Frontiers Journal of Nutrition & Food Sciences (FJNFS) Asante OR et al., Front J Nutr and Food Sci 2019, 1:1

FM Publisher

Short Communication Open Access

Assessment of Consumers' Perception on Fresh-cut Fruit: A Case Study in the New Juaben Municipality in Ghana

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Received August 01, 2019; **Accepted** November 21, 2019; **Published** January 02, 2020

Citation: Asante OR (2019) Assessment of Consumer's Perception on Fresh-cut Fruit: A Case Study in the New Juaben Municipality in Ghana Front J Nutr and Food Sci 1:1.

Abstract

Selling of fresh cut fruits is a major source of employment in the New Juaben Municipality. The condition of the fruits prior to consumption is normally not done well, due to lack of education on the part of the vendors. However, this research was designed to assess consumers' perception about fresh cut fruits sold in the Municipality. Sixty questionnaires were randomly assigned to 60 respondents in Koforidua. The data was analyzed using SPSS version 20. Results have indicated that the purchasing of fresh cut fruits is influenced by price, health benefits and the visual appeal of the fresh cut fruits. The respondents also scored high means for all important factors when purchasing fresh cut fruits. Visual Appeal scored the highest mean of (3.57) followed by Price (3.33), Packaging (2.98) and Food safety (2.95). The sig-values as indicated by the regression model show that all the factors except convenience have significant effect on the decision to purchase fresh cut product. It is recommended that vendors should be educated on food packaging, proper cleaning and disinfection of water used in cleaning the fruits to increase the rate of fresh cut purchase.

Keywords: Food safety; Consumers; Fresh cut fruits; Purchase; Price

Introduction

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Fruits are the main source of vitamins A, C and E. It helps in addressing most health issues in humans [1]. Fruits and vegetables are known as healthy diet since ages. The Dietary Guidelines for Americans 2010 recommend that: one-half of your plate should be fruits and vegetables [2]. The reason being that, fruits are necessary for human health when consumed. A review conducted by Ness and Powless et al., indicated that fruits and vegetables have strong effect on controlling stroke and less effect on cardiovascular diseases [3]. Flavonoids has been shown to have antioxidative activity, free-radical scavenging capacity, coronary heart disease prevention, and anticancer activity, while some flavonoids exhibit potential for anti–human immunodeficiency virus functions [4]. Due to the increasing awareness of the importance of fruits and vegetables in both developed and developing countries people tend to consume fruits [5]. Fruits found in the tropics include orange, pawpaw, pineapple, apple, sorsup, banana and watermelon [6]. These fruits are processed to reduce postharvest losses as well as serving the nutritional needs of consumers [6]. Fruits are bought from the market unprocessed or minimally processed for consumers. In the developing countries, fresh-cut fruits have become popular and very demanding [7]. Consumers in developing countries have become more concerned about the nutritional and sensory aspects in addition to the safety of the food they eat due to growing health concerns [5]. Fresh cut products can be defined as fruit or vegetables that have been trimmed and/or peeled and/or cut into 100% usable product that is bagged or pre-packaged to offer consumers high nutrition, convenience, and flavor while still maintaining its freshness [8]. Minimally processed products for both retail and food service applications have increasingly appeared in the market place in the recent years. Fresh-cut produce implies fruit or vegetables that have been prepared and subsequently packaged to provide convenient and safe ready-to-eat products for consumers, while maintaining their lives in a fresh state [9]. Fresh-cut fruits are processed by peeling, slicing or chopping into small portions. Since cells are exposed to the environment after peeling, it creates a very conducive environment for microorganisms to survive [10]. The reason being that the cytoplasm of the fruit is cut, the moisture content in the fruit provides conducive environment for the microorganisms to survive and multiply. The nutrients in fruit serve as a substrate for the growth of the microorganisms. Some of the microorganisms that have been isolated from fresh-cut vegetables and fruits include E. coli, Salmonella spp, yeasts, Geotrichum, Fusarium, and Penicillium spp [11]. Some of these microorganisms have been reported as the main causative agent for foodborne illnesses [12]. The demand for fresh-cut fruits is increasing due to its availability. Therefore, this research was conducted to determine consumer perception and the frequency of consumption on fresh-cut fruits in Koforidua Municipality, Ghana.

Materials and Methodology

Study area

This study was conducted in the central business area of Koforidua, Eastern Region, Ghana (6°5‟64N, 0°15‟54W) in June, 2018. The Koforidua municipality was chosen for this study due its large number of street foods including fresh fruit vending action.

Study design, Data collection & Analysis

Open and close Questionnaires were developed and randomly administered to 60 respondents in Koforidua Township. The selection of respondents was based on their willingness to participate in the study and their readiness to give the required information. Data were collected from the respondents on demographic factors, education, the number of times fresh cuts are purchased, the amount spent on the fresh cut fruits and the factors consumers consider when purchasing fresh cut fruits. Statistical analysis was performed on data collected using SPSS version 20 to determine the mean and standard deviation for the average expenditure on fresh cut, regression and correlation coefficients on decisions to purchase fresh cut fruits.

Results and Discussion

General Characteristics of Respondents

(Table 1) shows the general characteristics of the respondents that were included in the study. The respondents included 60 individuals sampled from the New Juaben Municipality in Ghana. The age range for the responding individuals was largely 18-25 years representing 55.0%. Majority of the respondents were female (63.3%) and majority were not married (80.0%). A total of 58% of the respondents had tertiary education.

Individual Food and Fruit Expenditure

The descriptive statistics in (Table 2) below is the analyses of the expenditures of respondents included in the study. The mean value describes the average expenditure of the respondents. The standard deviation explains the degree of dispersion of the expenditure for each category of expenditure. The overall total number of observation (N) included 60 individuals. The mean and standard deviation for the amount spent on food per week was (Mean= GH 93.81, Std. dev. = GH 78.731, Min= GH 10 and Max= GH 560). This implies that on the average, respondents spent GH 93.81 within a week. The mean and standard deviation of expenditure on fresh fruit within a week was (Mean= GH 15.45, Std. dev. = GH 17.608, Min= GH 1.0 and Max= GH 80). This implies that the average expenditure on fresh cut fruit within a week was GH 15.45. The amount spent on fruits daily is similar to the findings of Noel et al., [13]. They reported that on the average, low-income households spent $3.59 per capita per week on fruits and vegetables. Claro et al., suggested that a reduction in the price of fruit and vegetables, achieved by means of public policies, could lead to an increase in fruit and vegetable intake in households in São Paulo and in other cities with similar scenarios [14].

Occasion and Frequency of Consumption

(Table 3) shows the occasions and frequency of fresh cut consumption among respondents included in the study. Out of the 60 individuals sampled for the study, 31.7% consumed fresh cut on daily basis, 40% consumed fresh cut once a week, 10% consumed more than once a week and 18% consumed once a month. Majority (51.7%) purchased fresh cut once a week, 20% purchase on daily basics, 13% purchase more than once within a week and 15% purchase fresh cut once a month. The consumption of fruit everyday by the participants was very low (31.7%). Consumers need to be educated on the health benefits of fruits as Ness and Powless et al., indicated that fruits and vegetables have strong effect on controlling stroke and less effect on cardiovascular diseases [3]. The consumers who purchase fresh cut fruits once a week had the highest percentage (51.7%) as compared to those who consume fruits everyday (31.7%). This research is in agreement to a work published by Simunaniemi et al., that the latest

Swedish national dietary survey from a decade ago revealed that consumption of fruits and vegetables are below recommended levels [15]. (Table 4) shows the period's respondents are likely to purchase fresh cut fruit products. Out of the 60 individuals sampled for the study, Majority (61.7%) are likely to purchase fresh cut fruit products all year round, 16.7% are likely to purchase fresh cut fruit products during hot weather, 15% are likely to purchase fresh cut fruit products during cold weather, 3.3% purchase fresh cut fruit products during other and none of the periods respectively. The weather has much influence on fresh cut consumption. Participants who consume fresh cut fruits once a month maybe associated to the findings Simunaniemi et al., [16]. They indicated that most people do not like or have the habit of fruits and vegetable consumption. Research indicated that laziness, forgetting and a lack of time were the main barriers to fruit and vegetable consumption [16].

Factors affecting Decision to Purchase Fresh Cut Products

In the research to arrive at the factors that affect the decision to purchase fresh cut products, the multiple regression analysis was performed. The results enabled the researcher to fit a model or a model fitting equation which explains the underlying relationship between factors and decision to purchase fresh cut products. The results are summarized and discussed as follows. The results in (Table 5) presents the model statistics which is used to assess the exact nature of the relationship between decision to purchase fresh cut product (Y) and factors that affect fresh cut purchase (Xn). Specifically, the correlation coefficient (R) of 0.621 shows a strong positive relationship between the factors considered and the decision to purchase fresh cut products. This implies that that the decision to purchase fresh cut product have a positive relationship with the factors considered in the study. The implication is that a slight variation among the factors has a significant effect on the decision to purchase fresh cut product. The coefficient of determination (R-square) which is a measure of the explanatory power of the model indicates that, the factors considered in the study was able to account for or explains 56.3% of the changes in the decision to purchase fresh cut products. The implication therefore is that there are other variables that have significant effect on the decision to purchase fresh cut products. However, visual appeal, convenience, health benefits, price and weather accounts for 56% of variations in the decision to purchase fresh cut products. The regression model which establishes the relationship between decision to purchase fresh cut product (Y) and factors that affect fresh cut purchase (Xn) as defined above is given as $Y = 0.684 + 0.094X1 + 0.154X2 + 0.032X3 + 0.212X4 + 0.014X5$ [Table 6]. From the regression model obtained, the constant value of 0.684 is interpreted to be the gain or change or the value of decision to purchase fresh cut product when all the factors that affect fresh cut purchase are held constant, whilst the coefficients 0.094X1, 0.154X2 , 0.032X3, 0.212X4 and 0.014X5 are the magnitude of change in value visual appeal, convenience, health benefits, price and weather respectively. The sig-values indicate that all the factors except convenience have significant effect on the decision to purchase fresh cut product. The implication is that the decision to purchase fresh cut product is highly influenced by visual appeal, health benefits, price and weather. On the contrary convenience revealed an insignificant effect on the decision to purchase fresh cut products. Although, researchers have reported that fresh cut fruits are gaining popularity due to its convenient however, this fact is in contrary to this research. Thus individuals would rather consider visual appeal, health benefits, price and weather rather than the convenience of the product [5,17]. The result as presented in (Table 7) shows that the sum of the

squares due to the regression is 2.404 and the sum of the squares due to the (residual) error is 23.213. This indicates that the variations explained by the independent variables are much larger than the variations explained by other factors that are not taken into account in the model. Unexplained variations form the basis of further studies which attempts to establish other factors that affects the decision to purchase fresh cut products.

Characteristics of Fresh Cut Product

(Figure 1) below shows respondents rating of characteristics when purchasing fresh cut fruits. The respondents scored high means for all important factors when purchasing fresh cut fruits. Visual Appeal scored the highest mean of (3.57) followed by Price (3.33), Packaging (2.98) and Food safety (2.95). Currently, Suntharalingam and Terano et al., studied: factors influencing consumption decision of fresh fruits from Malaysia: a case of foreign nationals in Malaysia [18,19]. It was reported that price, visual appeal, occasion/familiarity and consumers'' status affect the decision of fresh cut consumption.

Place of Fresh Cut Purchase

(Figure 2) shows places where fresh cut fruits are purchased. Out of the 60 individuals sampled for the study, (42%) indicated they purchase fresh cut products from Local market/super market, 28% indicated on the street, 13% indicated near home, 12% indicated workplace/school while the remaining 5% indicated other places. This shows that fresh cut fruits are normally found in the local market. These sellers need education on fresh cut fruit processing and packaging.

Figure 1: Characteristics of Fresh Cut Product.

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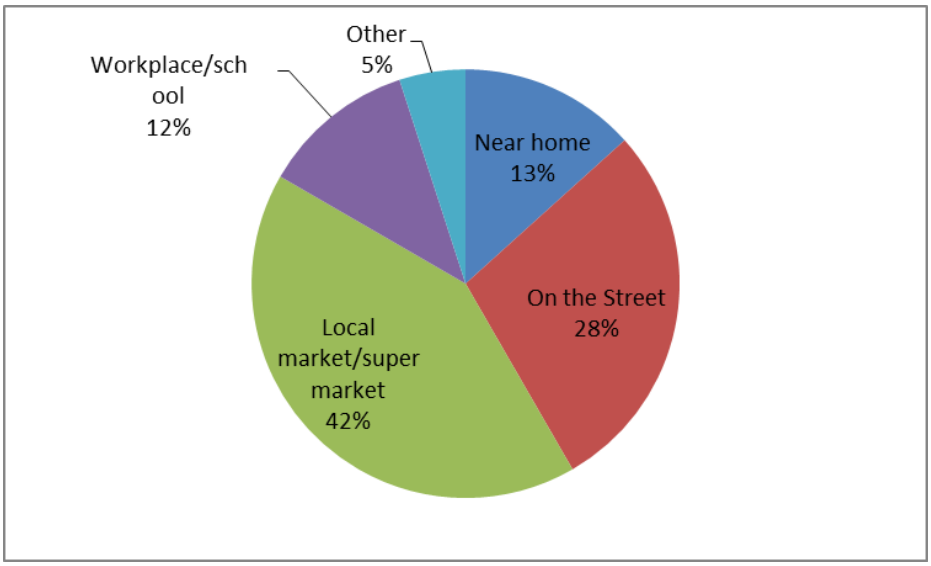

Figure 2: Places where fresh cut fruits are purchased.

Variable	Frequency	Percentage
Age		
18-25 years	33	55.0
26-35 years	14	23.3
36-45 years	11	18.3
46-65 years	2	3.3
Gender		
Female	22	36.7
Male	38	63.3
Marital Status		
Married	12	20.0
Single	48	80.0
Education		
JSS	3	5.0
SHS	18	30.0
Others	4	7.0
Tertiary	35	58.0
Total	**60**	**100.0**

Table 1: General Characteristics of Respondents.

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Average amount spent on food/week	59	10	560	93.81	78.731

Average amount spent on fresh fruit	60	1	80	15.45	17.608

Table 2: Individual Food and Fruit Expenditure *(Source; Field Survey, 2018).*

Variable	Consumption	Purchase
Period		
Daily	19 (31.7%)	12 (20.0%)
Once a week	24 (40.0%)	31 (51.7%)
More than once a week	6 (10.0%)	8 (13.3%)
Once a month	11(18.3%)	9(15.0%)
Total	**60**	**100.0**

Table 3: Occasion and Frequency of Consumption *(Source; Field Survey, 2018).*

Variable	Frequency	Percentage
Period		
Periods of hot weather	10	16.7
Periods of cold weather	9	15.0
All year round	37	61.7
Other	2	3.3
None	2	3.3
Total	**60**	**100.0**

Table 4: Likelihood of Fresh Cut Purchase *(Source; Field Survey, 2018).*

Statistic	Value
R	0.621
R-Square	0.563
R-Square (adj)	0.538
Standard error	2.4561

Table 5: Summary of Model statistics.

Predictor	Coeff	SE Coef	T	Sig
Constant	0.684	1.031	1.152	.042
Visual appeal	0.094	0.362	0.365	.002
Convenience	0.154	0.065	0.241	.061
Health Benefits	0.032	1.061	0.305	.041

Price	0.213	0.033	0.165	.033
Weather	0.014	0.041	0.121	.012

Visual appeal (X1); Convenience (X2); Health Benefits (X3); Price (X4); Weather (X5)

Table 6: Summary of Regression coefficients.

Source	Df	SS	MS	F	P
Regression	4	2.404	0.601	0.702	0.032
Residual Error	55	23.213	0.422		
Total	59	41.452			

Table 7: Analysis of Variance.

Conclusion

The results showed that on the average, respondents spent GH 93.81 within a week which implies that the mean and standard deviation of expenditure on fresh fruit within a week was (Mean= GH 15.45, Std. dev. = GH 17.608, Min= GH 1.0 and Max= GH 80). The respondents also scored high means for all important factors when purchasing fresh cut fruits. Visual Appeal scored the highest mean of (3.57) followed by Price (3.33), Packaging (2.98) and Food safety (2.95). The sig-values as indicated by the regression model show that all the factors except convenience have significant effect on the decision to purchase fresh cut fruits. It was revealed that the decision to purchase and consume fresh cut fruits is influenced by visual appeal, health benefits, price and weather.

Ethics Approval and Consent to Participate

Not Applicable.

Human and Animal Right

No animals/Humans studies that are base of were used for this research.

Consent for Publication

Not applicable.

Conflict of Interest

The author confirmed that this article content has no conflict of interest.

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