

Responsiveness of Cassava Demand to Variations in Price and Income in Ikwerre Local Government Area of Rivers State, Nigeria (2000-2012)

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Abstract

This study was conducted to ascertain the responsiveness of cassava demand to variations in price and income in Ikwerre local government area of Rivers state, Nigeria. The study particularly focused on changes in demand due to price change and changes in cassava demand as a result of income variation as well as examine the trend in supply and demand of cassava between 2000-2010 in Ikwerre local government. Secondary data were sourced from agricultural development programme (ADP) and ministry of agriculture. Tables as well as elasticity measurement and regression analysis were used as analytical technique. The study revealed that there was excess demand for cassava in Ikwerre local government, between 2000 to 2009. This also increased the price of cassava. The study also revealed that the income level was relatively high since Ikwerre local government area was close to the city (semi urban) and that as income increased, cassava demand fall which makes cassava inferior good (table 2) The study recommended that unnecessary destruction of farm lands due to urbanization be checked in other not to create food insecurity and that incentives be given to farmers to produce more cassava to march increasing demand in study area(Ikwerre local Government Area)

1.0 INTRODUCTION

Cassava was originated in eastern region of tropical south -America and later spread to Asia and Africa. Cassava is ideally grown in the tropical areas of the world. In Nigeria, it is a staple food and is the cheapest source of carbohydrate. Cassava contributes significantly to improve food security for humans as well as livestock. In areas where cassava is widely grown, famine hardly or rarely occurs because it bridges the food gap since it is grown all year round. Cassava also has the ability to enter into divers market through processing or modification into various products (Donald 2000). Cassava, apart from human consumption, is processed and used for animal consumption and industrial uses etc. Fresh cassava roots could be boiled or processed into slices, chips, pellets, spent-pulp, sago, flakes garri noddles, marsh, paste, flour, starch, granules etc. The qualities or characteristics of cassava that makes it a food security crop is its ability to tolerate drought, grow in sub-optimal soil and its aggressiveness towards weed and insect pest (Nweke, 1998). Cassava is very low in saturated fat, cholesterol and sodium, it is also a good source of manganese and very good source of vitamin C. cassava provide means of livelihood for up to five hundred million farmers and food processors (FAO, 1997) Development of market opportunities for cassava can contribute substantially to poverty eradication, especially for resources constrained household. Those who cannot directly farm can buy from farmers who cultivate and process and create a market.

1.2 Problem statement

Ikwerre local government area is fast becoming an urban or semi-urban area. This means that farm-lands hitherto used for cassava cultivation are now used for industrial location or public utilities such as school, market recreation or commercial building or hospitality business (hotel). This has reduced cassava cultivation and also alters cassava supply but does not reduce cassava demand rather it increases cassava demand because of the urbanization and industrialization in Ikwerre local government which may have raise income in the area. This scenario may have also affected the price of cassava in Ikwerre local government area. It is for this reason that this study is conducted to ascertain whether or not there is a response or change in cassava demand as income and price of cassava change in Ikwerre local government area of rivers state.

1.3 Objectives of the study

The broad or general objective of this study is to examine the responsiveness of cassava demand to variations in

price and income in Ikwerre local government area. The specific objectives were:

- (i) examine the changes in demand for cassava when there is a change in price
- (ii) examine the response of cassava demand to changes in income
- (iii) investigate and evaluate the supply and demand trends for cassava from (2000-2012)

2.LITERATURE REVIEW

The responsiveness of cassava demand to variations in prices is known as price elasticity of demand for cassava, while responsiveness of cassava demand to variation in income is known as income elasticity of demand for cassava. When price of cassava change, Its demand will likely change also. Again, when income of consumers change, their consumption or demand also change. Other factors that will likely bring about variation in demand for cassava include taste and preference, price of other goods such as cassava substitute, population, etc (Samuelson and Nordhause, 2005). The estimate of cassava usage in Nigeria suggests that approximately 16% of cassava root produced is utilized as chips, 5% is processed into a syrup concentrate for soft drinks and 1% is processed into high quality cassava flour used for biscuits and confectionary, dextrin, adhesive starch (Ene, 1993). Due to population pressure in the city and semi-urban areas demand for cassava is high, the demand for cassava as well as its supply are determined by urban factors (Fresho, 1993). Although, it has been established that expenditure elasticity of demand for cassava products like every other food may be low at higher income. This agrees with the assertion that cassava product appears inferior in household consumption bundles of higher income earners (Nweke, 1998). The total world's supply of cassava is about 250 million tons a year, of this figure, Nigeria alone produces about 45 million tons a year which is the highest in the world (FAO 2011) In 2004 it was estimated that 5 million, seven hundred thousand tons of cassava was exported for food, while one million, seven hundred and seventy seven thousand was exported for starch, 15 million for livestock, nine hundred thousand for ethanol (FAO, 2004)

3.1 METHODOLOGY

Ikwerre local government area is one of the 23 local government areas in Rivers state, Nigeria. It has a land area of 1,099 square kilometers with a population of 186, 598 (2005 national population census). Ikwerre local government is one of the four local government of Ikwerre ethnic nationality made up of mostly rural community linked to semi-urban areas, majority of the people are predominantly agrarian. Due to its proximity to urban area, it is faced with rapid population increase with increase food demand.

3.2 sources of data and sample size

The data for this study were collected through secondary sources such as text books, Journal, ministry of Agriculture, Agricultural Development Programme (ADP). Data on demand and supply of cassava, price of cassava, income per head were collected from Ministry of Agriculture and Agricultural Development Programme (ADP) for a period of 11 years (2000-2010) income level was based on average

3.3 method of data analysis

The data for this study were analysed using regression analysis, descriptive statistics and elasticity model.

Regression model.

Cassava demand depends on price and income. $Q_{dc} = f(X_1, x_2) + U$ where

- Q_{dc} = Cassava demand
- X_1 = Price
- X_2 = Income
- U = Stochastic error term

Elasticity model

$$PEd = \frac{\Delta Q/Q}{\Delta P/P} = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q} \quad \text{Dominick (1991)}$$

Where;

- PEd = price elasticity of demand for cassava
- ΔQ = change in quantity demanded
- Q = quantity demanded
- P = price of cassava
- ΔP = change in price of cassava

4.0 RESULTS AND DISCUSSION

Table 4.1 Demand for cassava, price, changes in qty demanded as well as change in income.

Year	Demand for cassava (kg)	Price per kg (N)	Change in quantity demanded (kg)	Change in income (N)	Change in Qty demanded due to change in income (EY)	Remark
2000	10,000	152.50	-	-	-	
2001	8,000	141.04	-2,000	-11,46	0.3	Inelastic
2002	9,000	163.15	1,000	22.11	0.81	Inelastic
2003	8,000	175.61	-1,000	12.46	1.40	Elastic
2004	9,000	196.99	1,000	20.94	1.04	Elastic
2005	8,000	239.20	-1,000	-57.79	0.37	Inelastic
2006	6,000	521.16	-2,000	381.96	1.39	Elastic
2007	5,000	1071.90	-1,000	549.84	0.31	Inelastic
2008	4,000	452.04	-1,000	-619.86	0.34	Inelastic
2009	3,000	1140.01	-1,000	687.86	0.16	Inelastic
2010	2,000	393.34	-1,000	-746.66	0.51	Inelastic

Source: Rivers State Agricultural Development Programme

Table 4.1 shows the demand and price of cassava in Ikwerre local government area, it also shows changes in income level. The table revealed that in 2000, a kilogramme of cassava was N152.50, and 10,000 tons were demanded. In 2001, the price fell to N141.44 per kg and 8,000 tons were demanded. In 2001, the quantity demanded of cassava fell to 6,000 tons when the price increased to N521.11 this study shows that as price of cassava increased, the quantity demand falls this is in line with theoretical expectation of the law of demand and supply from the elasticity model, the result shows that in 2003, 2004, 2006 price of cassava was elastic with coefficient of 1.40, 1.04 and 1.39 respectively. This is because price elasticity was greater than one (.1) meaning that a change or a variation in price brings about greater change in quantity demanded of cassava. All other years had inelastic demand with coefficients < 1. The study also revealed that due to urbanization and industrialization the demand for cassava pushed the price high from N141.04 to N521.66 between 2001 to 2006. The price of cassava continue to increase between 2001 to 2010.

Table 4.2 Demand for Cassava And Changes In Income Level

Year	Demand for cassava (kg)	Income level in (N)	Change in quantity demanded (kg)	Change in income (N)	Change in Qty demanded due to change in income (EY)	Remark
2000	10,000	304600	-	-	-	
2001	8,000	282080	-2000	-22,520	2.86	Luxury
2002	9,000	489450	1000	207,370	0.17	Inferior
2003	8,000	351220	-1000	-138,230	0.48	Inferior
2004	9,000	590970	1000	239,750	0.18	Inferior
2005	8,000	417600	-1000	-173,370	0.38	Inferior
2006	6,000	1,563,480	-2000	1,145,880	0.09	Inferior
2007	5,000	2,143,800	-1000	580,320	0.45	Inferior
2008	4,000	904080	-1000	-1239,720	9.34	Inferior
2009	3,000	2280000	-1000	1,375,920	0.16	Inferior
2010	2,000	393349	-1000	1,886,651	0.41	Inferior

Source: Rivers State Agricultural Development Programme

Table 4.2 shows the demand for cassava and changes in income level in Ikwerre local government. The study revealed that as income increased, the demand for cassava falls from 2002 to 2010 the coefficient of income elasticity was less than one (< 1) showing that income elasticity of demand for cassava was low. This mean

that cassava was an inferior good since the coefficient of income elasticity was less than 1. The negative sign in the income elasticity in table 4.2 column 4 also confirmed that cassava was an inferior good. When income and demand for a product have inverse relationship, the product is inferior (Dominic 2000) This research also showed that income level in Ikwerre local government was relatively high within the period of study. A good could be a normal good or even a luxury when income level changes. The definition of inferior, luxury, intermediate or normal good depends on the income level of the consumer holding taste and preference constant.

Table 4.3: Supply And Demand Trend Of Cassava In Ikwerre Local Government

Year	Demand for cassava (kg)	Supply of cassava (kg)	Remark
2000	10,000	8,000	Demand > supply
2001	8,000	6,000	Demand > supply
2002	9,000	6,000	Demand > supply
2003	8,000	6,000	Demand > supply
2004	9,000	6,000	Demand > greater than supply
2005	8,000	5,000	Demand > greater than supply
2006	6,000	3,000	Demand > greater than supply
2007	5,000	3,000	Demand > greater than supply
2008	4,000	2,000	Demand > greater than supply
2009	3,000	2,000	Demand > greater than supply
2010	2,000	3,000	Demand > less than supply

Source: Rivers State Agricultural Development Programme

Table 4.3 shows the supply and demand trend of cassava in Ikwerre local government area from 2000-2010. In 2010, the supply of cassava was higher than the demand and there was excess supply of 1000 tons from 2000 to 2009, there was excess demand. As the supply of cassava reduces, the demand also decrease (Table 4.3) due to increase in price of cassava. One of the cardinal findings of this study as regards the trend of supply and demand of cassava vis-à-vis the price, is the fact that when supply decreases and there is palpable perception of rise in price, consumers quickly move to substitutes, this reduces demand and also check further price increase this means that when supply reduces, consumers reduces their consumption in other to check unnecessary price rise.

Summary of regression result

$$Y = 18.3Q - 5.43x_2 \quad (22.72)$$

$$Y = 53.67Q - 5.87x_1$$

The summary of the regression result ($18.3Q - 5.43x_2$) shows that the relationship between income (x_2) and quantity demand of cassava (Q) is negative. The same could be said about the second equation ($53.67Q - 5.87x_1$)

Conclusion

This study concluded that demand for cassava was higher than supply due to the fact that Ikwerre local government is a semi-urban areas and only few people farm. Also, income level of the people was fairly higher and as income increased demand of cassava fell, this makes Cassava to be inferior good with inelastic demand. The study also revealed that the price of cassava was higher because of the reduction in supply.

Recommendations

This study recommended that more cassava be produced to march with the demand in order to reduce shortages. That unnecessary destruction of farm land for so called urbanization be checked by government in other for Ikwerre local government not to run into serious food insecurity.

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