancement of the commercial chicken sales unit in the state must emphasis on the acquisition of storage facilities such as refrigerators and oven to preserve the product at all times.
- Consumers' protection council must insist on daily routine check on production history, food pedigree and labels to ensure that the standard stipulated for commercial operation is meet in the market.
- Consumers should follow the NAFDAC approved list of producers' strictly to enhance their safety.
- It is very important that while government is ensuring a steady supply of power to save the products from spoilage, there is also an insurance policy on consumers safety so that consumers can be indemnified incase of any crisis from unsafe product obtained from the market.
- Cost of safety nets should be reduced to minimize production cost, reduce the unit market price, and increase consumers satisfaction for safe chicken product in Imo State.

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