Consumers' willingness to pay for raw sweet corn in the University of Ibadan, Ibadan, Oyo state, Nigeria

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ABSTRACT

The modernised consumption of canned sweet corn is being discouraged health wise**.** Raw sweet corn is grown as substitute to canned ones to curtail its negative impact on the health. However, the extent of acceptability and willingness to pay for raw corn is not fully documented. The University of Ibadan community was stratified into four major groups which were academic staff members (5,759), the non-academic members (4,210), the undergraduate students (16,248), and the postgraduate students (13,056). Data on socio-economic characteristics, monthly food and non-food expenditure, monthly expenditure on corn, level of awareness and perception of raw sweet corn, factors determining the point of purchase and willingness to pay for raw sweet corn were collected randomly from a sample of 120 respondents from halls of residence, boy's quarters, chalets, flats and block-of-flats, respectively. The data were then subjected to descriptive statistics, probit regression and contingent valuation technique. The contingent valuation method revealed that household size, average monthly income and frequency of corn consumption were the determinants of WTP for raw sweet corn. The mean WTP was ₦ 505 as premium for 10 cobs of raw sweet corn. Following the results obtained, it was concluded that not all the socio-economic characteristics affected WTP for raw sweet corn significantly. Also, average monthly income of respondents in the study was observed to affect willingness to pay positively can be adjusted to enhance the probability of willingness to pay for raw sweet corn.

Key words: contingent valuation; probit regression; sweet corn; willingness to pay

Introduction

In the past, agricultural products were typically viewed as homogeneous. Today, numerous agricultural products are sold in differentiated markets where the product's attributes are marketed to consumers. One food category that has seen tremendous growth is the organic sector. Organic sales have increased rapidly over the past decade, with annual sales growth of approximately 20% for most of the 1990s (Dimitri and Greene, 2002). Sales in 2005 reached $ 13.8 billion, an increase of 16.2% over the previous year; currently, consumers are eating more organic food and using more organic products than ever before, according to the 2020 Organic Industry Survey released by the Organic Trade Association. The U.S. organic sector posted a banner in 2019, with organic sales in the food and non-food markets totalling a record $ 55.1 billion, up a solid 5 percent from the previous year. Both the food and non-food markets shattered major benchmarks. Organic food sales hit $ 50.1 billion, up 4.6 percent. Organic non-food sales totalled just over $ 5 billion, up a strong 9.2 percent. Both sectors easily outpaced the general market growth rate of around 2 percent for total food sales and of just

3 percent for total non-food sales (Organic Trade Association, 2006; 2020). Recent figures suggest nearly two-thirds (65%) of Americans have tried organic foods and beverages. The primary reason cited for buying organic foods was the avoidance of pesticides while avoiding genetically modified (GM) foods was ranked fourth (Whole Foods Market, 2005). Although, surveys reveal numerous reasons why consumers purchase organic food products, little is understood about the values they place on the individual parts of organic. If organic is viewed as a bundle of attributes, then it is important to understand the relationships between the value of the whole bundle and the values for the individual parts.

The importance of maize in Nigeria cannot be overemphasized, with the country producing 43% of maize grown in West Africa. It is especially important in the Northern Guinea Savannah (NGS) where it is one of the two major crops in about 40% of the area under agricultural production. Maize is widely grown throughout the world and has the highest production of all the cereals with 817 million tonnes being produced in 2009 (FAOSTAT, 2010). It is an important food staple in many countries, as well as being used in animal feed and many industrial applications. Sweet corn (Zea mays convar) also called sugar corn and pole corn) is a variety of maize with high sugar content. Although, in developing temperate countries, raw sweet corn is one of the staple foods that can be seen on shelves of food stores, supermarkets etc. and often regarded as a vegetable. Also, they can afford to produce in bulk and then package in tins and cans and export down to Nigeria and other African Countries. Nigeria 's weather condition does not show support for the growth of raw sweet corn, hence it is seen in cans, but the department of agronomy (University of Ibadan), area has found a solution to this problem and thus raw sweet corn is being grown.

Furthermore, consumers' awareness of food safety information has been recognized as a germane policy tool in food demand analysis. The knowledge about the effect of food consumption on human health, increasing awareness of foodborne diseases such as bird flu, and increasing concern about the environment, are driving consumer demand for food that are healthier, safer, more palatable and environmentally or animal friendly. Consumers evaluate food alternatives in terms of functional and psychological benefit that the food offers and their choices are influenced by both internal and external factors. Food safety is therefore affected by the decisions of producers, processors, distributors, food service operators and consumers as well as government regulations (Caswell, 2003). In a world that has become globally linked, and often somewhat confusing, a search for a regional and local identity is emerging. The desire for traceable products is a by-product of a never-ending series of food scandals, and it comes alongside a growing ethical outlook that embraces organic food production, ethical consumption and a concern for animal welfare. It is important to note that processed or canned foods are grown using pesticides, herbicides, and fertilizers that are believed by health practitioners are harmful to the body. Medically, consumption of canned foods is highly discouraged because of the various preservatives, additives used in the processing and preservation and the different chemicals used as flavours and colouring, the food product is exposed to before being canned/tinned and then exported/imported down for consumers consumption.

Though many studies have been carried out on consumers' willingness to pay, notable among them are Krystallis et al. (2006) who discovered that some consumers purchased canned products because they perceived these products as higher quality, safer foods that they could trust more than their conventional counterparts. It is also stated that among the factors that affect willingness to pay for raw food products were consumers' use of food labels, experience with the product, and the prices consumers actually pay; and Aryal et al. (2009) found that lack of information available to consumers; higher prices over those of conventional foods, and the limited and erratic domestic supply were factors influenced consumers' willingness to purchase. It still is not clear what the terms of willingness to pay of consumers are, and what factors influence intention of consumers to pay for raw sweet corn in the pro-

posed area of study. This has spurred the investigation of this study to ascertain the willingness of consumers to pay for raw sweet corn. Against this backdrop, the study guided itself with the following questions i. are consumers in the University of Ibadan aware of raw sweet corn and what is their perception of the product? Are the consumers willing to pay a premium for raw sweet corn? What are the determinants of willingness to pay for raw sweet corn among consumers in the study area?

The importance of consumers in the business process has made it vital to always conduct research about consumers. According to Mabadeje (2013) there has always been need for consumer research before, during and after sales, because changes occur in the business process. Consumer perception and willingness to pay has therefore been studied in different directions, from its measurement to its relationships with other business aspects. Some researchers have provided possible means of definition, measurement and determinants of the Consumer's Willingness to Pay (Marine Le Gall-Ely, 2009). Meanwhile other authors have studied Consumers' Perception and Willingness to pay for Organic Leafy Vegetables in Urban Oyo State, Nigeria (Obayelu, Agboyinu and Awotide, 2013). In relation, Boccaletti, and Moro (2000) examined Consumer Willingness-to-Pay for genetically modified food products in Italy. Also, Loureiro and McCluskey (2003) studied on whether consumers are willing to pay for fair and safe working conditions for farm workers. Muene (2006) carried out an analysis on consumer attitudes and their willingness to pay for their functional foods. Akankwasa (2007), assessed consumer acceptability and willingness to pay for introduced dessert bananas. Oviahon et al. (2011) carried out an analysis on Determinants of Bread Consumers' willingness to pay for safety labels in Oredo Local Government Area, Edo State. Hansen, Wier and Anderson (2002) investigated the willingness to pay for organic products.

In spite of the considerable research efforts in many salient areas of consumer's willingness to pay, no existing research has been able to explain, neither has there been any empirical fact detailed enough to show consumers' willingness to pay for raw sweet corn. No research is also available on whether respondent's level of awareness and perception of the product will influence their willingness to pay for it in the proposed study area. Therefore, it is imperative that this study sets out to determine consumers' willingness to pay a price premium for raw sweet corn in the University of Ibadan. The result of this study will make relevant technical data available for the present and prospective investors that would have relied on "trial and error" methods in determining the extra willingness of consumers to pay for "raw sweet corn". By having consumer having higher preference for locally produced food products means having more consumption of food with lesser food miles and reduction of preservative used in food prior consumption (Martinez et al., 2010). With a wide range of possible factors that influences consumers' purchase intention for locally produced food, awareness in encouraging sustainable consumption with locally produced food product is currently low. Therefore, by knowing the reasons for consumers to choose locally produced product will help marketers to establish proper communication message. Additionally, knowledge on sustainable consumption with locally produced food product need to be disseminated among consumers. Understanding factors influencing consumers' intention to purchase locally produced food will enable producers and marketers of locally produced food to focus on the relevant or most appreciated factors by consumers to increase the demand for locally produced food products. The study will further enlighten policy makers as willingness to pay is an important factor for informing public policy by providing information about how much people value some goods or services and can thus provide information on the pricing of these goods and services (Nick et al., 2006). This approach, will therefore lay a foundation for setting prices that will likely maximise turnover, or profits, or market share and for further development of theoretical and empirical models to study consumer perception and willingness to pay for raw sweet corn in general. This study attempts to provide

producers, distributors, sellers and marketers that provide local produce to the community a means to know whether perceived environmental concern, perceived health benefit, perceived freshness, perceived social influence and perceived product availability influence the consumers' purchase intention for locally produced food.

With the growing importance for locally produced food to be marketed at a higher level, an opportunity has been provided for researchers to look deeper into the factors influencing consumers purchase intention. This study will contribute to further understand the extension of Ajzen's (1991) theory of planned behaviour to include the context of locally produced food. While numerous studies have been performed to understand consumers' purchase intention for locally produced food in countries including United States and Europe, this study aim to provide more information on factors influencing consumers' purchase intention for locally produced food and whether price consciousness moderate the relationship between factors influencing consumer purchase intention towards locally products. This study will have important marketing implications for the local food economy and green industry promoting in developing local food market as it provides a reference on factors influencing consumers' food purchase intention. The result will also support sustainability practices as marketing locally produced food to consumers will help to focus on environmental needs. This study will assist food production, food distribution, marketing specialist, and consumer economist to better understand consumer preference and food selection reason. Ultimately, this study will provide understanding of factors influencing consumer purchase intention for locally produced food and made improvements in education and marketing plan to promote locally produced food in order to reduce environmental cost of food.

The world has gotten sensitive to the hazards of consuming industrially produced food and. resolving to consume natural food. Studies have therefore been carried out on health related subject and people's awareness or willingness to pay for such commodities. Consumer demand for high quality food has been on the increase in the developed countries of the world based on their increased knowledge about links between diet and health, awareness of quality characteristics and access to information about new production and processing technology (OECD, 1997). Awareness about safety labels, for instance, in order to reduce health hazards is needed m Nigeria. In a study on Determinants of Bread Consumers' Willingness to Pay for Safety labels in Oredo Local Government Area by Oviahon et al., (2011) it was observed that majority of the respondents were found to purchase bread from well-established market outlets as the major factor that determined their point of purchase was quality. Higher percentage of people in their study area has a preference for breads with safety labels and 72.5% of the respondents were willing to pay higher for breads with safety labels. The mean household size of the respondent is 4.79 which is approximately 5 members per household. The result implies that the respondents sampled in the degradation are the most likely to buy organic food and are willing to pay a premium ranging from 15 to 25% over the price of conventional products. Adesope et al., (2010) studied the willingness to pay for safety label on sugar and vegetable oil among households in south-western Nigeria and also revealed that 66.3% of consumers of vegetable oil are aware of the health benefit, that is, vitamin A composition although a fewer percentage is aware of its presence in sugar. Yusuf et al. (2007) examined the economic value of improved household solid waste management in Ibadan North Local Government, Oyo state. A dichotomous choice contingent valuation technique was used to elicit information from 140 households on their willingness to pay for an improvement in management of their solid waste. The data were analyzed using logit regression technique. The results show the household mean willingness to pay for improved solid waste management is ₦ 1,240.92 per month. The main factors determining households' willingness to pay for improved solid waste management (collection and disposal) are the posted price of the service, age, educational level, household size and household's monthly expenditure. The willingness to

pay elasticity coefficients is generally inelastic and low. In improving solid waste management in the local government area, prices of the service rendered, educational status, household size and monthly income of respondents would have to be taken into consideration.

Obayelu et al., (2013) reported in their study on consumers' perception and willingness to pay for organic leafy Vegetables in Urban Oyo State, Nigeria. Results showed that majority (87%) were in their economic active age and 73% of the respondents had prior knowledge of organic vegetable. Furthermore, about 58% of the consumers preferred organic fluted pumpkin (Ugwu) to other organic vegetable probably owing to their awareness of the health advantages and nutritional constituent of the vegetable. The results of the principal component analysis showed that 49 percent of the respondents had information (awareness) about organic leafy vegetables. They gathered through the logistic model that employment status, price, health benefit and label had positive relationship with WTP for organic vegetables while gender and household size had a negative relationship with WTP.

Conceptual Framework

Based on the framework of Millock (2013) combined with the framework of Bonti-Ankomah and Yiridoe (2006)'s analyzing steps, a simplified conceptual frame for WTP is put forward. Factors that directly affect consumers' willingness to pay are consumers' attitude, socio-economic attributes, purchase behavior and product attributes while the factors influencing indirectly the willingness of consumers to pay for food products (raw sweet corn) include advertisement, certification and labeling, perceived food quality, available information and knowledge. If an individual cannot clearly differentiate between two alternative products, a price premium on a food product can confuse and/or affect the individual's purchasing decision. Consumers and markets are two independent but interactive subjects under the frame. This research is in line with classi-

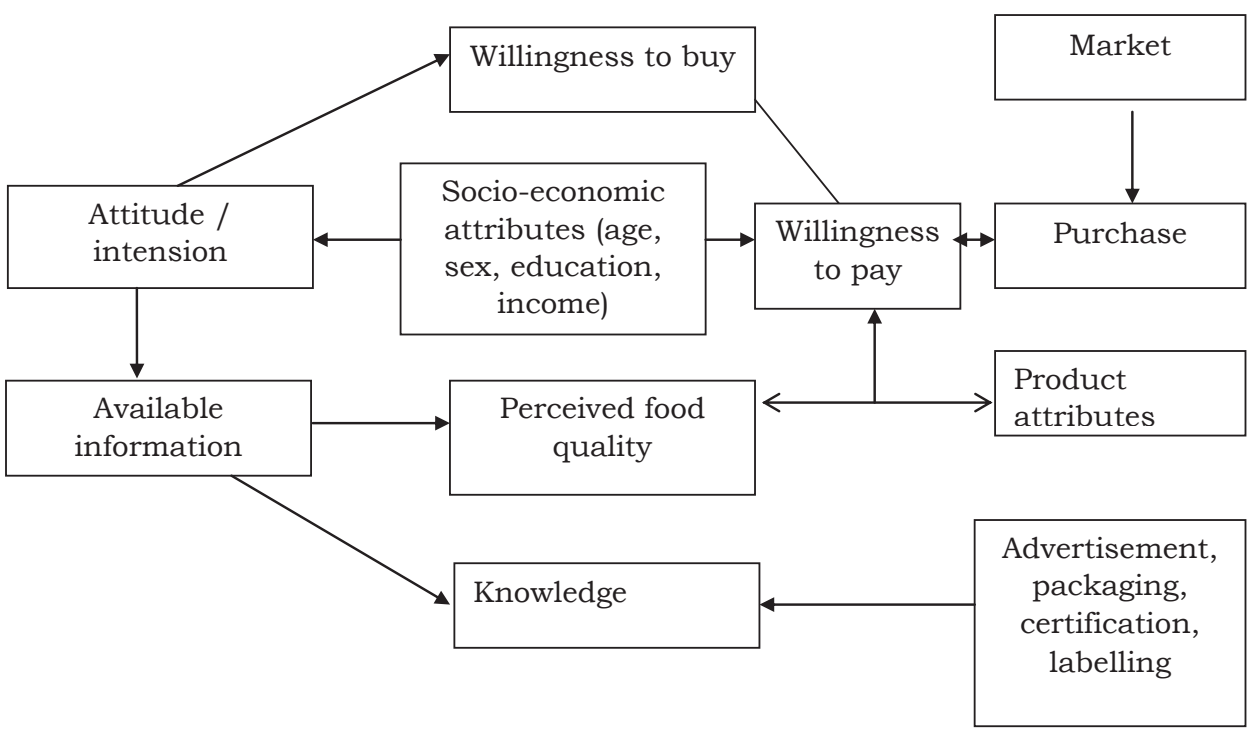

Fig. 1. Adapted from Millock (2013) and Bonti-Ankomah & Yiridoe (2006)

cal consumer behavior theory: perception determines behavior and behavior determines WTP. Willingness to buy provides the threshold of entering the market, which is the previous step before purchasing (Soler et al., 2002). Purchase behavior reflects the real WTP and gains positive or negative experiences which reversely affect consumer's WTP in future. Consumer's characteristics influence all decision process. Therefore, it is meaningful to explore consumer's individual characteristics for the division of the sweet corn market.

According to the reviewed literature on consumers' perception and willingness to pay for various products, it is obvious that consumers' willingness to pay is significantly affected by socioeconomic and demographic characteristics like age, years of formal education, income, working experience, marital status, household size etc. It is also influenced by the perception of consumers on price, value and consumers' awareness of raw sweet corn, environment, situational factors, buying behaviour, consumer circumstances and consumer characteristics. It is also revealed the fact that price, reputation, packaging significantly determines consumers' awareness of raw sweet corn. However, this research is different from the studies reviewed because so far there has been no study that ascertains consumers' willingness to pay for raw sweet corn in the study area.

Methodology

Study Area

The study was carried out in the University of Ibadan. Ibadan is the largest indigenous city in West Africa and is located in the South Western part of Oyo State of Nigeria. The city of Ibadan is located approximately on longitude $3^{0}5^{1}$ east of the Greenwich Meridian and latitude $7^{0}23^{1}$ north of the equator at a distance of about 145 kilometres north east of Lagos. Economic activities undertaken by people in Ibadan include trading, public service employment and agriculture in decreasing order of importance. The diversity and volume of demand for food products stimulated the need for agricultural production within the vicinity of the city. Moreover, economic needs and knowledge of residents have transformed the land left over by urbanization into gardens notable for their ecological richness and variety (Tomori, 2011). The study was carried out within the campus of the University of Ibadan located 8 kilometres from the centre of the major city of Ibadan in Oyo State, Nigeria. The University of Ibadan is the first University established in Nigeria, it was founded in 1948. As at the time of proposed study the University has a total enrolment of over 21,000 students shared among 13 different faculties: Arts, Sciences, Basic Medical Science, Clinical Sciences, Dentistry, Public Health, Pharmacy, Agriculture and Forestry, Education, the Social Sciences, Technology, Law, Veterinary Medicine and the various institutes. The University has ten halls of residence for undergraduate students and two for postgraduate students. Out of the ten undergraduate halls of residence, one is made up of both undergraduate and postgraduate female students. The others consist of six male students' halls of residence, two female halls of residence. Furthermore, the University has staff quarters within its premises that house both the junior and senior staff members of the University.

Sources of and Method of Data Collection

Primary data were used for this study and it was obtained with the aid of well-structured questionnaires. The questionnaires were administered to individuals (undergraduate and postgraduate students) and households (academic and non-academic members) in the study area, in order to collect data on their: general socioeconomic characteristics (like age, marital status, sex etc.), information about expenditure and consumption of raw sweet corn, consumers' cooking and eating habit, level of awareness and perception of raw sweet corn. The questions were designed to obtain comments from respondents and suggestions in order to improve the marketing for raw sweet corn.

Sampling Frame and Sample size

According to the Academic planning unit of the University of Ibadan, for the 2017/2018 academic session, there was a total of 29304 (16248

undergraduates and 13056 postgraduates) students; 5759 (424 females and 1125 males) academic staff; 4210 (1433 females and 2777 males) non-academic staff. A total of 120 questionnaires were administered and the two-stage random sampling procedure was used in the selection. The first stage involved the grouping of the members of the University community into 4 major strata. The second was the sample selection in proportion to the size of each stratum.

Based on this proportionate factor, the formula used for the selection of respondents is stated thus:

$H_i = \frac{h_i}{TH} \times S$, where:

H_i = the number of respondents sampled from each group;

h_i = the number of respondents in each group;

TH = total number of respondents in the four groups;

S = number of respondents sampled from the four groups.

Therefore the total of 120 questionnaires will be distributed in this order:

1. Undergraduates: 16,248/39,273 × 120 = 49.6 (50) respondents.

2. Postgraduates: 13,056/39,273 × 120 = 39.9 (40) respondents.

3. Academic Staff: 5759/39,273 × 120 = 17.6 (18) respondents.

4. Non-academic Staff: 4210/39,273 × 120 = 13.9 (14) respondents.

Method of Data Analysis

Descriptive analyses were used to profile the perception of people about raw sweet corn. The contingent valuation of consumers' preference and probit analytical models were used to determine the factors affecting consumers' willingness to pay, and the mean willingness to pay for raw sweet corn. Consumers' response to willingness to pay for locally produced sweet corn will be characterized as a dichotomous response. The probit model postulates the probability (Pi) that a consumer is either aware/willing to pay or not, by predicting a binary outcome (YES or NO) out of a set of independent variables. In this model, awareness and willingness to pay (the dependent variable) was specified as 1 if willing/aware and 0 otherwise. Assuming that willingness to pay for a product is function of income, price and socio-economic characteristics.

$P_i = P\ (Y = 1|X) = P\ (I_i^* \leq Ii) = P\ (Z_i \leq \beta_1 + \beta_2 X_i) = F\ (\beta_1 + \beta_2 X_i + \beta_2 X_2 + \beta_2 X_n)$

The dependent variable used in this study is the willingness to pay for raw sweet corn. The independent (explanatory) variables that were used in determining factors influencing consumers' willingness to pay for raw sweet corn are specified below:

X_1 = Age (Years)

X_2 = Household size (number)

X_3 = Gender of respondents (Male = 1, Female = 0)

X_4 = Position of respondents in the household (Male head = 1, Otherwise = 0)

X_5 = Type of house lived in (If Flat = 1, Otherwise = 0 (If Block-of-flats = 1, Otherwise = 0) (If School Hostel = 1, Otherwise = 0)

X_6 = Form of house ownership (Self Owned = 1, Otherwise = 0)

X_7 = Occupation of Principal income earner in the household (Government employed = 1, Otherwise = 0)

X_8 = Major Occupation (Civil Servant = 1, Otherwise = 0)

X_9 = Frequency of Corn Consumption (If consumed at least once a week = 1, Otherwise = 0)

X_{10} = Type of corn bought (If Raw = 1, Otherwise = 0) (If Boiled =1, Otherwise = 0) (If Roasted = 1, Otherwise = 0)

Results and discussion: Socioeconomic Characteristics of Respondents

This section discusses the socio-economic characteristics of the respondents. These socio-economic variables include age, sex, marital status, household size, major occupation, form of house ownership etc.

Table 1: shows that from the 120 respondents sampled, there were 66 female respondents, 32 of them are married. There were 54 male respondents, where 18 are married. In Table 2, out of the 120 respondents sampled, only 50% of the respondents were members and relatives of the

household. 25% represent the male head of the households, 10% and 13% represent the female head and wife of the head of the household respectively. Table 3 indicates that 41 percent of the respondents from the 120 sampled lived in school hostels, 28 percent lived in flats while others lived in block-of-flats, face-to-face, boy's quarters, chalet and villa respectively. From Table 4 below, 42 percent of the respondents lived in rented houses while 38 percent lived in their own individual homes. Other population percentage lived in inherited and family house respectively. In Table 5, the household size was highlighted, 80 percent of the respondents sampled had the household size of between 1–6 and 16 percent of the respondents had the household size of between 7–12. This implies that majority of the respondents sampled in the study area had a household size of 1–6. Table 6 reveals the major occupation of the respondents, 49 percent of the respondents were stu-

Table 1. Distribution of Respondents by Gender and Marital Status

Gender/Marital Status	Single	Married	Total
Female	34	32	66
Male	36	18	54
Total	70	50	120

Source: Field Survey, 2018.

Table 2. Distribution of Respondents by their Position in the Household

Position of Respondent in the Household	Frequency	Percentage (%)
Member of the Household	61	50.83
Male Head of the Household	30	25.00
Female Head of the Household	13	10.83
Wife of the Head of the Household	16	13.33
Total	120	100

Source: Field Survey, 2018.

Table 3. Distribution of Respondents by the type of house they live in

Type of house lived in	Frequency	Percentage (%)
Flat	34	28.33
Block-of-Flats	17	14.17
Face-to-face	11	9.17
Boy's quarters	3	2.50
Chalet	1	0.83
Villa	4	3.33
School Hostel	50	41.67
Total	120	100.0

Source: Field Survey, 2018.

Table 4. Distribution of Respondents by the form of house owned

Form of house ownership	Frequency	Percentage (%)
Self-owned house	46	38.33
Rented house	50	41.67
Inherited house	2	1.67
Family house	22	18.33
Total	120	100.00

Source: Field Survey, 2018.

Table 5. Distribution of Respondents according to their household size

Household Size	Frequency	Percentage (%)
1-6	100	83.33
7-12	20	16.67
Total	120	100.0

Source: Field Survey, 2018.

Table 6. Distribution of Respondents by Major Occupation

Major occupation	Frequency	Percentage (%)
Artisan	4	3.33
Civil Servant	42	35.00
Trader	4	3.33
Student	59	49.17
Public Servant	5	4.17
Retiree	1	0.83
Unemployed	3	2.50
Farmer	2	1.67
Total	120	100

Source: Field Survey, 2018.

dents, and 35 percent were civil servants while the rest of the respondents were artisans, traders, public servants, retirees, unemployed and farmers conclusively.

Product Information and Awareness of Raw Sweet Corn

This section established consumers' awareness and knowledge on raw sweet corn. The table below shows the level; of information, awareness, consumption and preference for raw sweet corn.

Frequency of Corn Consumption

According to Table 7, about 32 percent of the respondent consumed corn during the rainy season, 25 percent consumed once a week, 17 percent consumed corn 2–5 times a week, 10 percent consumed once a month or less. The other respondents consumed daily and during the dry season. Table 8 shows that 46 percent of the respondents were buying corn at the rate of ₦ 30, 31 percent bought at the rate of ₦ 50, 10 percent bought at the rate of ₦20 while others were buying at the rate of ₦ 10, ₦ 25, ₦ 30 and ₦ 40 respectively. Table 9 indicates that 17 percent spent between ₦ 50–₦ 200 on corn monthly, 44 percent spent ₦300-₦ 500 on corn monthly, 33 percent spent between ₦ 600–₦ 2000, while other percent of the respondent spent between ₦ 3000–₦ 4000 on corn monthly. This therefore shows that more than half of the respondents (61 percent) spent less than ₦ 1000 on corn monthly. Table 10 shows that 46 percent of the respondents buy their corn from the market, 24 percent buy from farmers and hawkers, while other respondents buy from shops and other sources. Table 11 shows that 32 percent of the respondents bought boiled corn, 28 percent purchased roasted corn; other respondents bought raw and canned corn respectively. This result shows that if consumers perceive raw sweet corn to be of better quality, it can attract the proportion of the market that canned sweet corn. Table 12 shows that 70 percent of the respondent sampled bought corn because of the freshness, 15 percent bought as a result of the price and 13 percent bought corn because of the taste. Table 13 indicates the level of awareness of raw sweet corn, according to the table, 80 percent of the respondents have heard of raw sweet corn, while 33 percent had never heard of it. Information plays an even more important role for innovative products, as in the case of GM foods (Hoban, 1997); the implication of this result therefore means the willingness of consumers to pay for raw sweet corn will increase since more than half of the respondents (66 percent) sampled in the study area are aware of the product. Table 14 indicates Perception based on Preservatives, 35 percent of the respondents sampled strongly agreed that the absence of preservatives make raw sweet corn safe for consumption, 31 percent agreed that the absence of preservatives make raw sweet corn safe for consumption, while 17 percent were indifferent and 8 percent of the respondent sampled disagreed that the absence of preservatives make raw sweet corn safe for consumption and 6 percent strongly disagreed that the absence of preservatives make raw sweet corn safe for consumption. This reveals that most respondents were of the opinion that absence of preservatives makes raw sweet corn safe for consumption. Table 15 shows respondents perception on health, 93 percent of the respondent think raw sweet corn is healthier than canned sweet corn, 6 percent of the respondents do not think so. This shows that most of the respondent sampled perceive that raw sweet corn is healthier than canned sweet corn. This result can be said to be as a result of the perception of respondents on the health risk that results from consumption of canned sweet corn. Table 16 shows the respondents perception on nutrition of raw sweet corn, 87 percent of the respondent sampled think raw sweet corn is nutritious than canned sweet corn, 12 percent of the respondents do not think so. This shows that most of the respondents in the study area perceive that raw sweet corn is nutritious than canned sweet corn. It is also similar to Table 14, where a larger percent (67.5) of the respondents agreed that raw sweet corn is safe for consumption due to the absence of preservatives and Table 15 where almost all respondents believed raw sweet corn to be healthier than canned sweet corn; this therefore falls in line with the respondents perception

Table 7. Distribution of Respondents Based on Frequency of Corn Consumption

Frequency of corn consumption	Frequency	Percentage (%)
Daily	8	6.67
2-5 times a week	21	17.50
Once a week	31	25.83
Once every two weeks	9	7.50
Once a month	12	10.00
Rainy season	38	32.50
Total	120	100.0

Source: Field Survey, 2018.

Table 8. Distribution of Respondents based on the price of corn per cob

Price of Corn per cob	Frequency	Percentage (%)
₦ 10	2	1.67
₦ 20	12	10.00
₦ 25	5	4.17
₦ 30	56	46.67
₦ 40	7	5.83
₦ 50	38	31.67
Total	120	100.0

Source: Field Survey, 2018.

Table 9. Distribution of Respondents based on expenditure on corn monthly

How much is spent on corn monthly	Frequency	Percentage (%)
50-200	21	17.49
300-500	53	44.17
600-2000	40	33.33
3000-4000	6	5.00
Total	120	100.0

Source: Field Survey, 2018.

Table 10. Distribution of Respondents based on source of purchase

Where do you purchase corn	Frequency	Percentage (%)
Other Sources	2	1.67
Farmers	29	24.17
Markets	56	46.67
Shops	4	3.33
Hawkers	29	24.17
Total	120	100.0

Source: Field Survey, 2018.

Table 11. Distribution of Respondents Based On Type of Corn Bought

Type of Corn Bought	Frequency	Percentage (%)
Raw	28	23.33
Boiled	39	32.50
Roasted	34	28.33
Canned	19	15.83
Total	120	100.0

Source: Field Survey, 2018.

Table 12. Distribution of Respondents Based On What Determines the Choice of Corn Bought

What determines choice of corn to buy	Frequency	Percentage (%)
Price	19	15.83
Taste	16	13.33
Freshness	85	70.83
Total	120	100.0

Source: Field Survey, 2018.

Table 13. Distribution of Respondents based on awareness

Have you heard of raw sweet corn	Frequency	Percentage
No	40	33.33
Yes	80	66.67
Total	120	100.0

Source: Field Survey, 2018.

Table 14. Perception of on the absence of preservatives on safe consumption of Sweet corn

Absence of preservatives makes raw sweet corn safe for consumption	Frequency	Percentage (%)
Strongly Disagree	8	6.67
Disagree	10	8.33
Undecided	21	17.50
Agree	38	31.67
Strongly agree	43	35.83
Total	120	100.0

Source: Field Survey, 2018.

Table 15. Perception on Health

Is raw sweet corn healthier than canned sweet corn	Frequency	Percentage (%)
No	7	6.48
Yes	101	93.52
Total	108	100.0

Source: Field Survey, 2018.

Table 16. Perception on Nutrition of raw sweet corn

Is raw sweet corn nutritious than canned sweet corn	Frequency	Percentage (%)
No	13	12.04
Yes	95	87.96
Total	108	100.0

Source: Field Survey, 2018.

that raw sweet corn is nutritious than canned sweet corn.

Summary of the Variables used in the regression

Table 17 presents the summary of the variables used in the regression analysis. It shows that approximately 80 percent of the respondents are willing to pay for raw sweet corn, 45 percent of the respondents are male, the minimum age of the respondents is 19 and the maximum age is 60, the average household size is approximately 5, the average monthly income is ₦ 282891.7, the male headed respondents constitute 25 percent of the respondents in the study area. Furthermore, the government employed respondents representing the principal income earners in the household are approximately 60 percent of the respondents sampled. 41.67 percent of the respondents live in school hostels, 28 percent live in flats and 14 percent live in block-of-flats. Additionally, the summary of the variables show that 38 percent of the respondents own their house, 35 percent of the respondents' major occupation is civil service. About 58 percent of the respondents consume corn weekly. 23 percent of the respondents buy raw corn, about 33 percent purchase boiled corn and 28 percent of the respondents buy roasted corn respectively.

Factors that determine Willingness to pay

Table 18 presents the results of Probit regression for the determinants of willingness to pay for raw sweet corn. The result shows the log likelihood of – 35.608952 and LR chi^2 of 32.99. The marginal effect computed for the Probit regression revealed that willingness of consumers to pay for raw sweet corn is affected significantly by three variables. Household size of the respondent is significant at 5% and has a positive influence on WTP for raw sweet corn. This means as the size of household increases, the likelihood of consumers' willing to pay for raw sweet corn decreases. Average monthly income also affects WTP positively at 5% level of significance. This implies that as the average monthly income of respondent increases, the probability of willingness to pay for raw sweet corn also decreases. Corn consumption once a week lastly affects WTP positively at 10% level of significance. This implies that the frequency of consuming corn once a week decreases the probability of consumers' willingness to pay for raw sweet corn.

Mean Willingness to Pay

After the Probit regression analysis was done, the mean willingness to pay was estimated. It is shown from the Table 19 that consumers are willing to pay at most ₦ 505 as premium for 10 cobs of raw sweet corn rather than not having it at all. This value is within the premium being offered in the market.

Conclusion

Given the findings of this study, the following observations were true; females were more represented than the males in the study area, most of the respondents were trained up to tertiary education level; Most of the respondents had an average household size of 6 persons, the study area is dominated with middle to high income earners. Although most of the respondents are aware of raw sweet corn, the percentage of those unaware can still be further reduced. The major point of purchase is the market. However the major determinant of raw sweet corn is the freshness. From the study, it can be concluded that respondents perceived raw sweet corn to have better quality, attractive, healthier, safer, reliable, and more nutritious than canned sweet corn. Furthermore, from the result of the Probit regression, the respondents' average monthly income, household size, consumers' consumption of corn had a positive significant effect on WTP and these were the prime drivers of the consumers' WTP for raw

Table 17. Distribution of the Summary of the Respondents' variables

Variables	Observation	Mean	Std. Deviation	Min.	Max.
Willingness to pay for raw sweet corn	108	0.7963	0.4046	0	1
Gender	120	0.45	0.4996	0	1
Age	120	31.4167	9.5492	19	60
Household size	120	5.3333	1.9243	1	12
Average monthly income	120	282891.7	227127.1	30000	1200000
Position of male head in the household	120	0.25	0.4348	0	1
Government employed as principal income earner in the household	120	0.6083	0.4902	0	1
Residence as Flats	120	0.2833	0.4527	0	1
Residence as Block-of-flats	120	0.1417	0.3502	0	1
Residence as School Hostel	120	0.4167	0.4951	0	1
Owned House	120	0.3833	0.4882	0	1
Major Occupation as Civil Servant	120	0.35	0.479	0	1
Consumption of corn once a week	120	0.575	0.4964	0	1
Raw corn as type of corn bought	120	0.2333	0.4245	0	1
Boiled corn as type of corn bought	120	0.325	0.4703	0	1
Roasted corn as type of corn bought	120	0.2833	0.4525	0	1

Source: Field Survey, 2018.

Table 18. Marginal Effects for Probit Regression

Variable	dy/dx	Std. Error	Z-Value	P > |z|
Gender	-0.0686	0.07129	-0.96	0.336
Age	-0.0005	0.0059	-0.09	0.925
Household Size	0.0515**	0.0225	2.29	0.022
Average monthly income	2.54E-07**	0	-2.02	0.043
Position of male headed	0.1094	0.0875	1.25	0.211
Government occupation	-0.0994	0.0656	-1.52	0.129
Residence flat	-0.00389	0.1268	-0.03	0.976
Residence block of flat	-0.0456	0.1738	-0.26	0.793
Hostel	-0.2354	0.171	-1.38	0.169
Owned House	-0.0857	0.0881	-0.97	0.331
Occupation civil servant	-0.0493	0.1326	0.37	0.71
Consumption once a week	-0.1331*	0.0766	-1.74	0.082
Raw corn	0.0995	0.0664	1.5	0.134
Boiled corn	0.0061	0.0891	0.07	0.946
Roasted corn	0.0611	0.0656	0.93	0.351

dy/dx is for discrete change of dummy variable from 0 to 1
(**), (*) indicates being significant at 5% and 10% respectively.
Source: Author's Computation, 2018.

Table 19. Distribution of mean willingness to pay

Price willing to pay	₦ 505	₦ 525	₦ 545	₦ 550 (later)
Yes	83	65	63	71
No	37	51	53	45

Source: Field Survey, 2018.

sweet corn in the study area. Finally, raw sweet corn has market potentials in the study area, since most of the respondents sampled in the study area are willing to pay a high premium.

Recommendations

According to the findings and conclusion of this research work, the following recommendations have been made: the mean willingness to pay for raw sweet corn as agreed to by the respondents was ₦ 505, as a premium for 10 cobs of raw sweet corn, this implies respondents are willing to pay ₦ 50.5 k for a cob; this can be adjusted so that more members of the study area can afford it and thus increase the likelihood of consumers' willingness to pay for raw sweet corn. Also, the average monthly income which was observed to affect willingness to pay positively can also be adjusted to enhance the probability of willingness to pay for raw sweet corn.

Suggestion for Further Studies

Previous studies in Nigeria have worked on consumers' preference for locally produced agricultural food products but few researches have focused on raw sweet corn. It is therefore suggested that similar studies should be carried out on a wider coverage.

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