



MARKET PRICE VOLATILITY AND BEHAVIOUR OF FRUIT AND VEGETABLE CONSUMERS IN ABAKALIKI METROPOLIS, EBONYI STATE, NIGERIA

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Abstract

The study analyzed the effects of seasonal market price variation on behaviour of fruits and vegetables consumers in Abakaliki metropolis, Ebonyi State, Nigeria. Ninety consumers of fruits and vegetables were randomly selected. Data were collected with the aid of well structured questionnaire and analyzed using both descriptive and inferential statistics. The result showed that majority (74.4%) of the consumers of fruits and vegetables in the area were females with a mean age and household size of 46 years and 7 persons respectively. Majority of the consumers (74.4%) were married with average annual income of N155,600. Predominant fruits consumed in the area include; banana (97.7%), mango (91.11%) and orange (90%). The factors that influenced price and seasonality of fruits and vegetables in the area were: need for product (3.8) and product availability (3.71), among others. The major coping strategies of consumers to the price and seasonal variation in fruits and vegetables include; in-house fruits and vegetables gardening (3.6), and adoption of strong pricing strategy (3.5) among others. However, age and household size were found to have significantly influenced the quantity demanded for fruit and vegetables at 5% level each and annual income at 1% level. The study therefore, calls for policies aimed at regulation of price and seasonality of fruits and vegetables using pricing policy and irrigation to stabilize production and consumption.

Keywords: Seasonality, Variations, Fruits, Vegetables, Consumer, Behaviour

Introduction

One of the basic characteristics of agriculture in Nigeria is that it is seasonal and most products are produced, stored, and sold seasonally (Smith *et al.*, 2015). Due to high level of seasonality of agricultural products, there is high level of variation in demand and supply thereby leading to variation in prices and market movements which play an important role in the future of agricultural products (Saneliso, 2010a). The seasonality of the agricultural system has made it to be often described as increasingly consumer-driven because consumer preferences could potentially be determined by the availability of products. However, Adekoya *et al.* (2013) reported that seasonality in agriculture has made it a risky business due to poor control over unpredictable factors like weather, diseases and pests. This has continued to influence the decisions of the consumers at different points in time.

Consumers are basically the end users of any product. Consumers of agricultural products make final use of all varieties of agricultural products in different forms. These include; food, feed and fibre. Consumers are becoming more aware of the quality attributes of different commodities found in the market and choose

products that closely match their tastes and preferences (Saneliso, 2010b). The consumer behavior model postulated by Ehiakpor *et al.* (2017) noted that products are consumed for the characteristics they possess, other than the product itself, and are associated with consumer preference/utility. Thus, consumers often express their preferences for product quality by paying a premium for the product with the desired characteristics. These premiums give producers an incentive to improve product quality, quantity and thereby enhancing the welfare of the consumers and producers. Similarly, consumer behaviour theory is intended to identify consumer variables, explain relationships between variables and specify cause and effect outcomes from variable interactions (Kivetz and Simonson, 2002). Better market information on consumer preferences will assist farmers in making informed decisions to produce appropriate consumer choices and maximize their returns.

Another important factor that determines consumer preferences in the market is price of agricultural products. It has been reported that price is the value which a consumer is willing to pay for enjoying the benefit(s) of a given product(s) or service(s) or the value

at which the producer is willing to supply a given product for the consumer to enjoy the benefits (Ikporah, 2012). Prices of many agricultural products if not all are highly unstable between seasons, and consumers pay different amounts for the same product in different markets separated by just a few kilometres (Akpan *et al.*, 2014). Price may vary widely and suddenly according to type, source, quality, quantity, and transportation mode and in the case of exportable commodity, the prevailing exchange rate (Musa, 2004). Saneliso (2010a) noted that price changes constitute one of the elements contributing to the risk of farming.

Farm prices have four important movements which include; long-run trend, seasonal variation, cyclical movements, and irregular fluctuations. Since a farmer can adjust his operation in some degree to take advantage of seasonal variation, primarily this price movement is considered. However, other price movements are important in planning and are not to be overlooked. Prices of agricultural products are governed by the law of supply and demand. When the supply of product exceeds the demand for it, price tend to be lower than average. Similarly, when the demand exceeds the supply, price tends to rise. Often, small changes in quantities offered for disposal in National Markets have a magnified effect on prices (Adekoya, *et al.*, 2013).

Prices received by farmers fluctuate between wide extremes. Prices of raw agricultural products rise and fall more, faster, and sooner than prices received for processed goods and services. The same is true of farm prices compared with wholesale and retail prices of farm-derived products. As a result, the farmer experiences difficulty in planning production to cope with price changes and this influence the consumers. Though some level of price fluctuation provides information signals about market situation and may serve as an instrument for adjustment of supply to demand, high price fluctuation has a deteriorating effect on the whole economy. Price variation can cause a negative shock to the economy of a nation, especially when the growing price level reflects the shortage of food items. In this case, the whole economy and social structure are unstable (Saneliso, 2010b). To consumers, price variation is an important tool for policy/planning since knowledge of factors that affect prices is needed to forecast price changes and so, individuals must keep currently informed on volumes of commodities being produced and marketed, and general supply-demand conditions (Adekoya *et al.*, 2013). Information on agricultural commodity price and its trend in both developed and developing countries like Nigeria is important to both producers and consumers

Prices vary almost throughout the year and understanding the trend of such variations is therefore essential for good planning by the producers, consumers and policy makers (FAO *et al.*, 2011). Poor market knowledge and other structural imperfections have been asserted to cause inefficiency in agricultural commodity markets but the role of information in pricing, the dynamic process of information transmission between

markets in price discovery and its implications for marketing efficiency is very important (Adekoya *et al.*, 2013). This could result in a sharp rise in fresh produce prices, followed by a slump when excess supplies reach the market with simultaneous harvesting of the delayed crops. Smith (1963) studied seasonal variations in prices of selected farm commodities in Nigeria. Adekoya *et al.*, (2013) analyzed price trend analysis of selected food grains in Ogun State, Nigeria. Saneliso (2010b) investigated economic analysis of consumer based attributes for rice in Benin. Taru *et al.* (2009) estimated seasonal price variation and price decomposition of maize and guinea corn in Michika Local Government Area of Adamawa State, Nigeria. Among these studies, it seems none had analyzed the effects of seasonal market price variation on the behavior of fruits and vegetables consumers in Abakaliki Metropolis of Ebonyi State, Nigeria. To address this gap, the study: described the socio-economic characteristics of fruits and vegetables consumers in the area; identified different fruits and vegetables seasonally consumed in the area; identified the factors influencing prices and seasonality of fruits and vegetables; determined the influence of some socio-economic characteristics of fruit and vegetable consumers on demand of fruits and vegetables; and analyzed effects of price changes on the demand for fruits and vegetables in the study area.

Methodology

The study was conducted in Abakaliki metropolis of Ebonyi State. The area is predominantly urban covering a total area of 5533km². Ebonyi State has a population of 2,176,947, out of which the capital territory has a population of 271,833 (NPC, 2006). Abakaliki Metropolis which lies between longitude 6°25'N and latitude 8°08'E is located in the North senatorial Zone of Ebonyi State. Urban activities in Abakaliki Metropolis include; agriculture such as production of fruits and vegetables, education and industrial development and rapid expanding residential areas. Abakaliki metropolis is a centre for agricultural trade such as yam, cassava, rice, palm oil and kernels, and kola nuts (Nwali and Anyalor, 2019). It is also known for its local lead, zinc, salt, and lime stone mining. The huge incentives and tax holiday offered by Ebonyi State Government to all major private investors have brought about a marked increase in new businesses in Abakaliki city.

The study adopted multi-stage sampling technique to select respondents for the study. Delineation method was employed to select consumers of agricultural products in Abakaliki. Three basic markets in Abakaliki Metropolis were selected; Abakpa, Kpirikpiri and Eke-Aba markets. Then 30 consumers of agricultural products were randomly selected to give a total of 90 respondents. Data were collected from the different selected respondents with the use of a well-structured questionnaire augmented with an oral interview schedule. Data collected were analyzed using relevant descriptive and inferential statistics. Model for multiple regression on effects of socioeconomic characteristics on demand of fruit and vegetable is stated thus:

$$Y = g_0 + g_1X_1 + g_2X_2 + g_3X_3 + g_4X_4 + u \dots\dots(1)$$

Where,

Y = Quantity of fruits and vegetables demanded (grain equivalent in kg)

X₁ = age (years)

X₂ = household size (number of individuals living and eating from the same pot for at least a period of 6 months)

X₃ = annual income (N)

X₄ = educational level (years)

g₁- g₄= estimated parameters

g₀ = constant

u = error term

Model for multiple regression on effects of price and seasonal variation on consumption behaviour of fruits and vegetables is stated thus:

$$Y = a + b_1X_1 + b_2X_2 + u \dots\dots(2)$$

Where,

Y = Consumption behaviour (quantity of fruits and vegetables consumed measured as grain equivalent in kg/season)

X₁ = Price of fruits and vegetables(N)

X₂ = seasonal variation (rainy season = 1; dry season = 2)

a = constant

u = error term

Rating scale analysis was used to identify important factors influencing price and seasonality of fruits and vegetables and coping strategies adopted by consumers to mitigate variations in price and season. A 5 point likert rating scale was used to identify important factors influencing price and seasonality of fruits and vegetables and coping strategies adopted by consumers to mitigate variations in price and season using strongly agree (5), agree (4), undecided (3), disagree (2) and strongly disagree (1). Respondents with mean score of 3.0 and above imply they are in agreement that the factors stated were important, while respondents with mean score of less than 3.0 were not in agreement. To determine the mean likert level = $X_s = \sum X$. Xs of each item was computed by multiplying the frequency of each response pattern with its appropriate nominal value and dividing the sum with the number of respondents to the items. This can be summarized with equation below.

$$X_s = \sum fn/N$$

Where,

X_s = mean score

Σ = summation

f = frequency

n = likert nominal value

N = number of the respondents

$$X_s = 1+2+3+4+5/5 = 15/5 = 3.0$$

Results and Discussion

Socio-economic characteristics of Consumers of fruits and Vegetables

The result obtained as presented in Table 1 shows that majority (74.4%) of the consumers of fruits and vegetables in the area were females. This might be

because females are regarded as home makers whose duties include; ensuring that the entire household are supplied with quality foods on daily basis and so, are obligated the role of going to market and purchasing food items including fruits and vegetables unlike their male counterparts who are traditionally delegated with the role of providing money for the family upkeep. The result further showed that many (56.6%) of consumers of fruits and vegetables in the area were of the age range of 41 – 50years, while only 4.44% were above 50 years. It was also shown that 27.7% were between 30 – 40 years, 11.1% were below 30years, whereas, the mean age was 46 years. This implies that most of the consumers of fruits and vegetables were adults in their middle ages and may be doing so regularly as a result of recommendations by physicians. This agrees with Baker (1999) who reported that most of the consumers of vegetable products were between the ages of 40 - 55years. Majority (61.1%) of the consumers of fruits and vegetables in the area were those whose household size were between 4 – 8 persons, while the least (3.3%) had household size below 3 persons. About 24.4% had household size of 9 – 12 persons, 11.1% above 12 persons, whereas, the mean household size of the respondents was about 7 persons. This could imply that the consumers of fruits and vegetables in the area may not have adopted family planning technique giving their large household sizes. This aligns with Adekoya *et al.* (2013) who reported that most of the consumers of agricultural products in Ogun State have large household size of above 6 persons. The result also showed that majority (74.4%) of the respondents was married, while a small population (2.2%) were divorced. It also showed that 13.3% were single, while, 10% were widowed. The low population attributed to those who were divorced is as a result of the unacceptability of divorce in African tradition. This result concurs with the finding of Joshua (2015) who reported that most of the consumers of agricultural products in Zaria were married. It was also disclosed that a large population (70%) of the fruits and vegetables consumers were those whose annual income ranged between N80,000 – N160,000, while only a small population (2.2%) earned above N240,000. It was also revealed that 18.89% earned below N80,000. About 8.89% earned between N161,000–N240,000, whereas, the mean annual income of the consumers was N155, 600. Referring to the recent poverty threshold of \$1.90 daily, it implies that many of the fruits and vegetables consumers were poor. The result further showed that a large population of the fruits and vegetables consumers (75.5%) had been into consumption of these products for between 16 – 25years, whereas, the least (4.4%) had been into consumption for less than 10years. It also showed that 14.4% had been consuming fruits and vegetables for at least 10 – 15years, 5.5% for 25years, with average years of consumption for 23 years. This shows that majority of the respondents have long years of consumption of fruits and vegetables in the area given the need for almost daily consumption of fruits and vegetables. This concurs with Akpan *et al.* (2014) who reported that most of the rural households in AkwaIbom State virtually depend on daily consumption of fruits and vegetables.

Table 1: Distribution of respondents according to socio-economic characteristics

Socio-economic characteristics	Frequency (N = 90)	Percentage (100%)	Mean
Gender			
Male	23	25.55	
Female	67	74.44	
Age			
Below 30	10	11.11	
30 – 40	25	27.77	
41 – 50	51	56.67	46
Above 50	04	4.44	
Household size			
Below 5	03	3.33	
6 – 10	55	61.11	7
11 – 15	22	24.44	
Above 15	10	11.11	
Marital status			
Married	67	74.44	
Single	12	13.33	
Divorced	02	2.22	
Widowed	09	10.00	
Annual income			
Below 80,000	17	18.89	
80,000 – 160,000	63	70.00	155,600
161,000 – 240,000	08	8.89	
Above 240,000	02	2.22	
Years of experience			
Below 10	04	4.44	
10 – 15	13	14.44	
16 – 25	68	75.55	23
Above 25	05	5.56	

Source: Field Survey, 2019

Fruits and Vegetables consumed in the area

The results (Table 2) show that the respondents consumed multiple fruits and vegetables with banana (97.7%), mango (91.1%), orange (90%), guava (84.4%), star apple (udara) (76.6%) and garden egg (74.4%) as the most consumed, while the least consumed were english pea (14.4%), apple (35.5%) and local pea (46.6%). This could be attributed to the high abundance of such fruits in the area, unlike apple which is not abundant in the area. This corroborates the findings of Ifeoluwapo (2018), who reported that the most predominant fruits in Nigeria include; banana, mango, oranges and guava, while Smith *et. al.*, (2015)

reported that the predominant fruit in Europe was Apple. The result further showed that the predominant vegetables consumed in the area were; pumpkin (100%), bitter leaf (96.6%), oha leaves (94.4%), curry leaves (86.6%), carrot (82.22%), cabbage (78.8%) and green leaf (71.1 %). This implies that most of the consumers of vegetables prefer its consumption to fruits. This could be because it's cheaper compared to fruits and also is a major composition in most African diets. The result also showed that the demand of these vegetables was high, and so implies that marketers who engaged in the sale of these vegetables are likely to break even.

Table 2: Distribution of consumers according to fruits and vegetables consumed in the area

Fruits and Vegetables	Frequency (N = 90)*	Percentage
Fruits		
Mango	82	91.11
Banana	88	97.77
Garden egg	67	74.44
Watermelon	58	64.44
Apple	32	35.55
Star apple (udara)	69	76.66
Local Pea	42	46.66
Pineapple	59	65.55
Orange	81	90.00
Guava	76	84.44
English pea	13	14.44
Cashew	42	46.66
Vegetables		
Pumpkin	90	100.00
Bitter leaf	87	96.66
Green leaf	64	71.11
Cabbage	71	78.88
Waterleaf	53	58.89
Carrot	74	82.22
Wild spinach (ukazi)	41	45.55
False cubeb leaves (uziza)	37	41.11
Bush buck (utazi)	45	50.00
Clove basil or scent leave (nchuanwu)	38	42.22
Curry leaves	78	86.66
<i>Pterocarpus mildraedii</i> (Oha leaves)	85	94.44

Source: Field Survey, 2019; *Multiple responses recorded

Factors Influencing Price and Seasonality of Fruits and Vegetables

Data collected were subjected to mean score analysis derived from a 5-point Likert scale in such a way that any variable that loads 3.0 and above was accepted as a factor, whereas, any variable that loads below 3.0 was rejected. The result obtained is presented in Table 3. From the analysis, it was observed that the predominant factors that influenced prices and seasonality of fruits and vegetables in the area were; need for product (3.8), product availability (3.7), preference (3.6), taste of product (3.5), weather situation (3.5) and availability of substitute products (3.5). This implies that if the need for fruits and vegetables is high, it leads to high demand and so may result to price increases in the area. It was also seen that when products are readily available, the price

may decrease, unlike when the products are scarce. It was also observed that when consumers have high preference for any product, it may increase the value and the price resulting to hoarding of products and seasonal distribution in order to make higher profit. Another important factor observed was weather conditions. This is because if the weather condition is favourable for fruits and vegetables production, there will be high production leading to availability of products, which decreases prices and seasonality of products unlike when the weather condition is not favourable. This result corroborates Taru *et al.*, (2009), who reported that the major factors that influence availability of agricultural products include; weather conditions, market availability, need for products, taste of products and availability of substitute products.

Table 3: Rating Scale analyses of Factors Influencing Prices and Seasonality of Fruits and Vegetables

Factors	Weighted mean	Decision (Mean = 3.00)
Preference	3.66	Accepted
Taste of product	3.59	Accepted
Competitiveness of products	3.37	Accepted
Availability of substitute products	3.51	Accepted
Quantity produced	3.44	Accepted
Product shelf life	3.68	Accepted
Disposable income	2.22	Rejected
Need for products	3.87	Accepted
Product availability	3.71	Accepted
Weather condition	3.57	Accepted

Source: Field survey, 2019

Influence of some Socio-economic Characteristics on Demand for Fruits and Vegetables

The influence of some socio-economic characteristics of consumers on demand for fruits and vegetables was analysed (Table 4). The result showed that the

coefficient of multiple determinations (R^2) was high with a value of 80.4%. This high value indicates that about 80.4% variation in the explained variable (demand for fruits and vegetables) was as a result of the combined influences of their socio-economic

characteristics. The F value was highly significant at 1% level indicating goodness of fit of the regression line. The coefficient of age was positive and significant at 1%. This implies that any increase in age of the consumer will increase their demand for fruits and vegetables. This was in line with *a priori* expectations because increase in age might increase the need for consumption of more fruits and vegetables to aid digestion in the body. This supports the finding of Slavin and Lloyd (2012), who reported that increase in age leads to increase in consumption of fruits and vegetables to enhance digestion in the body. This is because as farmers age, doctors advice to consume more of fruits and vegetables than meat. This leads to higher demand for fruits and vegetables. Household size had a positive coefficient and was significant at 5%. This implied that any increase in household size of the consumer leads to increase in demand for fruits and vegetables. This was in line with *a priori* expectations, that increase in household size may lead to increase in need to feed the family well, thereby, increasing demand. This is obvious that a family of four persons will consume less fruits and vegetables than a family of 8 persons. This finding

supports the finding of Otunaiya and Adebayo (2014), who reported that increase in household size increase consumption and demand for vegetables. The coefficient of annual income was positive and significant at 10%. This implied that any increase in the amount of money earned will increase the demand for fruits and vegetables. This is in agreement with *a priori* expectations given that increase in income will increase availability of disposal income, and so may increase the consumers' demand for fruits and vegetables in the area, unlike when the consumers earns lower income. It is obvious that wealthy families demand for fruits and vegetables compared to their poor counterparts. This is in tandem with the result of Akpan *et al.* (2014), who noted a high demand and consumption of fruits and vegetables among wealthy persons in Akwaibom State than poor persons. The coefficient of taste for product was positive and significant at 5%. This implies that any increase in the taste for fruits and vegetables will result to increase in demand for fruits and vegetables. This was in line with the *a priori* expectation since increase in taste increases zeal and ability to willingly pay for the products preferred.

Table 4: Regression estimates of the influence of some socio-economic characteristics on demand for fruits and vegetables in the study area

Variable name	Parameter	Coefficient	Stand. error	t-value
Constant	b ₀	1.840	0.559	3.291***
Age	X ₁	0.396	0.182	2.170**
Household size	X ₂	0.701	0.311	2.250**
Annual income	X ₃	0.408	0.268	1.7522*
Educational level	X ₄	-0.516	0.315	1.638
R ²	80.4%			
Adj R ²	79.81%			
Standard error	0.516			
F-ratio	68.91***			

Source: Field survey, 2019; * = 10%; ** = 5%; *** = 1% levels of significance

Effects of Price and Seasonal Variations on Consumption behaviour for Fruits and Vegetables among the consumers

This section analysed the effect of price and seasonal variation on the consumption behaviour of fruit and vegetable consumers. Data collected were analyzed using multiple regression analysis and the result obtained was presented in Table 5. From the analysis, it was observed that the coefficient of determination (R²) was high with a value of 81.34% indicating that about 81% variation in the explained variable (consumers' behaviour) was as a result of the variations in price and season of fruits and vegetables. The reliability of this result was established by a low standard error of the estimates (0.503). Furthermore, the overall influence of the explanatory variables on the explained variable was indicated by F-statistics, whereas the close relation of the R² and the adjusted R² which constituted about

18.66% of the total variation that was not explained implies that the explanatory power of the chosen model was not exaggerated. The implication is that this result can be used for forecasting purpose since its output is of economic and econometric relevance. Meanwhile, individual result showed that the coefficients of price and seasonal variations were positive and significant at 5% and 1% level of probability respectively. This implied that changes in price and season have positive linear relationship with the behaviour of the consumer towards the fruits and vegetables. Hence, a change in price and season will result to 84% and 56% positive change in the consumption of fruits and vegetables. This ran contrary to the finding of Obayelu (2010), who reported that apparent change in price and season tends to negatively influence consumption behaviour of consumers.

Table 5: Effects of price and seasonal variation on Consumers behaviour

Variable name	Parameter	Coefficient	Stand. error	t-value
Constant	b ₀	1.480	0.459	3.291***
Price	X ₁	0.841	0.310	2.712**
Seasonal variation	X ₂	0.562	0.161	3.490***
R ²	81.34%			
Adj R ²	78.82%			
Standard error	0.503			
F-cal	312.73***			

Source: Field survey, 2019; ** and *** is Significant at 5% and 1% level respectively

Coping Strategies against Price Variation and Seasonality of Fruits and Vegetables

In order to adapt to the effects of price changes and seasonality of most agricultural products, the consumers of fruits and vegetables have adopted various strategies to cope with the changing effects of season and price. Analysis of coping strategies option revealed that the consumers have resorted to adoption of in-house fruits and vegetables planting (3.68), which is a process by which the consumer instead of going to the market to buy fruits and vegetables prefers to raise a garden in his/her compound where fruits and vegetables can grow and be harvested from. This makes it easy for the consumer to access the different fruits and vegetables whether the price is high or not. Adoption of strong pricing strategy (3.51); it has been observed that most often, marketers of fruits and vegetables are willing to

sell off their produce to avoid spoilage, and so if a consumer insists on not offering a high price for the products, there is every tendency that the consumer will win the price battle. Bulk purchase for storage (3.25); it was also discovered that another good strategy adopted by the consumers was bulk purchase though this does not last for long because fruits and vegetables can hardly be stored for a long period, but can stay for a while if well preserved. Making good customers to always buy (3.26); again, if a consumer has a customer that he/she always patronizes, there is every tendency that the seller will reduce the price due to familiarity. Change of place of purchase (3.21); it was also discovered that sometimes the consumer need to know the prevailing price in the market by buying from other places as this will strengthen his/her bargaining power.

Table 6: Coping strategies for variation in price of fruits and vegetables

Coping Strategies	Mean score	Decision (Mean=3.00)
Purchase in bulk for storage	3.25	Accepted
In-house fruits and vegetable planting	3.68	Accepted
Adoption of strong pricing strategy	3.51	Accepted
Making good customers to buy	3.26	Accepted
Change of place of purchase	3.21	Accepted
Substitution of fruits and vegetables	2.89	Rejected
Avoid consumption of fruits and vegetables	2.06	Rejected

Source: Field Survey, 2019

Conclusion

The study shows that though the consumption of fruits and vegetables in the area was high, and seasonality and price variation influenced the consumers' behaviour. It was further observed that socio-economic characteristics influenced their demand for fruits and vegetables in the area and in order to cope with seasonality and price variation, the consumers adopted some strict strategies. The study therefore recommend for regulation of price and seasonality of fruits and vegetables as this will enhance its demand and consumption. There is need for consumers to adopt some strategies like raising fruits and vegetables in their gardens to ensure sustained consumption. There is also need to encourage farmers in production as this will reduce the losses and ensure continuous supply. Consumers' adoption of strong pricing policy while bargaining for fruits and vegetables is also recommended.

References

- Adekoya, O.A., Ashaolu, O.F., Adewuyi, S.A., Phillip, S.A., Dipeolu, A.O. and Omotayo, A. M. (2013). Price Trend Analysis of Selected Food Grains in Ogun State, Nigeria (1988-2012). *Journal of Agricultural Science and Environment*. 13: 104-115
- Adeoye, I.B., Badmus, M.A.O. and Amao, I.O. (2011). Price Transmission and Market Integration of Banana and Plantain in Oyo state, Nigeria. *ARPN Journal of Agricultural and Biological Science*, 6(5): 18-24.
- Akpan, S.B., Udoh E.J. and Udo U.J. (2014). Monthly Price Analysis of Cowpea (beans) and Maize in Akwalbom State, Southern Nigeria. *International Journal of Food and Agricultural*, 2(2): 65-86.
- Baker, J. (1999) *Fast, Easy Vegetable Garden* published by Plume,
- Ehiakpor, D.S., Apumbora, J., Danso-Abbeam, G. and William A. (2017). Households' Preference for Local Rice in the Upper East Region, Ghana, *Advances in Agriculture*, Article ID 1812975, 1-9.

- FAO, IFAD, IMF, OECD and World Bank (2011). Price Volatility in Food and Agricultural Markets: Policy Responses.
- Ifeoluwapo, A. (2018). Health Benefits of Fruits and Vegetables: Review from Sub-Saharan Africa. Open access peer-reviewed chapter. DOI: 10.5772/intechopen.74472.
- Ikporah E.N. (2012) Branding strategy for effective agricultural marketing in Nigeria. A project submitted to Department of Marketing Faculty of Business Administration University of Nigeria, Enugu Campus
<https://www.unn.edu.ng/publications/files/images/IKPORAH%20ESTHER%20NGOZI.pdf>
- Joshua, Y. (2015). Socio-economic Assessment of Farmers' Response to Agricultural Extension Service Delivery on Ginger Production in Kaduna State, Nigeria. A Dissertation Submitted to the School of Postgraduate Studies, Ahmadu Bello University, Zaria, In Partial Fulfilment of the Requirements for the Award of Master of Science Degree In Agricultural Economics. Department of Agricultural Economics and Rural Sociology, Faculty of Agriculture Ahmadu Bello University Zaria, Kaduna State Nigeria.
<http://hdl.handle.net/123456789/8176>
- Kivetz, O. and Simonson, E. (2002). Quality as a determinant of vegetative prices: A statistical study of quality factors influencing vegetable prices in the Boston wholesale market. Columbia University Press, New York.
- Musa, R (2004). Urban Consumer Preferences and Sensory Evaluation of Locally Produced and Imported Rice in West Africa. *Food quality and preference*, 16: 79-89.
- Nwali, A.C. and Anyalor M. (2019). Marketing Analysis of Locally Produced Rice in Abakaliki Local Government Area of Ebonyi State Nigeria. *Mediterranean Journal of Social Sciences*, 10(1): 39-47.
- Obayelu, A. E. (2010). Global Food Price Increases and Nutritional Status of Nigerians: The Determinants, Coping Strategies, Policy Responses and implications. *ARP Journal of Agricultural and Biological Science*, 5(2): 1990-6145.
- Otunaiya, A.O. and Adebayo M.S. (2014). Complete household demand system of vegetables in Ogun State, Nigeria. *Agricultural Economics – Czech*, 60(11): 509–516.
- Saneliso M. (2010a). Economic analysis of consumer based attributes for rice in Benin. Department of Agricultural Economics McGill University
- WARDA (2008). Rice trends in Sub-Saharan Africa. Africa Rice Center (WARDA) Cotonou, Benin. Available at www.warda.org
- Saneliso, O. (2010b). Seasonal Variation in Arrival and Effect on Price of Wheat. *Indian Journal of Agricultural Marketing*, 9(1): 1-3.
- Slavin, J.L. and Lloyd, B. (2012). Health Benefits of Fruits and Vegetables. *Advanced Nutrition*, 3: 506–516.
- Smith, T.M., Pinard, C.A., Byker, S. C., Wethington, H., Blanck, H. M. and Yaroch, A. L. (2015). Fruits and vegetables as a healthier snack throughout the day among families with older children: findings from a survey of parent-child dyads. *Eat Behav.*, 17: 136-9. doi: 10.1016/j.eatbeh.2015.01.006
- Smith, E.V. (1963). Seasonal Variations in Prices of Selected Farm Commodities. Agricultural Experiment Station, Bulletin 350, Auburn University. Auburn, Alabama
<https://aurora.auburn.edu/bitstream/handle/11200/2294/1532BULL.pdf?sequence=1>
- Taru, V.B., Mall, S.I., Mshelia, R. J. and Tumba D. (2009). Estimation of Seasonal Price Variation and Price Decomposition of Maize and Guinea Corn in Michika Local Government Area of Adamawa State, Nigeria Post Primary School Management Board, Yola, Adamawa State, Nigeria