

*Original Research Article***What Determines Ginger's Purchase Decision among Consumers in Tertiary Institutions in Abeokuta, Ogun State, Nigeria?**

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*Department of Agricultural Economics and Farm Management, Federal University of Agriculture, Abeokuta, Ogun State, Nigeria***Abstract**

This study examined ginger consumption patterns and factors influencing ginger purchase decisions among consumers in tertiary institutions in Abeokuta, Ogun State, Nigeria. A multi-stage sampling procedure was used to select respondents from whom data were collected with the aid of a structured questionnaire. Descriptive statistics and probit regression were the tools for data analyses. The average age of the respondents was 29 years. Most (88.36%) of them indicated they were aware of ginger's medicinal benefits and approximately 66.14% of the respondents indicated purchase of ginger products. On the average, respondents spent about ₦302.22 (0.83USD) per month on ginger. Most (86.77%) of the respondents prefer to consume ginger with food or as herbal tea/drink (41.27%). Awareness about the health benefits of ginger ($P < 0.1$), electronic media as source of information ($P < 0.1$), consumers' concern for their health ($P < 0.05$) and previous gratifying experience from ginger's consumption ($P < 0.01$) are factors substantially influenced ginger purchase decision. Income and demographic characteristics of the consumers are unlikely to induce decision to buy significantly. Thus, promoting awareness of the health benefits of ginger and, more especially through electronic media are suggested as important pathway for stimulating people's decision to buy ginger in the studied population.

Keywords: *Zingiber officinale*; consumer; health; tertiary institution; healthier foods; questionnaire.

INTRODUCTION

Consumption of unhealthy diets and bad eating habits are known as the major contributors to the global burden of diseases such as heart disease, stroke, chronic lung disease, cancer and diabetes (WHO, 2011). The rising consumers' concerns for good health, enhancement of life expectancy and desire for improved quality of life has necessitated renewed attention on consumption of foods with some special medicinal/health benefits (Kotilainen et al., 2006) generally known as functional foods. Some examples of such foods are fortified products such as fruit juices with vitamins, enriched products like margarine with sterol ester and folate-enriched foods, altered products such as ice cream with fiber, enhanced commodities such as lycopene-enhanced tomatoes and yogurt with added prebiotic or probiotic, synthesized food ingredients (such as prebiotics) introduced to traditional foods, and natural food products like oat, wheat and soy-based products (European Commission (EC), 2010; International Food Information Council Foundation (IFICF), 2011), among others.

Although ginger (*Zingiber officinale* Roscoe) has not been commercially recognized globally as functional

food, especially from the regulatory/legislative point of view (ESFA, 2016), the many health benefits/functions of ginger have been documented. Ginger has been used as medicine in Asian, Arabic and Indian herbal tradition since ancient times. Among its health benefits are: maintain normal blood circulation and fight common respiratory problems (Ali et al., 2008), it prevents cold and flu, combats morning and motion sickness (Ryan et al., 2012). It improves absorption and combats stomach discomfort (Ghayur and Gilan, 2005), reduces inflammation and can relief menstrual pain (Ozgoli et al., 2009).

Nigeria is one of the leading producers of ginger in the world; her production as in 2013 was estimated at 496 920 tonnes (representing approximately 21% of the world production) (FAO, 2017). Of the total quantity of ginger produced in the country, 10% is locally consumed as fresh ginger while 90% is primarily for the export market (FAO, 2010). An individual who is healthy can go a long way to maximize potential and achieve goals for life, while this may remain a speculation for those who are unable to maintain the stock of health endowment. In this regards consuming foods with special health functions becomes critical. Although awareness of the health

benefits of ginger and other products has begun to rise in Nigeria, not much empirical consumption side works has been documented in terms on the influence of awareness, health concerns and other consumers' characteristics of purchase decision on ginger. Such information is important for the sustainability of ginger market in the country. Against the background of limited empirical studies and the expectation that the level of awareness about the health functions of foods should to be relatively higher in tertiary institution subsector of the general population, this study was therefore conducted among consumers in tertiary institutions. This is also in line with Asumugha (2006) who noted that studies on foods with special health functions should also be conducted in tertiary institution's segment of the population. As far as we know, no empirical studies on drivers of ginger purchase decision have been documented among this population subset or the broader population of Nigeria.

This study hypothesized (in its null form) that economic factors such as consumer income/stipend, demographic factors such as household size, age and sex of consumer, and non-economic factors such as awareness, and source of awareness about the health benefits of ginger do not exert significant influence upon consumer's decision to purchase ginger.

MATERIALS AND METHODS

Study Area

The study was conducted in tertiary institutions in Abeokuta which is the capital of Ogun state. Abeokuta is situated between latitude 7°9'39"N and longitude 3°20'54"E. The state is a major economic hub of the country as it has one of the largest concentration of industries (Ogun Sate Government, 2017) which is expected to impact on the socioeconomic conditions of the people of the state. Dwellers in the study area are mainly traders, artisans, other private business owners, civil servants, farmers, and student populations. Presence of tertiary institutions in Abeokuta has stimulated substantial economic activities and business opportunities in the city and its environs. The officially documented population of Abeokuta by the National Population Commission was 449,088 (NPC, 2010).

Sampling Procedure and Sample Size

A Multi-stage sampling procedure was use in the research to select 208 respondents (comprising staff and students)for the study. The first stage involved a simple random selection of 3 tertiary institutions out of seven in Abeokuta. The selected institutions were Federal University of Agriculture Abeokuta (FUNAAB) which had a total population of 14,493 undergraduate students, Federal College of Education (FCE) Osiele with a population of 6,252 undergraduate students and Moshood Abiola Polytechnic (MAPOLY)

of which information gathered indicated about 7,200 undergraduate students as at the time of data collection. Relying on the available information, the second stage featured a random selection of six departments from Federal College of Education, Osiele, 14 departments from Federal University of Agriculture, Abeokuta and seven from Moshood Abiola Polytechnic, Abeokuta. This totaled up to 27 departments. At the third stage, three staff and four students were selected through convenient sampling from each department. This made up to a total of 81 staff and 108 students; equaling 189 respondents. Data were collected from respondents using a structured questionnaire. The data collected include, among others, income/stipends, age, sex, household size, marital, occupation status, of respondents.

Analytical Techniques

Descriptive statistics were used to describe the respondents' socio-demographic characteristics, consumption patterns and knowledge of the health benefits of ginger while probit regression was employed in the analysis of factors influencing ginger's purchase decision. The probit model is as specified:

Model Specification (Probit Regression Model)

The probit model is as specified:

$$y_i^* = X_i \gamma + u_i \tag{1}$$

Where y_i^* is the latent variable that defines the rule as to whether a household would decide to consume ginger or not. X_i is a vector of exogenous variables. γ represents the coefficients associated with the repressors (X) including the constant term. The u_i is the error term assumed to be normally distribution which zero mean and unit variance. The observed participation (y) is linked with the latent participation y^* as follows.

$$y = \begin{cases} 1 & \text{if } y^* > 0 \\ 0 & \text{otherwise} \end{cases} \tag{2}$$

The explanatory variables included in the equation are described below:

- Exper.....Experience (1 if respondent perceived some health improvement or satisfaction in previous consumption of ginger, otherwise 0)
- DiscipDiscipline (1 if respondent's course of study or discipline is agriculture or food related, otherwise 0)
- AwareAwareness (1 if respondent is aware of the health benefits of ginger, 0 otherwise)
- IncstipMonthly income/stipend of respondent (Naira) (expressed in natural logarithm)
- Marsta.....Marital status of respondent (1 if single, married 0)
- Worsta.....Work status of respondent (1 if student, otherwise 0)

Sex..... Sex of respondent (1 if respondent is a male, 0 otherwise)
 Age Age of respondent (in years)
 Hsize..... Household size (number of people)
 Funaab FUNAAB (1, if student belongs to FUNAAB, 0 otherwise)
 Fce..... FCE (1, if student belongs to FCE, 0 otherwise)
 Health..... Health condition (1, if respondent's perceived health condition strongly derives consumption decision, 0 otherwise)
 Source Source of awareness (1, if respondent indicated awareness through electronic media as strongly influenced of purchase decision, 0 otherwise).

show that approximately 51.85% of the respondents were females while 48.15% were males. The majority (61.90%) of the respondents indicated they were Christians while 38.10% were Muslims. The majority, 68.78% of the respondents were single whereas 31.22% were married. Furthermore, 79.37% of the respondents had household size of 1-2 members and the mean household size was 2 persons. Age distribution shows that most (50.26%) of the respondents fall within the age range of 21 to 30 years, and 19.05% falls within the age range of 31 to 35 years. The mean age was approximately 29 years. In addition, the majority (57.14%) of the respondents had monthly income/stipend below ₦20000 while 15.34% had income within ₦ 91000 to ₦130000.

RESULTS AND DISCUSSION

Socio-economic Characteristics of the Respondents

Table 1 shows the distribution of the respondents by their socio-economic characteristics. The results

Table 1. Distribution of Respondent by Socio-economic Characteristics

Respondents	Frequency	Percentage
Gender		
Female	98	51.85
Male	91	48.15
Religion		
Muslim	72	38.10
Christian	117	61.90
Marital Status		
Single	130	68.78
Married	59	31.22
Household size		
1-3	150	79.37
4-6	36	19.05
7-9	3	1.58
Mean	2	
Age (years)		
<21	37	19.58
21-25	51	26.98
26-30	44	23.28
31-35	36	19.05
36-40	21	11.11
Mean age	28.63	
Monthly Income/stipend (Naira)		
<20001	108	57.14
20001-50000	17	8.99
50001-90000	12	6.35
90001-130000	29	15.34
Above 130000	13	6.88
Total	189	100
Mean	49646.74	

Source: Field survey, 2015

Awareness and Sources of Information about Ginger's Health Benefits

Presented in Table 2 is the distribution of respondents based on awareness and the sources of information about the health benefits of ginger. Table 2 shows that the majority (88.36%) of the respondents were aware about the health benefits of ginger. This is a relatively high level of awareness which is expected to stimulate consumers towards its consumption. The majority (66.14%) of the respondents obtained their information by word of mouth from friends and families, 23.81% of them obtained their information through Doctor/Nutritionist/health workers. Social media networks (like Facebook, Twitter, and others) is third in the rank of sources of information with 13.23% of the respondents indicating that they obtained

information on the health benefit of ginger from it while 11.64% of them obtained information on the health benefits of ginger from the media (electronic and print media).

Expenditure on Ginger and its Consumption Patterns

Table 3 shows that the majority (66.14%) of the respondents indicated that they consumed ginger during the period covered by the survey while 33.86% of the respondents did not but indicated that they consumed it occasionally. This result is in agreement with Cazacu (2012) who reported that on average, consumers were aware of the health benefits of functional food products unlike Dogan et al. (2011) who reported below average level of awareness. The majority (86.77%) of our respondents consumed ginger by

Table 2. Distribution of Respondents by Awareness and Sources of Information about ginger

Awareness about health benefits of ginger	Frequency	Percentage
Aware	167	88.36
Not aware	22	11.64
Total	189	100
*Major Sources of Information		
Social Network Media (facebook, twitter, website)	25	13.23
Electronic Media (Television/Radio)	13	6.88
Print Media (Books, Magazine)	9	4.76
Doctor/Nutritionist	45	23.81
Words of mouth (family, friends, neighbor)	125	66.14

Source; Field Survey, 2015

* = Multiple Respondents for Information

Table 3. Distribution of Respondents by Ginger's Expenditure and Consumption Patterns

Consume Ginger	Frequency	Percentage
Consumption Frequency		
2-3 times a week	59	31.22
Once in a week	17	8.99
Once in a Monthly	49	25.93
Occasionally	64	33.86
*Pattern of Consumption		
Cooked with food	*164	86.77
As Herbal tea/drink	*78	41.27
Eating raw	*39	20.63
Mix with pap spice/sauce	*35 *43	18.52 22.75
Monthly Expenditure on Ginger (Naira)		
Zero Purchase	64	33.86
21 to 200	67	35.45
201 to 500	31	16.40
501 and above	26	14.29
Total	189	100
Mean	302.22	

Source: Field Survey, 2015

*Multiple Response for Pattern of Consumption

cooking it with food; 41.27% consume it as tea/herbal drink while about 20.63% consumed it in raw form. Another 22.75% of the respondents consumed it as food spices while others (18.52%) consumed it with pap. On the average, respondents expended about ₦302.22 per month on ginger.

Factors Affecting Ginger’s Purchase Decision

Table 4 shows the results of probit regression analysis carried out to identify the socio-economic determinants of ginger’s purchase decision. The Log-likelihood function of the estimated model is -100.13 with the associate Chi-square value (50.18) is statistically significant ($P < 0.000$), implying that the probit model can be relied upon to predict ginger’s purchase decision (market participation) on ginger in the studied population. Consumer’s awareness about the health benefits of ginger, the source of awareness, concerns about their health, and feelings of perceived feeling of health improvement or satisfaction in previous consumption are factors with positive and statistically significant influence on ginger’s purchase decision. The positive signs of the coefficients of the significant variables suggest that the variables can substantially enhance the likelihood of consumer decision to purchase ginger in the study area. The findings on awareness is similar to the work of Rezaei et al. (2012) who found a positive relationship between consumers’ awareness and their behavioural intention towards consumption of foods with special health functions, but contrary to Cazacu (2012) who established a non-significant relationship. This study

established positive influence of consumers concerns for their health on decision to purchase ginger contrary to Brečić et al. (2014) who reported that perceived health status had statistically insignificant relationship with functional food consumption. The significance (although weak) of the coefficient of electronic media (dummy; $P < 0.1$) indicates that the information sources are likely to be a stronger means to influence consumer behaviour towards purchasing ginger. This shows the unique role electronic media could play in stimulating consumers towards consumption of ginger in the studied population.

Turning to the partial/marginal effect of each explanatory variable on the likelihood of ginger’s purchase: The estimated marginal effect (0.339) associated with previous experience of consumption ginger implies that an average consumer who had previously consumed had higher probability (0.339) of purchasing ginger than a counterpart who had not. An average (potential) consumer who is aware of the nutritional and health benefit of ginger has greater probability (0.223) of purchasing ginger than an average consumer who is unaware of the benefits. On the average, consumers whose consumption choice is strongly driven by concerns for health improvement has higher probability (0.188) of purchasing ginger than other consumers. The result also shows that an average respondent got aware about the benefits ginger mainly via electronic media has higher probability of purchasing it than an average consumer whose main sources of awareness are not via electronic media.

Table 4. Factors Influencing Ginger's Purchase Decision

VariablesSymbol	Coefficient	Z-Value	p > z	Marginal effect
Exper	***0.899	3.460	0.001	0.339
Discip	0.162	0.640	0.520	0.058
Aware	*0.584	1.700	0.090	0.223
Incstip	-0.103	-0.500	0.617	-0.037
Marsta	-0.202	-0.480	0.631	-0.072
Worsta	0.063	0.110	0.913	0.022
Sex	-0.108	-0.490	0.623	-0.039
Age	0.016	0.830	0.405	0.006
Hsize	0.037	0.450	0.655	0.013
Funaab	-0.205	-0.740	0.461	-0.073
Osiele	0.199	0.640	0.524	0.069
Health	**0.521	2.390	0.017	0.188
Source	*0.754	1.800	0.073	0.215
Constant (b ₀)	-0.282	-0.120	0.902	
Log pseudo-likelihood	-100.13			
Wald Chi-square	50.18			
p-value	0.000			
Pseudo R-square	0.172			

Source: Field survey, 2015.

Note: *, ** and *** imply that coefficients are statistically significant at 10%, 5% and 1%, respectively.

The results suggest that socio-economic characteristics of the consumer such as income, age, sex, household size, marital status and respondents discipline/course of study, the institution where they belong and whether or not respondent is a staff appear to hold little consequence for their decision to participate in ginger' market. This is contrary to studies such as Dogan et al. (2011), Özen et al. (2012) and Phuah et al. (2015) who found statistically significant influence of income, education, sex, age, and household size, marital status on their purchasing behaviour towards functional foods. The importance of these data is that efforts to manipulate the socio-demographic characteristics of the consumers are unlikely to be an effective way to influence buying decisions on ginger in the studied population. The non-significance of the socio-economic variables does not mean that the variables are irrelevant but that their contributions are not strong enough to substantially induce consumers towards purchase of ginger in the study area.

CONCLUSION

Consumers across the globe are becoming increasingly aware of the roles certain foods or spices could play in prompting health beyond their traditional nutrition functions. That as it may, little is known empirically in Nigeria, especially in tertiary institutions as to whether consumer concerns for their health status and awareness about the health benefit of ginger, among others, drives ginger's purchase decision. The study therefore examined the influence of consumers' concerns about their health and awareness about the health benefits of ginger on its market participation among consumers in tertiary institutions in Abeokuta, Nigeria. The awareness about the health benefits of ginger is relative high in the study population, with most consumers cooking ginger with foods or consuming it as herbal tea/drink. While consumer concerns for their health status and awareness about the health benefits of ginger are strong influencers of participation in ginger market, their discipline or courses of study, monthly income/stipend, marital status, work status, sex, age, household size and institutions of work or study play little role in explaining ginger's purchase decision. Thus, spreading awareness about the specific health benefits of ginger, particularly through electronic media is vital for stimulating consumer's decision to purchase ginger.

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