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Preference and Purchasıng Behavıour of Selected Functıonal Foods Among Households in Ifo Local Government Area, Ogun State, Nıgerıa

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Abstract

The rising awareness of functional foods and their health benefits has influenced consumer preferences and purchasing behavior globally. However, limited research exists on the consumption patterns of functional foods in Nigeria. This study examines the determinants of functional food consumption in Ifo Local Government Area, Ogun State, using primary data collected through structured questionnaires administered physically and virtually via the KoboToolbox platform. A multistage sampling technique was employed, selecting 10 Community Development Committees (CDCs), 30 Community Development Associations (CDAs), and 300 households, with 240 valid responses for analysis. Descriptive statistics were used to assess the socio-economic characteristics, awareness levels, and purchasing behavior of respondents. A Poisson regression model was applied to identify key factors influencing functional food consumption. Findings indicate that age, marital status, and income significantly determine purchasing behavior. Family, friends, and health professionals were the primary sources of nutrition information, while local markets and roadside vendors served as major suppliers. Price and availability emerged as the most crucial factors affecting consumer choices. To enhance functional food consumption, policies should focus on improving accessibility, regulating prices, and increasing consumer awareness. Additionally, future research should expand to larger and more diverse populations to strengthen the generalizability of findings. Insights from this study provide valuable information for policymakers, food producers, and marketers to promote functional foods and support sustainable nutrition practices in Nigeria.

Key Words: *Preference, Purchasing behaviour, Functional Foods, Households, Nigeria.*

Introduction

Recently, there has been growing concern about the healthiness of diets globally, and consumers are revealing increasing interest in foods that minimise the risk of diseases for optimal health promotion, boost mental health and improve quality of life beyond foods with the traditional aim of hunger satisfaction or correction of nutrient deficiency (Green, 2014; Amoah et al., 2023). This is because poor-quality diets are highly correlated to chronic diseases like cancer, diabetes, heart disease, stroke, obesity and hypertension (Drewnowski et al., 2021), and have been identified as a phenomenon with the greatest threat to public health worldwide and changing lifestyles like poor nutrition and inadequate physical activity caused the epidemic of non-infectious diseases which lead to several health problems and even death (Plasek *et al*., 2020). According to Goetzke *et al*. (2014), it is important to prevent diseases considering the high costs of curative medicine. Therefore, it is pertinent to advocate for increasing the intake of foods with additional health benefits among households, which includes functional foods. The public interest in the concept of functional foods came into the limelight during the global awareness of the role foods could play in improving the health of human beings and was first established by the Japanese to introduce a legal category of foods with potential health benefits as part of national efforts to curbing the increasing cost of health care (Ohama *et al*., 2006). Functional food was invented in 1980 in Japan and was defined as enhanced food products that give a positive physiological action (Stanton *et al*., 2005). Functional foods could be natural or altered food products by adding or removing one or more components, reducing the risk of disease (Roberfroid, 1999). In 2012, a more consensus and acceptable definition was developed at the Functional Food Centre (FFC)'s 10th International Conference in Santa Barbara, CA. Functional foods were defined as ''Natural or processed foods that contain known or unknown biologically-active compounds; which in defined amounts provide a clinically proven and documented health benefit for the prevention, management, or treatment of chronic disease" (Martirosyan & Singh, 2015). Having noticed a deficiency in this definition, in 2014, at the 17th international conference jointly organised by the United States Department of Agriculture (USDA) and Agriculture Research Service (ARS). The definition of functional food was revisited in a Panel Discussion entitled "The Definition of Functional Foods and Bioactive Compounds". Functional foods were defined as "Natural or processed foods that contain known or unknown biologically-active compounds; which, in defined, effective, non-

toxic amounts, provide a clinically proven and documented health benefit for the prevention, management, or treatment of chronic disease" (Functional Food Centre, 2018). The amendment to this definition was in the amount of bioactive compound previously stated to be ´´defined amount´´ but changed to ´´defined effective non-toxic amount´´. This was necessary as the latter gave a more precise description for future use. Hence, the latter definition will be used in this study to select local functional foods established in the literature.

There are many health benefits of functional foods, ranging from their potential to boost the immune system to reduce the risk of cardiovascular problems, osteoporosis, obesity and cancer (some types), as well as to enhancing memory and physical condition (Bekoglu *et al*., 2016; Topolska *et al*., 2020). It generally improves the quality of life, prevents obesity and improves psychophysical and working ability (Jokić *et al*., 2016). It is acknowledged in the food market as a special category. It represents one of the most intense areas of innovation in food products globally (Đurović *et al*., 2020). It is more sought after in the hospitality market because it is essential for improving the quality of life, balancing and maintaining the maximum of body functions, maintaining health and reducing disease risk (Cvetković *et al*., 2016). Fortified products such as non-alcoholic beverages fortified with vitamin A, dairy products containing Lactobacillus fermentum ME-3, enriched products such as eggs enriched in omega-3 and vitamin E, natural foods such as cereals like oats and barley, which can be used as fermentable substrates for the growth of probiotic microorganism are examples of functional foods approved by European Food Safety Authority (Siro *et al*., 2008)

In Nigeria, some local/natural foods have potential as functional food sources. For instance, Acham *et al*. (2018) stated that Nigeria has abundant preservation of its own local functional food resources with massive potential of being a source of revenue to the people who are now becoming more conscious of their lifestyles or health status. In this study, local/natural functional foods are obtained from natural sources such as traditional food, fruits and vegetables. Some of these foods are edible mushrooms, tigernuts, soy milk, melon seed, bitter leaf, moringa, kunun-zaki, zobo, snail, edible insects, fura da nunu and garlic (Chanda *et al*., 2011; Akerele *et al*., 2016; Acham *et al*., 2018; Adenowo & Kazeem, 2020). These foods have been proven to have many health benefits. For instance, garlic has antimicrobial activity, anti-carcinogenic effects, antioxidant activity, ability to reduce cardiovascular diseases, improve immune functions, anti-diabetic activity and contains sulfide (Diallyl-sulfide, Diallyl-thiosulfinate, Allyl-methyl trisulfide) that help in detoxification of undesirable compounds, support the maintenance of heart, immune and digestive health; prebiotics (Inulin, Fructo-oligosaccharides, Polydextrose), that enhance maintenance of digestive health and calcium absorption; as well as selenium, which neutralises free radicals that may damage cells, and aids maintenance of immune and prostate health (Rahman, 2007). Frequent consumption of edible mushrooms can cure diabetes, breast cancer, prostate and high cholesterol levels (Okigbo & Nwatu, 2015). In fact, tigernut was referred to as natural functional food owing to its usefulness in treating indigestion and controlling flatulence, excessive thirst, diarrhoea, and dysentery treatment. It is also used in the prevention and treatment of coronary heart disease, obesity, diabetes, colon cancer and gastrointestinal disorders (Chevallier, 1996; Adejuyitan, 2011). Other local foods like fura (from millet) can prevent the incidence of gallstones in women (Chibuikem, 2015); edible insects like termite (M. nigeriensis) can be added to the diets of people suffering from high blood cholesterol content and probably at risk of cardiovascular disease because of its high desirable unsaturated fatty acid content and low saturated fatty acid (Alamu *et al*., 2013); snail is used in some part of Africa as native medicine to treat hypertension, whooping cough and asthma (Offiong *et al*., 2013). However, most of these foods are yet to be approved as functional food due to legislative or regulatory issues, especially by the European Union, which accepts products as functional foods if they are labelled and if the acclaimed health and nutritional benefits on their labels are guaranteed by law (Chanda *et al*., 2011). Although people are shifting attention to food with functional benefits to their health, studies have shown that preference has been given to natural/local functional food, that is, food whose functional components are inherent in the original products rather than added functional components (Siegrist *et al*., 2008; Kuster-Boluda & Vidal-Capilla, 2017).

Functional food is an emerging concept in Nigerian literature. Little is known empirically about the consumers´ awareness, preference and purchasing behaviour of these functional foods. For instance, some of the studies considered consumers´ attitudes and willingness to pay in Malaysia, Iran, Italy, Germany, China, Turkey, Spain (Salleh *et al*., 2015; Siegrist *et al*., 2015; Bekoglu *et al*., 2016; Küster-Boludaa & Vidal-Capilla, 2017; Mohammad *et al*., 2017; Palmieri *et al*., 2022). However, these studies pay little attention to local/natural functional foods. The available literature in Nigeria mainly selected one of these natural functional foods; for instance, Akerele et al. (2020) and Obayelu et al. (2015), among others, examined the health claim awareness and sources of the awareness for tiger nut and Consumers' willingness to pay for labelled and certified moringa products respectively. Also, Adetunji et al. (2022) focused on mushrooms as functional foods.

It is pertinent to examine consumers' preferences and purchasing behaviour of functional foods to provide information for farmers, food processing industries, and food marketers on the potential of these local foods as a source of income and to develop marketing strategies to capture potential customers in different parts of the world. In the long run, it will increase farmers' income, reduce poverty and promote good health and well-being, which are crucial parts of the sustainable Development Goals (SDGs) for 2030. Several researchers surveyed functional

foods and consumers' attitudes towards them. They observed that people purchase functional foods because they perceive they are healthier, safer and more convenient than other products (Nystrand & Olsen, 2020; Marina & Marija, 2014). Preference and purchasing behaviour of consumers could serve as sources of innovative ideas for novel foods (Grujić, 2024). To formulate and model products, producers must identify food properties that can benefit target consumers (Grujić & Odžaković, 2021). Consumers must widely accept functional foods. Other than its health properties, it must appeal to consumers. A healthy diet is popular when it includes tasty foods with acceptable sensory quality (Grujić et al., 2023). Food producers must improve the attractiveness of healthy food products for consumers' trust and acceptance (Lassale et al., 2019; Springfield et al., 2020). Producers must ensure they produce what consumers want in terms of quality and quantity. Consumer preference and purchase decisions cannot occur without knowledge of their motivations and utility derived. Information on consumer preference and purchasing behaviour of functional foods is essential to identify potential economic opportunities, promote food innovation and promote trade.

Materials and Methods

This research was conducted in the Ifo Local Government Area of Ogun State. Primary data were obtained through a questionnaire, and data collection was accomplished with the aid of a Kobotool box, which enabled us to access respondents physically and virtually. A multistage sampling technique was adopted to select respondents for the study. The first stage randomly selected 10 Community Development Committees (CDCs) in Ifo L.G.A. The second stage was the proportional random sampling of 30 Community Development Associations (CDAs) from the selected CDCs based on the size of the CDC. The third stage randomly selected 10 households from each selected CDA to give 300 households. However, only 240 households' responses were helpful in our analysis, giving an 80% response rate. The reason for this low response rate was that most of the responses gotten virtually did not complete the questionnaire compared to the respondents we interacted with physically.

Analytical Tools

Descriptive Statistics

We used descriptive statistics to describe the socio-economic characteristics of the respondents, the level and sources of awareness of urban households about the nutrition and health benefits of functional foods, and assess consumer preference and purchasing behaviour of selected functional foods.

Poisson Regression Model

The Poisson regression model was used to determine the factors influencing the purchasing behaviour of selected functional foods. The Poisson regression model was specified owing to its appropriateness in estimating count data as it is a non-linear regression model application of Poisson distribution. (Mensah-Bonsu et al., 2017). In this model, a scalar dependent variable is linked to independent variables. Following Chekol et al. (2022), this can be expressed as:

$$P(Y_i = y_{i,}\mu) = \frac{e^{-\mu_i}\mu^y}{y_i!}, \mu_i > 0, i = 1,2,3 \dots \dots$$

The equation can be specified as:

$$\mu = exp(\beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_k X_{ki})$$

Where y_i is the value of the count outcome occurring at a time with a mean parameter μ_i; μ is the mean and variance of the Poisson distribution, assumed to be a non-linear function of the explanatory variables; βs are the intercept and the coefficients of the (estimated parameters as maximum likelihood function) regressors; K represents the number of regressors.

The dependent variable (y) is the frequency of purchase of functional foods per week. The analysis was done separately for each selected functional food.

The explanatory variables used in the study are:

X_1 = Awareness of health benefits (Dummy: 1 if yes; 0, otherwise)
X = Age of household head (Years),
X_3 = Sex of household head (Dummy: 1 if male; 0, otherwise),
X_4 = Marital status (Dummy: 1 if married; 0, otherwise), Households size (Number)
X_5 = Education (Years spent in school),
X_6 = Major occupation of spouse (Dummy: 1 if civil service; 0, otherwise),
X_7 = Major occupation of household head (Dummy: 1 if civil service; 0, otherwise),
X_8 = Monthly income of spouse (Naira),
X_9 = Monthly income of household head (Naira),
X_{10} = Monthly garlic expenditure (Naira),
X_{11} = Monthly ginger expenditure (Naira),
X_{12} = Monthly tigernut expenditure (Naira),
X_{13} = Monthly turmeric expenditure (Naira)
X_{14} = Monthly moringa expenditure (Naira)

Results and Discussion

Socioeconomic Characteristics of Households.

The mean age of household heads in the study area was approximately 53 years, which means that the majority (about 57%) were aged above 50 years. The majority (app. 85%) of household heads were male, as expected from typical African culture, where males are expected to head households and provide basic needs for them. Most (about 85%) household heads were married, which may have substantially affected their consumption pattern compared to other types of households. The average household size was 4, and the majority (about 56%) of households had less than 4 members, close to the average size of 5 from Akerele *et al. (2020)*. There was a high level of education among the households in the study area, where the largest share of the respondents (about 44%) had a bachelor's degree or higher national diploma. In comparison, only about 2% had no formal education, which was contrary to the finding of Akerele et al. (2020), where NCE and National Diploma were the highest levels of education. The major occupation of more than half of the household heads was civil service, followed by trading, while the majority (about 54%) of their spouses were traders.

Table 1: Socioeconomic Characteristics of Households.

	Frequency	Percentage	Mean
Age of household head			
≤ 30	6	2.50	52.62
31 – 50	97	40.41	
Above 50	136	57.08	
Sex of household head			
Female	35	14.58	
Male	205	85.42	
Marital status			
Married	205	85.42	
Single	15	6.25	
Widowed	11	4.58	
Divorced	8	3.33	
Separated	1	0.42	
Religion			
Christianity	130	54.17	
Islam	108	45.00	
Traditional	2	0.83	
Household size			
≤ 4	134	55.83	4.46
5 – 8	103	42.92	
9 – 12	2	0.83	
Above 12	1	0.42	
Education			
BSc/HND	105	43.75	
Masters/PhD	16	6.67	
ND/NCE	77	32.08	
Primary Education	2	0.83	
Secondary Education	36	15.00	
No Formal Education	4	1.67	
Major occupation of household head			
Civil Service	122	50.83	
Artisan	40	16.67	
Farming	11	4.58	
Trading	67	27.92	
Major occupation of spouse			
Civil Service	47	20.03	
Artisan	54	22.50	
Farming	2	0.83	
Trading	131	54.58	
Others	6	2.50	
Total	**240**	**100**	

Source: Field Survey, 2023

Distribution of Households' Income and Food Expenditure.

The average monthly income of the household head was about 88,000 naira, meaning that the most significant proportion (about 45%) earned between 50,000 and 100,000 naira monthly. On the other hand, the majority (about 69%) of the spouses earned 50,000 naira or less per month. On average, about 47,000 naira was spent on food by the households in the study area, while about 100,000 naira was spent on non-food items. This implies that the majority (about 87%) of the households spent less than 50,000 on food, while more than 50% spent between 50,000 and 100,000 on non-food items.

Table 2: Distribution of Households' Monthly Income and Expenditure.

	Frequency	Percentage	Mean
Income of Household Head			
≤ 50000	91	37.92	87793.16
50000 – 100000	108	45.00	
100001 – 200000	26	10.83	
above 200000	15	6.25	
Income of Spouse			
≤ 50000	166	69.17	56797.43
50001 – 100000	59	24.58	
100001 – 200000	12	5.00	
above 200000	3	1.25	
Other Income			
≤ 50000	212	88.33	33792.89
50001 – 100000	24	10.00	
100001 – 200000	4	1.67	
Food Expenditure			
≤ 50000	210	87.5	47020.87
50001 – 100000	28	11.67	
Above 100000	2	0.84	
Non-Food Expenditure			
≤ 50000	68	28.34	102701.10
50001 – 100000	124	51.67	
Above 100000	48	20.00	
Total	240	100	

Source: Field Survey, 2023

Level and Sources of Awareness About the Health Benefits of Functional Foods

Most households knew the health benefits of all the selected functional foods (moringa, garlic, ginger, tigernut, and turmeric). This awareness could influence their consumption and dietary choices. The level of awareness varies across functional foods; the highest awareness level was reported for ginger, with about 99% of the respondents, followed by garlic (about 97%), tiger nut (app. 93%), and turmeric (app. 78%). Moringa had the lowest awareness level with about 56% of respondents. This means that almost all the respondents knew the health benefits of ginger, garlic, and tigernut. This is crucial for their preference and consumption among households.

The data also give insights into how individuals in the surveyed population gain awareness about dietary choices. Family and friends (43.75%) and health professionals (35.83%) were the two most common sources of awareness about functional health benefits. This indicates that personal relationships and healthcare experts play significant roles in propagating the healthiness of diets. Books or publications (9.58%), seminars or workshops on nutrition (3.75%), and radio/television (4.59%) were also sources of awareness to some individuals, although to a lesser extent. Only about 2% of the respondents got information on the health benefits of these foods through newspapers. This might be due to low publications on the health benefits of foods in newspapers or that most respondents have not acquainted themselves with the newspaper. In summary, this result showed a high level of awareness about the healthiness of functional foods. It emphasised the significant impact of family, friends and healthcare professionals in achieving such a high level of awareness. The implication is that family, friends, and health workers can be important avenues for shaping urban households' dietary choices and consumption patterns to be healthy and sustainable.

Frequency of Purchase of Functional Foods Per Week

The result of the weekly purchase of functional foods is presented in Table 4. Ginger is the most frequently purchased functional food among the selected foods, and it was purchased on average about 1.48 times per week. This was followed by tigernut and garlic, which were purchased about 1.36 and 1.26 on average, respectively, per week. The high purchase frequency of ginger and garlic might be because most households use them as spices in food and soup. Also, tigernuts require little or no processing compared to others before eating, and most people eat them as snacks, which justifies their higher purchase frequency. Turmeric and moringa were the least purchased

functional foods, with an average purchase frequency of 0.97 and 0.98, respectively. Unlike garlic and ginger, these two functional foods are used primarily for medicinal purposes among those aware of their functionality; consequently, if we assume that purchases equal consumption, this result shows that the most frequently consumed functional foods were ginger, garlic, and tigernuts due to their inclusion as spices in foods and minimum processing requirements.

Table 3: Level and Sources of Awareness about the Health Benefits of Functional Foods

Level of Awareness	Frequency	Percent
Moringa		
No	105	43.75
Yes	135	56.25
Garlic		
No	8	3.33
Yes	232	96.67
Ginger		
No	3	1.25
Yes	237	98.75
Tiger nut		
No	16	6.67
Yes	224	93.33
Tumeric		
No	52	21.67
Yes	188	78.33
Total	**240**	**100.00**
Sources of Awareness		
Books or publications	23	9.58
Family and friends	105	43.75
Health professionals	86	35.83
Newspapers	5	2.08
Radio/Television	11	3.59
seminars or workshops on nutrition	10	4.17
Total	240	100.00

Source: Field Survey, 2023.

Table 4: Frequency of Purchase of Functional Foods Per Week

Moringa	Frequency	Percentage	Mean
≤ 1	215	89.58	0.98
2 – 3	18	7.50	
Above 3	7	2.92	
Garlic			
≤ 1	196	81.67	1.29
2 – 3	32	13.33	
Above 3	12	5.00	
Ginger			
≤ 1	189	78.75	1.48
2 – 3	33	13.75	
Above 3	18	7.50	
Tigernut			
≤ 1	190	79.17	1.36
2 – 3	35	14.58	
Above 3	15	6.25	
Turmeric			
≤ 1	223	92.92	0.97
2 – 3	12	5.00	
Above 3	5	2.08	

Source: Field Survey, 2023

Attributes Considered When Selecting Functional Foods

When choosing preferred functional foods, consumers consider some attributes that later inhibit or improve their purchasing behaviour. These attributes include taste, flavour, nutrient content, health benefits and price. The respondents were asked to select the most important attribute before selecting functional foods. According to their responses, nutritional value was the most important attribute, with more than 70% of the respondents' affirmation. This was followed by flavour, health benefits and taste, as indicated by about 66%, 58% and 57% of respondents. Price was the least considered attribute, as it was chosen by only about 13% of the respondents. This showed that respondents valued functional nutritional and health attributes over their prices. Consequently, emphasis should be placed on the quality of functional foods when policy regarding their consumption is formulated.

Table 5: Attributes Considered in Selecting Functional Foods

Attributes	% of an affirmative response
Taste	56.67
Flavour	66.25
Nutritional value	70.83
Health benefits	57.92
Price	13.33

Source: Field Survey, 2023

Attributes Considered When Purchasing Functional Foods

We also inquire about the attributes that influence the purchase of functional foods. Some of the factors frequently mentioned in the literature were presented to the respondents, including price, availability, taste, quality, convenience, and security, among others, to rank based on their effects on the purchase. The result showed that price, availability and taste were ranked first, second and third, respectively, as the factors with the most significant impact on purchasing functional foods. This is understandable based on the premise of demand theory. It might also be a result of the economic status of most of the respondents. The implication is that policy on price regulation, increasing production and value addition to functional foods should be a priority to increase the consumption of these foods among consumers.

Table 6: Attributes Considered when Purchasing of Functional Foods

Factors	Score	Rank
Price	1119	1st
Availability	1087	2nd
Taste	1077	3rd
Convenience	1037	4th
Familiarity and security	1018	5th
Trust products	957	6th
Better quality	949	7th
Product healthy options	907	8th
Attractive package	821	9th
Information given on the label	798	10th
Personal health issues	712	11th
Recommended by health professionals	703	12th

Source: field survey, 2023

Point of Purchase of Functional Foods

The point of purchase is necessary for targeting policy intervention. Identifying the point of purchase of most respondents would enlighten policymakers on how to improve the marketing of these products and pricing regulation to enhance their consumption. According to this result, the purchase points of the selected functional foods vary slightly. While most of the functional foods (four out of five, that is, garlic, ginger, turmeric and moringa) were purchased at the local markets by the majority (more than 50%) of the respondents, tigernut was purchased from roadside vendors by the most (about 45%) of the respondents. Aside from local markets, some respondents also purchased from supermarkets, making it the second preferred point of purchase for garlic, ginger, turmeric and moringa. The implication is that to facilitate the consumption of functional foods, the government and non-governmental organisations should target local markets when formulating policies regarding demand, supply and price regulation for functional foods to improve their consumption.

Table 7: Point of Purchase of Functional Foods

Tigernut	Frequency	Percentage
Local markets	88	36.67
Roadside vendors	107	44.58
Supermarkets	41	17.08
Others	4	1.67
Garlic		
Local markets	143	59.58
Roadside vendors	44	18.33
Supermarkets	50	20.83
Others	3	1.25
Moringa		
Local markets	122	50.83
Roadside vendors	38	15.83
Supermarkets	74	30.83
Others	6	2.5
Turmeric		
Local markets	118	49.17
Roadside vendors	38	15.83
Supermarkets	70	29.17
Others	14	5.83
Ginger		
Local markets	154	64.17
Roadside vendors	37	15.42
Supermarkets	46	19.17
Others	3	1.25
Observation	240	100.0

Source: Field Survey, 2023

Factors Considered When Choosing Where to Purchase Functional Foods

Most respondents ranked safety, freshness, and brand reputation as the most important factors for choosing the supermarket to purchase functional foods. Purchasing by the roadside was motivated mainly by safety, which ranked first, followed by price and freshness. In contrast, the highest choice factors for local market purchase were safety, variety and price. Based on this, safety was the most important factor consumers considered when choosing where to buy functional products, followed by freshness prices. This implies that to increase the consumption of functional foods, policymakers and stakeholders in agriculture, food system, and health should monitor all purchase points to improve the safety of goods so that consumers can purchase these items at any purchasing point closer to them without worrying about food safety.

Table 8: Factors that Determine the Choice of Point of Purchase

	Supermarket		**Roadside**		**Local markets**	
Attribute	Score	Rank	Score	Rank	Score	Rank
Price	969	5th	1101	2nd	1101	3rd
Freshness	1164	2nd	1092	3rd	1101	3rd
Safety	1184	1st	1123	1st	1118	1st
Distance	766	6th	1002	5th	1058	4th
Variety	1106	4th	1076	4th	1102	2nd
brand reputation	1135	3rd	665	6th	664	5th

Source: Field Survey, 2023

Factors Influencing the Purchasing Behaviour of Selected Functional Foods

Table 9 shows the factors influencing the purchasing behaviour of selected functional foods (moringa, garlic, ginger, tigernut, and turmeric) among households. The frequency of purchase was used as a proxy for purchasing behaviour following Adeoye et al. (2016). The frequency of moringa purchases was significantly affected by the household head's and spouse's monthly income, with negative and positive effects, respectively. This implies that while the monthly income of the household head inhibits its purchase frequency, the spouse's monthly income enhances it. The expenditure on tigernut also positively affected the frequency of purchase of moringa. This means

that the frequency of moringa purchases increases with tigernut expenditure. Also, married household heads had a higher frequency of purchasing moringa than others (single, divorced, and separated).

The major occupation of the household head (using civil service as a reference) and ginger expenditure had negative and positive significant effects on ginger purchasing behaviour, respectively. This means that civil servant households purchased ginger less frequently. Also, ginger purchasing frequency increases with expenditure.

The purchasing behaviour of tigernut is significantly influenced positively by marital status (ρ10%), education (5%) of household heads and tigernut expenditure (1%), and negatively by the occupation of household heads (10%). This implies that married household heads with a high level of education had a higher frequency of tigernut purchases, and the civil servant household had a lower frequency of purchasing tigernut. The frequency of purchase of tigernut increases with tigernut expenditure. This finding is consistent with Akerele et al. (2020), who state that a higher level of education enhances the consumption of tigernuts.

Table 9: Factors Influencing the Purchasing Behaviour of Selected Functional Foods

	Moringa		Garlic		Ginger		Tigernut		Turmeric	
Frequency of purchase	Coef. (Std.err.)	P>z	Coef. (Std.err)	P>z	Coef. (Std.err.)	P>z	Coef (Std.err.)	P>z	Coef (Std.err.)	P>z
Awareness	0.240 (0.155)	0.121	-0.165 (0.334)	0.622	0.855 (0.719)	0.235	0.145 (0.252)	0.565	0.648*** (0.218)	0.003
Age of household head	0.000 (0.006)	0.947	-0.006 (0.006)	0.248	-0.002 (0.005)	0.651	-0.002 (0.006)	0.774	-0.012* (0.006)	0.058
Sex household head	-0.080 (0.214)	0.707	-0.163 (0.178)	0.361	-0.085 (0.173)	0.621	0.182 (0.194)	0.348	-0.151 (0.205)	0.459
Household size	0.028 (0.027)	0.306	0.009 (0.027)	0.732	-0.005 (0.028)	0.856	-0.022 (0.034)	0.508	0.040** (0.020)	0.050
Marital status of household head	0.270* (0.159)	0.090	0.116 (0.132)	0.379	0.176 (0.124)	0.155	0.224* (0.131)	0.087	-0.025 (0.154)	0.870
Education of household head	0.011 (0.028)	0.695	0.026 (0.026)	0.306	0.029 (0.024)	0.221	0.051** (0.026)	0.047	0.046 (0.031)	0.132
Major occupation spouse	-0.057 (0.194)	0.771	0.047 (0.166)	0.778	0.020 (0.157)	0.897	0.114 (0.159)	0.472	-0.043 (0.194)	0.826
Major occupation of household head	0.170 (0.176)	0.334	-0.025 (0.149)	0.866	-0.237* (0.139)	0.089	-0.249* (0.146)	0.088	-0.263 (0.169)	0.121
Monthly income of spouse	3x10^6** (0.000)	0.046	0.000 (0.000)	0.819	0.000 (0.000)	0.518	0.000 (0.000)	0.180	4.3x10^6*** (0.000)	0.008
Monthly income of household head	-4.6x10^7*** (0.000)	0.003	0.000 (0.000)	0.572	0.000 (0.000)	0.564	0.000 (0.000)	0.101	-4.5x10^6*** (0.000)	0.002
Garlic expenditure	0.000 (0.000)	0.194	0.000 (0.000)	0.785	0.000 (0.000)	0.970	0.000 (0.000)	0.623	-4.3x10^4*** (0.000)	0.007
Ginger expenditure	0.000 (0.000)	0.235	0.000 (0.000)	0.313	0.000** (0.000)	0.050	0.000 (0.000)	0.238	-2.7x10^4* (0.000)	0.075
Tigernut expenditure	1.4x10^4** (0.000)	0.020	0.000 (0.000)	0.107	0.000 (0.000)	0.117	1.6x10^4*** (0.000)	0.000	0.000 (0.000)	0.770
Turmeric expenditure	0.000 (0.000)	0.418	0.000 (0.000)	0.293	0.000 (0.000)	0.423	0.000 (0.000)	0.416	2.4x10^4*** (0.000)	0.003
Moringa expenditure	0.000 (0.000)	0.196	0.000 (0.000)	0.761	0.000 (0.000)	0.276	0.000 (0.000)	0.638	0.000 (0.000)	0.295
Constant	-0.691 (0.518)	0.182	0.240 (0.585)	0.681	-0.968 (0.864)	0.263	-0.753 (0.529)	0.155	-0.512 0.564)	0.364
Number of observations	240		240		240		240		240	
LR chi2(15)	69.420		36.040		49.810		58.650		82.110	
Prob > chi2	0.000		0.002		0.000		0.000		0.000	
Pseudo R2	0.118		0.058		0.070		0.086		0.139	
Log likelihood	-259.282		-295.135		-330.132		-313.381		-255.385	

Source: Field Survey, 2023

The purchasing behaviour of turmeric is positively influenced by awareness of its nutrition and health benefits, household size, the income of the spouse, and turmeric expenditure. The implication is that awareness of nutrition and health benefits enhances the purchasing of turmeric. This is similar to the finding of Akerele et al. (2017) that awareness positively influences the consumption of some foods known with specific health claims in Nigeria. Also, larger households with higher spouse income had a higher purchase frequency. However, the age and income of household heads and garlic and ginger expenditure negatively affected its purchasing. The frequency of purchase increases with an increasing level of awareness, household size, the income of the spouse and the amount spent on turmeric per week. At the same time, it decreases as the age and income of household heads increase. The higher the garlic and ginger expenditure, the lower the purchase frequency of turmeric. Contrarily, Ong et al. (2014) affirmed that age positively correlated with the purchase frequency of functional foods. Also, Sekinat et al. (2024) stated that as people's age increases, social factors have more impact on their purchase decisions toward functional foods.

Conclusion

The demographic and socioeconomic characteristics of the surveyed population provide valuable insights into the diversity and occupation patterns within the community. Income and expenditure patterns indicate varying economic conditions, with a substantial portion of the population falling into the average income categories. Sources of awareness highlight the significance of family, friends, and health professionals in disseminating nutrition and health-related information. The roadside vendors and local markets were the major suppliers of functional foods to the households. Price and availability were the most crucial attributes considered when purchasing functional foods. Age, marital status and income were the determinants of purchasing behaviour of functional foods.

Recommendations

To enhance the consumption of functional foods, it is necessary to improve their availability and ensure that they are accessible at lower, regulated prices, especially among local market and roadside vendors. Since age and income were important determinants of purchasing behaviour, increasing the minimum wage will enhance purchasing functional foods since most respondents were civil servants. For effective policy regarding functional foods, there is a need to consider age differences since it is an important determinant of functional food purchasing behaviour. Future research should consider a larger sample size that covers a wider geographical location to enhance the generalizability of the findings. It may also consider diversity in socioeconomic characteristics when analysing data on functional food consumption and purchasing behaviour.

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