Effect of Nutrition Labelling on Demand for Agro-Fruit Juice in Abakaliki Urban Area of Ebonyi State, Nigeria

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Abstract
The demand for agro-fruit juice has been on the increase in Nigeria. Despite its increasing demand, there seems to be a dearth of empirical data on the influence of nutrition labelling on consumers demand of agro-fruit juice in Abakaliki urban area of Ebonyi State, Nigeria. The study specifically, analyzed the ability of consumers to recognized nutrition labelling information and how this influenced the demand for agro-fruits juice. A multi-stage random sampling technique was used in the selection of respondents for the study. Data were collected primarily using well structured questionnaires and the data analysed using both descriptive and inferential statistics. The result of the analysis showed that the mean age of the consumers was 37 years and who are mostly females with an average household size of 4 persons and who earn an average income of N187,200.00. The result further revealed that health claims, date of production and expiration, geographical place of origin, nutritional claims, and safety claims were the major factors that influenced the demand for agro-fruit juice label. With the R^2 of 0.860, the study at P=0.05 level of significance found that nutrition information has significant effect on the demand of agro-fruit juice. Similarly, with the R^2 of 0.946 the coefficient of age, gender, and primary occupation, was negatively related to the demand level of agro-fruit juice label. Again, the result showed that that coefficient of household size, educational level, annual income, and membership of social organisation were positively signed and statistically significant. The study also showed that misleading health claims on agro-fruit juice, falsified nutrition information, lack of interest in agro-fruit juice label information, numerous information content of agro-fruit juice label, and obscure and unclear information on agro-fruit juice were the major constraints to demand for agro-fruits juice nutrition labels. Based on the findings of this study recommended that food regulatory agencies such as NAFDAC should ensure that nutrition information on food label depict the actual quality and claims of its nutritional content; and that producers should ensure that the practice of inscribing unnecessary logos, signs and letters on food labels which carry little or no information should be discouraged.
Keywords: nutrition labelling, influencing, demand, agro-fruit, juice, Abakaliki

Introduction

Of recent in Nigeria, food consumption habits have immensely changed as it is becoming common for people to work and eat outside their home. Consequently, increase in average household incomes due to implementation of eighteen thousand naira (₦18,000.00) minimum wage has given consumers a broad range of choices for the basic food bundle. However, there is increasing demand for healthy and nutritional products as a consequence of consumers being better educated and more demanding; which leads to a need for new products and a more differentiated food product assortment (Linneman, Meerdink, Meulenberg, and Jongen, 1999). In fact, consumers want high quality products that will deliver specific benefits in terms of health, safety and environmental quality (Van den Heuvel, Van Trijp, Van Woerkum, Renes, and Gremmen, 2007).

A health aware nation and a rising interest in maintaining and improving human life are just a few reasons why fruit and vegetable demand has risen. In view of this, World Health Organisation (WHO) promoted a campaign of "5 A Day" as a way of encouraging people to consume five fruits or vegetables per day. The food industry has responded to this demand by developing fresh and nutritional products with conservation techniques that extend the shelf life of the product (Deliza, *et al.* 2003).

Fruit juice is a ready and rich source of vitamins, fibre and mineral salt for human consumption due to its uses as medicine, food and appetites (Ashurt, 1991). Fruit juice is originally produced as a result of surplus production of fruits, but it is obtained from processing specially grown species of plant for that purpose. Fruit juice can be obtained from economic plants such as citrus orange (*Citrus sinensis*), tangerine (*Tamarinds indica*), grape (*Citrus pavadisi*), lemon (*Citrus lemon*) and lime (*Citus oryantifolia*). Other main sources of agro-fruit juice are: pineapple (*Ananas comosus*), mango (*Mangifera indica*), cashew (*Anacardium occidentale*), etc.

As a response to consumers demand for healthier and nutritious goods, several studies have been conducted to examine how consumers evaluate different product attributes in numerous food products. Health, nutrition, taste, price, convenience are some of the criteria consumers use to determine which product is more attractive (Bech-Larsen, Grunert and Poulsen, 2001). Nutritional information on the label can persuade consumers to purchase the product, and sensory attributes will confirm if they like it. Nutritional information have only a few seconds to make an impact on the consumer's mind (Dantas, Minim, Deliza and Puschman, 2004); during that time, it must catch the consumer's eye, and convince the shopper that it is the optimum option

on the shelf (Rowan, 2000).

In Nigeria, agro-fruit juices are highly demanded among people of different age group and this has led to influx of varieties of imported and home-made agro-fruit juices into the market. Unfortunately, some of these imported agro-fruit juices do not come in natural form but have been stored with preservatives, prompting the need for proper labelling that will guide the decision of the consumers at a point of purchase. However, despite the importance of nutrition labelling on agro-fruit juice, it appear there is a dearth of empirical data on the influence of nutrition labelling on consumers demand of agro-fruit juice especially in the study area. Given the above scenario, the present study seek to analyze the ability of consumers to recognized nutrition labelling information and how this influence their demand for agro-fruits products in Abakaliki Urban Area of Ebonyi State.

Methodology

The study area was Abakaliki Urban Area of Ebonyi State. Located between latitude 4'N and longitude 8'E and inhabited mainly by civil servants, traders, artisans, students etc. However, Abakaliki metropolis has no single fruit juice industry and the consumed fruit juices are imported or locally manufactured from others cities of Nigeria. A multi-stage random sampling technique was used in the selection of one hundred and twenty (120) respondents for the study. Data for analysis were collected primarily using well structured questionnaires. Data collected were analysed using both descriptive and inferential statistics.

Results and Discussion

Socio- economic Characteristics of the Respondents

From Table 1, it was observed that the age of the consumers was an average of 37 years which indicated that most of them are within the active economic productive age. This was in line with the findings of Phillips and Sternthal (1977) who posited that older consumers are likely to process less information than younger consumers because they are less capable of processing large amounts of information and also due to greater market experience. This finding equally ran contrary to the findings of Mitchell and Boustani (1993) who found that older respondents perceived risk reducing strategies to be more useful than their younger counterparts when purchasing breakfast cereals. It was observed that majority of the consumers (53.3%) are females and married (52.5%). Again, the result showed that the respondents had an average household size of 4 persons, indicating that the agro-fruit consumers have relatively small household size. The small household size was attributed to the dwindling economic fortune of the nation, which have forced many families to cut down the number of children they can have, coupled with increasing awareness of family planning campaign among the populous especially the educated class. The result equally revealed that all the consumers is educated having acquired one form of formal education or the other. The breakdown showed that most (28.3%) had OND/NCE certificate, followed by those with HND/B.Sc with 26.7%, while 23.3% and 16.7% had completed secondary and primary education respectively. This was very vital in determining the effect of nutrition labelling on the demand for agro-fruit as consumers' awareness increase with increase education. Table 1 result also showed that the consumers earn an average annual income of N187,200.00 which signified that the respondents are low income earner which was hypothesised to have serious implication on demand and consumption level of agro-fruit juice in the area as in the scale of preference, the lean annual income will compel consumers to satisfy first basic necessity such as cloths, healthcare, and staple foods before demanding for agro-fruit juice which they may considered as luxury. Meanwhile, the finding was in consonance with that of Ezike (2011) who reported that average annual income of N185,987.00 for Ebonyi State Fadama III users. The study equally revealed that majority of the consumers (37.2%) were civil servants who earn a minimum wage of eighteen thousand naira (N18,000.00).

Table 1: Percentage Distribution of the Respondents According to Socio-economic Characteristics

Variables	Description	Frequency (N=120)	Percentage	Mean
Age (years)	21-30	39	32.5	37
	31-40	38	31.7	
	41-50	38	31.7	
	51-60	5	4.1	
gender	Male	56	46.7	
	Female	64	53.3	
Marital status	Single	48	40.0	
	Married	63	52.5	
	Widowed	9	7,5	
Household size	1-4	79	65.8	4
	5-8	40	33.4	
	9-12	1	0.8	
Educational status	Primary	20	16.7	
	Secondary	28	23.3	
	OND/NCE	34	28.3	
	HND/B.SC	32	26.7	
	M.Sc	6	5.0	
Annual income (₦)	50,000-100,000	6	5.0	187,200
	100,001-150,000	24	20.0	
	150,001-200,000	56	46.7	
	200,001-250,000	34	28.3	
Primary occupation	Civil service	47	39.2	
	Farming	7	5.8	
	Artisan	18	15.0	
	Students	21	17.5	
	Trading	27	22.5	

Source: field survey, 2012

Types and Characteristics of Agro-Fruit Labelling that Influence Consumers' Demand

It is worthy to note that consumers give plenty attention to their diets, and especially to the information that appears on the package label such as, nutritional, health claims etc. As a response to consumers demand for healthier and nutritious foods, producers now highlight these claims on the front label of their agro-fruit juice packages. It is in view of this that data were collected on the types and characteristics of agro-fruit juice label that influenced consumers' demand. From the result as presented in Table 2, it was observed that agro-fruit juice labels that influenced consumers to demand for the products were information health claims (90%), date of production and expiration (100%), geographical place of origin (56.7%), nutritional claims (95%) and safety claims (93.3%). This justified the findings of Dantas *et al.* (2004) who used focus groups to obtain information on consumer's attitudes about minimally processed products. He observed further that the main packaging characteristics observed by participants were "best before", brand and nutritional information. The results of these studies implied that giving consumer's information about food production had a positive impact on the perception. However, labelling information on taste (17.5%), packaging attributes of the agro-fruit juice (25%), visual appearance of agro-fruit label (27.5%) and colour attribute on agro-fruit label (37.5%) were not accepted as types and characteristics of agro-fruit juice that influence demand and consumption of agro-fruit juice in the area.

Table 2: Percentage distribution of the respondents on types of nutrition information on agro-fruit juice label that influence demand

Characteristics of Label on Agro-fruit Juice	Frequency (N =120)*	Percentage
Health claims on agro-fruit label	108	90.0
Taste claims on agro-fruit juice	21	17.5
Date of production and expiration (Best Before)	120	100.0
Geographical place of origin	68	56.7
Packaging attributes of the agro-fruit juice	30	25.0
Claims/ information on content/ingredient (Nutrition)	114	95.0
Safety claims	112	93.3
Visual appearance of agro-fruit label	33	27.5
Colour attribute on agro-fruit juice label	45	37.5

Source: Field Survey, 2012; *multiple response recorded

Effect of Nutrition labelling on Agro-fruit Juice Demand

From the simple regression analysis result on the effect of nutrition labelling on the demand for agro-fruits juice as shown in Table 3, it was observed that the coefficient of multiple determination (R^2) was 0.860 which indicated that about 86% in the total variation in dependent variable (agro-fruit demand) was influenced by the independent variable (nutrition labelling) in the Abakaliki Urban area. The coefficient of nutrition labelling was positively and significantly related to the demand of agro-fruits juice. This finding signified that a well labelled agro-fruit juice will enhance the demand of agro-fruit juice.

Table 3: Simple Regression Result of the Effect of Nutrition labelling on Agro-fruit Juice Demand

Variable	Coefficient	Standard error	T-value
Constant	10.573	21.052	0.502*
Nutrition labeling	0.008	0.030	0.267*
R^2	0.860		
Durb Watson	1.259		
F-statistics	0.715		

Source: Field survey, 2012. *significant at 5%

Effect of socio-economic Characteristics of the Consumers on the Demand Level of Agro-Fruit Juice in the Study Area

A multiple regression analysis was carried out to determine the effect of the socio-economic characteristics of the consumers on the demand level of agro-fruit juice in the area. The summary of the result is presented in Table 4.

From the result it was observed that the coefficients of multiple determination (R^2) was 0.946 or 94.6%, signifying that about 94.6% of total variation observed in demand level of agro-fruit juice was explained by the explanatory variables. Specifically, the coefficient of age was negatively related to the demand level of agro-fruit juice but was statistically significant at 1%. This indicated that as consumers advance in age in years, his/her level of demand and consumption of agro-fruit juice will decline. This conformed to the a priori expectation. Similarly, the coefficient of gender of was negatively related to level of demand and consumption of agro-fruit juice and statistically significant at 1%. This was an indication that consumers of agro-fruit juice were not restricted by gender composition. Hence, the a priori expectation was met. Primary occupation of the consumers was negatively related to the demand and consumption of agro-fruit juice. This was an indication that the consumption of agro-fruit juice cut across all occupations in the area. This also conformed to the a priori expectation.

The result equally showed that the coefficient of marital status of the consumer was positively signed and statistically insignificant. This was an indication that as consumers change from being single to being married, the quest for healthy family living increases hence the demand for nutritional information on every fruit juice purchased. This was in-line with the a priori expectation. In similar way, there was a positive relationship between the consumer's household size and the demand and consumption of agro-fruit juice. This was justified on the fact as household size of the consumers increase; there will be corresponding increase in level of demand and consumption of agro-fruit juice in the area. The coefficient of educational level of the consumer was positively related to level of demand and consumption of agro-fruit juice and statistically significant at 5%. This was an indication that education has a way of shaping the demand for agro-fruit juice due to nutritional information. Thus, as consumers acquire higher level education, they will be more inclined to the understanding of the nutritional content of every agro-fruit juice consumed. This conformed to the findings of Nwibo and Alimba (2013) who posited that formal education provides a greater capacity to learn about new production processes and product designs, offer specific technical knowledge conducive to firm expansion, and increase consumers and owners' flexibility. This conformed to the *a priori* expectation because education promotes awareness on the need for consumption of food products such as agro-fruit juice that are low in calories and fats. The coefficient of annual income of the consumers was positively signed and statistically significant at 1% level. This implied that increased annual income of the consumer will lead to increase demand and consumption of agro-fruit juice in the area. This was in conformity with the *a priori* expectation, because the consumers with enhanced annual income will have the financial power to purchase as much agro-fruit juice as him/her and his/her household desires. Membership of social organization of the consumers was positively signed and statistically significance at 10%. This implied that belonging to social organization promotes the consumption of agro-fruit juice among the consumers. This can be attributed to the practice of serving refreshment such as agro-fruit juice in such organizational gathering. Thus, the a priori expectation was met.

Table 4: Effect of Socio-economic Characteristics of the Consumers on the Demand Level of Agro-fruit Juice in the Study Area

Variables	Co-efficient	Standard error	T-value	Significant
Constant	26.731	0.224	119.372	*
Age (x_1)	-0.123	0.003	-36.287	*
Gender (x_2)	-1.401	0.060	-23.165	*
Marital status (x_3)	0.244	0.027	8.882	-
Household size (x_4)	0.090	0.013	6.745	*
Annual income (x_5)	3.433E-6	0.000	6.594	*
Primary occupation (x_6)	-0.193	0.017	-11.363	*
Educational level (x_7)	0.053	0.008	6.614	**
Membership of soc. org (x_8)	0.163	0.086	1.886	***
R^2	0.946			
D.W	1.639			
F-statistics	241.728			
Standard error	0.2938437			

Source: SPSS Analyzed Field Data, 2012
* indicates significant at 1%
** indicates significant at 5%
***1 indicates significant at 10%

Constraints to Demand and Utilization of Nutrition Label on Agro-Fruit Juice in the Area

Factor analysis (Table 5) was used to analyse factors that constraint demand and utilization of nutrition labels on agro-fruit juice in the area. With the use of Kaiser's rule of thumb, variables that loaded high were used in naming each of the extracted factors. It should be observed that Kaiser in 1950 developed a rule of thumb of 0.40 and above as a benchmark for accepting a factors as being influential. This rule has general application in all cases regarding factor analysis.

From the analysis, the identified constraints consumer's demand and utilization of nutrition information on agro-fruit label were categorised under three components, namely: personal, information and institutional components. Component I was named personal factor, because variables that loaded high were related to it. The personal factors that loaded higher were that of health claims on agro-fruit juice which were judged to be misleading and exaggerated and the information on agro-fruit juice which was noted not to be true indicators of quality. Component II was named information because factors that loaded high here were information related. The identified information factors include lack of interest in agro-fruit juice label information and numerous information contained in agro-fruit juice label. The identified institutional factor that loaded high was obscure and unclear information on agro-fruit juice that are ambiguous and misunderstanding. Thus justifying the findings of Grunert (2005); Verbeke, (2005), who reported that labelling of agro-fruit juice are often subject to misunderstandings, misconceptions and generalizations, and often do not work as quality indicators since consumers cannot interpret their meaning effectively, leaving the information asymmetry problem essentially unchanged.

Table 5: Varimax rotated component factors on constraints to demand and utilization of nutrition label on agro-fruit juice in the area.

Variables	Component I Personal Factor	Component II Information Factor	Component III Institutional Factor
Lack of interest in agro-fruit juice label information	0.321	0.684	0.301
Information are obscure and unclear	0.056	-0.518	0.620
Agro-fruit label contain too much information	0.285	0.540	-0.337
Information on agro-fruit label are ambiguous and misunderstanding	0.021	-0.464	0.459
Information on agro-fruit juice label are difficulty to understood	-0.616	0.280	0.254
Health claims on agro-fruit juice are misleading and exaggerated	0.447	0.368	0.379
Information on agro-fruit juice are not indicators of quality	0.697	0.300	0.307

Source: Computed Field Data, 2012

Conclusion and recommendations

Based on the findings of this study, it was concluded that the consumers of agro-fruit juice were aware of nutrition information on agro-fruit juice label. Health claims, date of production and expiration, geographical place of origin, nutritional claims and safety claims were some of the nutrition information consumers sought for on agro-fruit juice label. Consequent upon the findings, the study concluded that nutrition information have significant effect on the demand and utilization of agro-fruit juice in Abakaliki urban area.

The study recommended the following:

> ➢ Food regulatory agencies such as NAFDAC should ensure that nutrition information on food label depict the actual quality and claims of the nutritional content.
> ➢ Government agencies and producers should intensive promotion and awareness creation on the importance and how to use information on food label by consumers in the area.
> ➢ Producers should ensure that the practice of inscribing unnecessary logos, signs and letters on food labels which carry little or no information should be discouraged.
> ➢ Campaign on the need for utilization of information on food label by consumers should be carried to social organizations since it has proven to be one of the effective ways of promoting the consumption of agro-fruit juice.

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