Hedonic Analysis of Consumers' Preference in the Choice of Cowpea in Ibadan Metropolis of Oyo State, Nigeria.

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ABSTRACT
This paper investigated the hedonic analysis of consumers' preference on the cowpea in the Ibadan metropolis. 100 cowpea sellers were selected by a purposive random sampling technique in five major markets in Ibadan.79% of the respondents were female while the rest 21% of them were male. 89% of the respondents sell a combination of varieties i.e. Peu/Drum, Sokoto, Mala, Olo and Oloyin for their nutritive value, popularity and availability which may be used for boiled whole grain cooking, fried cowpea balls (akara), and steamed cowpea cake (moin-moin). 75% of the respondents do not use any chemical to store cowpea grains.Also, analysis of Covariance model which was used capture price-quality relationship of the type of cowpea purchased by consumers revealed that there is a significant relationship between the number of holes in each of the cowpea varieties and their respective prices in the various markets sampled in the study area. Hence, the numbers of holes appear to be the major determining factors affecting the prices of various cowpea types in the study area.

Introduction

Cowpea (VignaUnguiculata L. Walp) is one of the most important indigenous legumes of the tropics and sub tropics (NRC, 2006). It is regarded as a key protein source for the urban and rural poor and plays an important role as cash crop (Langyintuoet al, 2003). Cowpea is one of the most ancient crops known to man, with its center of origin and subsequent domestication being closely associated with pearl millet and sorghum. In the modern world it is a broadly adapted and highly variable crop, cultivated around the world primarily as a pulse, but also as a vegetable (for both the grains and the green peas), a cover crop and for fodder (Faye et. al., 2002).Cowpea has many varieties. The most commonly cultivated varieties are: IT 90K-76, IT 90K-59, IT 90K-277-2, IT 87D-941, IT 89KD-88, IT 98KD-88, IAR-48 and Ife brown (Afolabi, 2002). In this study it was however discovered that when the various cowpea reach the markets, it becomes difficult to identify them by their code variety names. Thus, the traders in the study area generally sell five basic types of cowpea which are categorized based on physical features and their price premium. The available cowpea types include locally dubbed peu/drum,Sokoto, mala, Oloyin (flat and large)' and Olo.

The general objective of the study was to analyse consumers' preference in the choice of cowpea in major markets in Ibadan metropolis, while the specific objectives were to: analyse the different characteristics of cowpea in the various market in Ibadan metropolis; compare these characteristics across market and consumers preference in Ibadan metropolis; and estimate the relationship between cowpea price and cowpea characteristics preferred by consumers in Ibadan metropolis.

Literature Review

Many developing countries rely on one or a few primary agricultural commodities for the bulk of their export earnings, though they remain net importers of food on balance. For these commodity-dependent, low-income, food-deficit economies, the price instability that is characteristic of agricultural commodity markets can have pronounced impacts on employment, income, government revenue, and food security. Current efforts to liberalize trade policies, to the extent that they have increased households' exposure to risk, have arguably exacerbated the problem of price fluctuations for the world's poor (Sarris and Hallam, 2006). Adipala et al., (1999) reported that availability of market for cowpea both domestically and regionally makes it a potential income and food security crop for the rural poor and so the need to understand its consumers, hence defining the market.

According to Bibangambah (2002), marketing is a prime mover and stimulator of production. The marketing system is a major tool of integrating the farming community into the market economy. It links various rural areas as well as rural and urban areas with a network for communication and exchange, which forms the basis for co-ordination of social and economic activities. The provision of secured market outlets gives the incentive to increase output and to diversify subsistence production into commercial farming. Marketing also provides for the transfer of preferences and pressures, (through the price system), from consumers to producers, thus supporting further quality improvement, diversification and specialization in agriculture (Bibangambah,2002).

Demand theory has traditionally been based on the fundamental precept that a product or a service generates

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utility. Hence, utility theory has been used to analyses consumers' choice of a good or a service based on price and a budget constraint. In the case of food products, the price a consumer is willing to pay may be a function of the marginal implicit prices that an individual is willing to pay for each nutrient (Brooker et al, 1986). Based on the economic principle that product demand stems from the utility provided as a function of its quality characteristics(Berndt, 1991), a hedonic pricing model can be used to investigate the impact of different product characteristics on product prices. As defined by Lancaster (1971), a hedonic price function is a regression of observed prices of a commodity against its quality attributes.

Faye et al. (2002) the Hedonic price function is most often used to value the individual characteristics of agricultural goods because it is relatively straight-forward and uncontroversial to apply, since it is based on actual market prices and also uses fairly easily measured data. In the use of Hedonic price function, the observed market price, which is the sum of implicit prices paid for each quality attribute (of the concerned product), is considered. Hence, price variable could be regressed on quality attributes as independent variables, where the coefficients would indicate valuation of each quality attribute in the price of the product.

Lancaster (1971)declared that "a hedonic price function is a regression of observed prices of a commodity against its quality attributes". Waugh (1928) formulated hedonic price analysis based on the observation that the different lots of tomatoes, asparagus and cucumbers in the vegetable market in Boston, Massachusetts, showed considerable variations in price. Waugh tried to identify those quality traits that were significantly influencing daily market prices. Rosen (1974) presented a model of product differentiation based on the hypothesis that any good is valued for its utility-generating, attributes. According to him, Consumers evaluate product quality attributes when' making a purchase decision.

Materials and Methods

The study was carried out in Ibadan Metropolis, the capital of Oyo State which geographicallylies between longitudes 7⁰ 40 and 7' 40 East of the Greenwich Meridian and between latitudes 3⁰ 35 and 40' 10 South of the Equator. Ibadan falls under the Equatorial Rain Forest Belt with average rainfall of 479.9mm in 23 wet days, relative humidity of about 78.8% and a temperature range of21.6 to 31. The weather is usually characterized by hot, bright days, except in rainy seasons. Primary datawas used for this study. In all, 100 cowpea sellers were selected. The cowpea sellers were randomly selected from the majormarketslike Academy, Bodija, Agbongbon, Gbagi and Ojoo in the study area and the data was collected through the use of structured questionnaire. Information collected were input – output data as well as those on the socioeconomic characteristics of the farmers. These include type of cowpea sold, reason for selling each, intended use of cowpea purchased, types of cowpea. The data were analyzed using Descriptive Statistics, and Analysis of covariance (ANCOVA). Analysis of covariancemodel was used to capture the hedonic analysis (price-quality relationship) of each of the cowpea varieties and their respective prices in the various markets sampled in the study area.

Results and Discussion

Sex

79% of the respondents were female while 21% of the respondents were Male. The implication is that most of the respondents were female and that implies that female have different business strategies of patronizing customers and In this part of country ,marketing of cowpea is generally believe to be female occupation.

Market

27% of the respondents were from Bodija market. By implication, majority of the respondents were from Bodija market and that implies that Bodija market is one of the largest market in Ibadan which performs the function of wholesales and retails to their customers.

Type of cowpea sold

89% of the respondents sell a combination of varieties i.e. Peu/Drum, Sokoto, Mala, Olo, Oloyin while 11% of the respondents sell only Oloyin. By implication, most of the respondents sell more than one varieties and that implies the respondents will have higher sales and more income generation over those selling oloyin alone.

Reason for selling each of the cowpea varieties

Peu/drum

60% of the respondents sell drum because of its nutritive value while the rest sell cowpea variety for other reason.

Sokoto

40% of the respondents sell Sokoto because of its nutritive value, while the rest sell cowpea variety for other reason.

Mala

72% of the respondents sell mala because of its nutritive value, while the rest sell cowpea variety for other reason.

Olo

71% of the respondents sell Olo because of its nutritive value, while the rest sell cowpea variety for other reason.

Oloyin

53% of the respondents sell oloyin because of its availability. By implication, most of the respondents sell oloyin due to its nutritive value and that implies both sellers and consumers are aware of high protein content and it is always available in the market.

Intended uses of cowpea purchased

54% of the respondents intended use of cowpea purchased by buyers, combined more than one uses. By implication, buyers combined more than one uses and that implies that cowpea is one of most important inexpensive source of protein that fits the needs of the urban and rural poor.

Types of cowpea, buyers like best for whole grain cooking

52% of the buyers of the respondents like Oloyin for whole grain cooking. This is because it has a quick cooking quality and swells or increase in size when prepared.

Types of cowpea, buyers like best for fried cowpea ball (Akara)

81% of the buyers of the respondents like Sokoto for fried cowpea balls, while the rest for other reason. This is because Sokoto white has a high foaming capacity and binding quality and it is readily available and cheap.

Types of cowpea buyer like for steamed cowpea cake (moin-moin)

77% of the buyers of the respondents preferred Sokoto for steamed cowpea cake. This is because of its flavour, availability and being very cheap compared to other varieties of cowpea sold in the same markets in the study area.

Numbers of holes of cowpea per Congo

Peu/drum: In Bodija and Agboon markets, it was an average of 43 holes per Congo. In Academy and Gbagi markets, it was an average of 38 holes per Congo. In Ojoo market, it was

an average of 19 holes per Congo. *Sokoto White*: In Agboon market, it was an average of 16 holes per Congo. In Academy market, it was an average of 18 holes per Congo. In Ojoo market, it was an average of 14 holes per Congo. In Gbagi market, it was an average of 20 holes per Congo. In Bodija market, it was an average of 27 holes per Congo.

Mala: In Ojoo market, it was an average of 19 holes per Congo. In Agboon market, it was an average of 16 holes per Congo. In Bodija and Gbagi markets, it was an average of 47 holes per Congo. In Academy market, it was an average of 18 holes per Congo

Olo: In Gbagi market, it was an average of 19 holes per Congo. In Academy market, it was an average of 18 holes per Congo. In Bodija and Ojoo markets, it was an average of 27 holes per Congo. In Agboon market, it was an average of 36 holes per Congo.

loyin: In Bodija market, it was an average of 27 holes per Congo. In Agboon and Gbagi markets, it was an average of 36 holes per Congo. In Academy market, it was an average of 18 holes per Congo. In Ojoo market, it was an average of 19 holes per Congo.

Mean price of cowpea

Peu/Drum at the mean price of ₦348.60, Sokoto at a mean price of ₦288.40, Mala at a mean price of ₦289.50, and Olo at a mean price of ₦343.40, while respondents sell Oloyin at a mean price of ₦349.60.

Analysis of Covariance (ANCOVA)

The result from the analysis of covariance (ANCOVA) showed that there is a significant relationship between the number of holes in each of the cowpea varieties and their respective prices in the various markets sampled in the study area. Hence, the numbers of holes appear to be the major determining factors affecting the prices of various cowpea types in the study area.

Descriptive Statistics of Cowpea sellers and Characteristics of the sampled cowpea.

Characteristics	Frequency	%
Market Distribution		
Academy	19	19.00
Bodija	27	27.00
Agbongbon	16	16.00
Gbagi	19	19.00
Ojoo	19	19.00
Sex		
Male	21	21%
Female	79	79%
Type of cowpea sold		
Oloyin	11	11%
Combination of (Peu/drum, sokoto, mala, Olo)	89	89%
Reason for selling drum		
Customary	14	14.00
Popular	5	5.00
Nutritive value	60	60.00
Easy to prepare	8	8.00
Availability	13	13.00
Reason for selling Sokoto		
Customary	10	10.00
Popular	9	9.00
Nutritive value	40	40.00
Easy to prepare	5	5.00
Availability	35	35.00
Combination of reasons (Nutritive value, easy to prepare, popular)	1	1.00
Reason for selling Mala		
Customary	12	12.00
Popular	3	3.00
Nutritive value	72	72.00
Easy to prepare	3	3.00
Availability	10	10.00
Reason for selling Olo		
Customary	11	11.00
Popular	2	2.00
Nutritive value	71	71.00
Easy to prepare	4	4.00
Availability	12	12.00
Intended uses of cowpea purchased by buyers		
Fried cowpea balls (akara)	9	9.00
Steamed cowpea cake (moin-moin)	10	10.00
Boiled whole grain cooking	22	22.00
Combination of more than one uses	54	54.00

Types of cowpea, buyers like best for whole grain cooking		
Peu/drum	17	17.00
Sokoto	19	19.00
Mala	1	1.00
Olo	7	7.00
Oloyin	52	52.00
Combination of more than one type of cowpea	4	4.00
Reason for cowpea preferred by buyers for boiled whole grain cooking.		
Colour	3	3.00
Size	6	6.00
Flavour	14	14.00
Quick cooking quality	35	35.00
Increase in volume after preparation	24	24.00
Contain less weevil	6	6.00
More than one reason	12	12.00
Types of cowpea buyer like for fried cowpea balls (akara)		
Peu/drum	7	7.00
Sokoto	81	81.00
Mala	2	2.00
Olo	4	4.00
Oloyin	5	5.00
More than one cowpea (sokoto, oloyin)	**1**	**1.00**
Reason for cowpea preferred by buyers for fried cowpea balls		
Peeling for preference	44	44.00
Binding quality	17	17.00
High foaming, capacity	32	32.00
Combination of more than one reason	7	7.00
Types of cowpea buyer like for steamed cowpea cake (moin-moin)		
Peu/drum	8	8.00
Sokoto	77	77.00
Olo	1	1.00
Oloyin	14	14.00
Reason for cowpea preferred by buyer for steamed cowpea cake (moin-moin)		
Flavour	**53**	53.00
Texture	**17**	17.00
Grinding ability	**18**	18.00
Size	**4**	4.00
Combination of more than one reason	**8**	8.00
Numbers of holes of peu/drum per Congo		
Bodija, Agbongbon	43	43.00
Academy, Gbagi	38	38.00
Ojoo	19	19.00
Numbers of holes of Sokoto per Congo		
Agbongbon	16	16.00
Academy	18	18.00
Ojoo	14	14.00
Gbagi	20	20.00
Bodija	27	27.00
Numbers of holes of Mala per Congo		
Ojoo	19	19.00
Agbongbon	16	16.00
Bodija, Gbagi	47	47.00
Academy	18	18.00
Numbers of holes of Olo per Congo		
Gbagi	19	19.00
Academy	18	18.00
Bodija, Ojoo	27	27.00
Agbongbon	36	36.00
Numbers of holes of Oloyin per Congo		
Bodija	27	27.00
Agbongbon, Gbagi	36	36.00
Academy	18	18.00
Ojoo	19	19.00
Cowpea	Mean price (₦)	
Peu/drum	348.60	
Sokoto	288.40	

Mala		289.50			
Olo		343.40			
Oloyin		349.60			

Analysis of Co-Variance for average cowpea price (ANCOVA)

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Tcowpsel	1	45.48	0.22	0.22	0.00	0.949
avnhole	6	5452.98	5452.98	908.83	17.30	0.000
Error	92	4832.55	4832.55	52.53		
Total	99	10331				

Source: Data Analysis, 2013

Conclusions and Recommendations

This study examined the analysis of consumer preference in the choice of cowpea in Ibadan metropolis of Oyo state. A total of 100 Cowpea sellers were purposively sampled from major markets in Ibadan metropolis. The result showed that majority of cowpea sellers in Ibadan metropolis are females who sell almost all the available varieties for their nutritive value, popularity and availability. Thedifferent varieties of cowpea available in the various markets were put to the following uses: boiled whole grain cooking, fried cowpea balls (akara), and steamed cowpea cake (moin-moin).There is no significant relationship between the skin texture and the skin colour of cowpea due to uniformity of these two characteristics for all the cowpea types sampled in all the markets surveyed, indicating that there is the product standardization of the various cowpea types in the market. There exist a significant relationship between the number of holes in each of the cowpea varieties and their respective prices in the various markets sampled in the study area. The recommendation of this study based on its major findings are: there is need for increasing awareness on the nutritional and economic value of the crop and farmers should be encouraged to remain in the business and produce more of the varieties most preferred by consumers.

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