

ANALYSIS OF THE RELATIONSHIPS OF FACTORS AFFECTING RICE CONSUMPTION IN A TARGETED REGION IN EKITI – STATE, NIGERIA

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Abstract: *In Nigeria today, there is the growing concern for food security, with particular focus on rice being a staple food. If effective policies must be made to impact rice production, it is important to appreciate the phenomena underlying the consumption in the first place. This study, therefore, examines the rice consumers in a rice producing region in Ekiti State Nigeria vis-à-vis the interrelated factors influencing consumption. Five hundred (500) respondents were randomly selected and interviewed in Eighteen (18) of the sixty nine (69) residential quarters that constitute the six (6) Local Government Areas (LGAs) which represent the study region. The study employed the Pearson's Correlation test of the consumers variables. Findings discovered strong relationship between; (i) Sex of consumers, (ii) their level of education, (iii) income, (iv) household size, (v) the source of the local rice consumed, (vi) availability of the rice, (vii) how regularly it is consumed, (viii) the quality, (ix) price, and (x) the need to strengthen production at source. Suggestions for policy measures were offered based on research findings.*

Key words: Rice; Rice consumers; region; Ekiti State; Nigeria

1. Introduction

Food security is a sensitive problem affecting many nations, especially the Developing Countries (DC) due to their ever increasing population (Ajake, 2003). The situation is indifferent in Nigeria; the most populous country in Africa, having over 130 million people (Doney 2005). Government target for now is ensuring adequacy of food in quantity and quality to meet the nutritional needs of the teeming population. However, only regionally coordinated agricultural and food security policies may offer good approaches in this regard, as considerable additional public and private investment would be necessary to accelerate the pace of agricultural growth (Otzen, 2002).

Of all the food items, rice is the most widely consumed. It is a staple diet in Japan and the principal crop in India. It is equally the mainstay of the economy of Thailand and Vietnam (Encarta, 2004). Rice is a staple crop throughout West Africa, especially in Cote d'Ivoire, the Gambia, Guinea, Guinea Bissau, Liberia, Burkina Faso, Senegal and Sierra Leone (NISER, 2002). Rice is cultivated in virtually all the agro-ecological zones in Nigeria (Akande 2001). Since the mid-1970s, rice consumption in the country has risen tremendously (10.3% and above per annum) as a result of accelerating population growth

rate (+2.8% per annum) and increasing per capital consumption (+7.3% per annum) due to changing consumer preference (Akpokoje *et al.* 2001).

The average Nigerian consumes 21 Kilograms of rice per year (WARDA, 2002). Unfortunately, the increase in demand in recent times has not be accompanied with corresponding rise in production in Nigeria. The core problems of production include: wide spread poverty, "dominance of the nation's agriculture by small holders" (Daramola, 2004), the use of relatively primitive tools for farm operations (Fakorede, 2001), lack of exposure to improved agricultural technology (improved seeds, fertilizers, pesticides etc) and farm mechanization aids by government. Highlighting the comments of Osinami (Head of the Africa Rice Centre in Nigeria), Nigeria produces two million tones and consumes about five million tones annually, thus, expends \$800 million yearly on importing the deficit of about three million tones (Awe, 2006).

Nigeria still ranks third with Iraq (after Philippines and China) in the group of major rice importing countries in the world (Awe, 2006). Reasons for the increase in Rice consumption in the country are numerous. They include: rapid urbanization, ease of preparation that fits easily into urban lifestyle of workers, and its general availability among food vendors and restaurants located in work places, especially urban areas (NISER, 2002). Nigerians prefer the local rice because of its taste and sometimes even its smell; good processing may make it compete favourably with imported rice (Longtau, 2000). Ekiti state is one of the country's sub-regions where rice is prominent. Over the years, its production has also expanded as a result of vast increase in land area put under cultivation. However, this was still considered insufficient to match their consumption increase as rice import makes up the shortfall (NISER, 2002).

2. The Rationale for Targeting the Study Region

Regional planning problem emerges from multi-dimensional issues. Regional needs, resource distribution, social priorities and taste, form the essentials of an overall framework for its analysis for effective planning. Hall (1994) observes that throughout the period of 1945 to 1980, planning policy at the regional level in Great Britain was targeted at the less prosperous regions of the North Scotland and Wales for the creation of factory jobs, unlike the more prosperous regions of the South and Midlands which were already commercial centres and seats of expanding service industries. Right from the 1960s, the growth of urban population has been accompanied by high levels of concentration of urban dwellers in a few large cities (Whang, 1988), majority of who are the absolute poor. This situation prompted the Korean government to target its cities for anti-poverty programmes in the 1980s. In 1983, the District Focus for Rural Development (DFRD) was initiated in Kenya, targeting the rural districts for allocation of resources that will enhance utilization of local resources, thus increasing employment opportunities (Schall, 2000).

In the South-Western part of Nigeria, Ekiti State remains one of the least developed economically,. About 87.0 percent of the State population are farmers, of which "70.0 percent are actively engaged in rice production" (NISER, 2002). Igbemo – Ekiti, in the region of study has national reputation for producing rice. Out of the major rice producing towns (Ikole, Ijero and Igbemo) in Ekiti, Igbemo controls a relatively large market area and enjoys the easiest accessibility to the State capital where it attracts high patronage. Other communities in the region have direct linkage with the town through trading and

consumption of its rice. Many rice processing and marketing activities complement rice farming to transform this centre to an agropole. It thus, presents the build-up of a system involving links between processes of activities on rice production and form of human communities in a regional setting. Targeting, therefore, appears a relevant approach in this study as it relies on specific criteria to identify the targeted location. The major utility of targeting is that, it assists in identifying the existence of large differences in the physical and living conditions between geographic areas (Okoko, 2004).

A major constraint in realizing the goals of targeting is determining the target group. Such indicators as location of residence of rice consumers, source of local rice consumed, distance to the source and major rice shopping centres can be used in delineating the targeted region. Another problem is how to select the local rice consumer and Igbemo catchment area for targeting. In this regard, the Access Opportunity (AO) model was employed. It assists in assessing the location of Igbemo in relation to the region of influence in terms of patronage. Accessibility in this case is estimated using the formular:

$$AO_i = \frac{S_j}{t_{ij}^b} \quad (1)$$

where AO_i = access opportunity index, S = size of item required at centre (i), t = time taken to travel from residence 'i' to acquire item at centre 'j' and b = exponent describing distance-decay effect (Smith 1977, Morenikeji, 2006).

The sixteen (16) LGAs that constitute Ekiti State are involved in the estimate. Undoubtedly, their locations from Igbemo vary with distance which is a determinant of their AO . The higher the AO , the higher the access level of a particular LGA. The mean AO for the entire region, therefore, is obtained by multiplying each LGA's AO by its population, summing the values and dividing with total population thus:

$$A_i = \frac{\sum AO_i x N_{ij}}{\sum N_j} \quad (2)$$

The higher the value of A_j , the better. The number of LGAs that fall below the mean AO value, however, represent the sub-regions of the state that are of less interaction in terms of access opportunity to the local rice.

It is possible to determine major areas of influence of the local rice using this model. But the usual constraint is determining the application to spatial dimensions. Whether it is better applied to the city or at regional level remains a crucial question. What is important, however, is the clear specification of the variables at any given level that reflects the function of a service centre.

3. Materials and Methods

Research Locale: The targeted region comprises of six (6) LGAs in Ekiti State. These are: Ado, Irepodun/Ifelodun, Ido/Osi, Gboyin, Oye and Ikole LGAs. The region lies on the rain-fed upland environment in the South-Western Nigeria. The region locates in the North-eastern part of Ekiti State where it shares boundaries with Ilejemeje and Moba LGAs as well as Kwara in the North; Ekiti East LGA, Kogi and Ondo State in the East; Emure, Ise-Orun, Ikere and Ekiti-South West in the South, and Ekiti –West and Ijero in the West (Fig. 1). Out of the total sixteen (16) LGAs, the study region which comprises only six (6) LGAs,

accommodates about 44.2% of the state population. The six LGAs surround Igbemo with the potential for strong inter-connections and well-established ties on rice business.

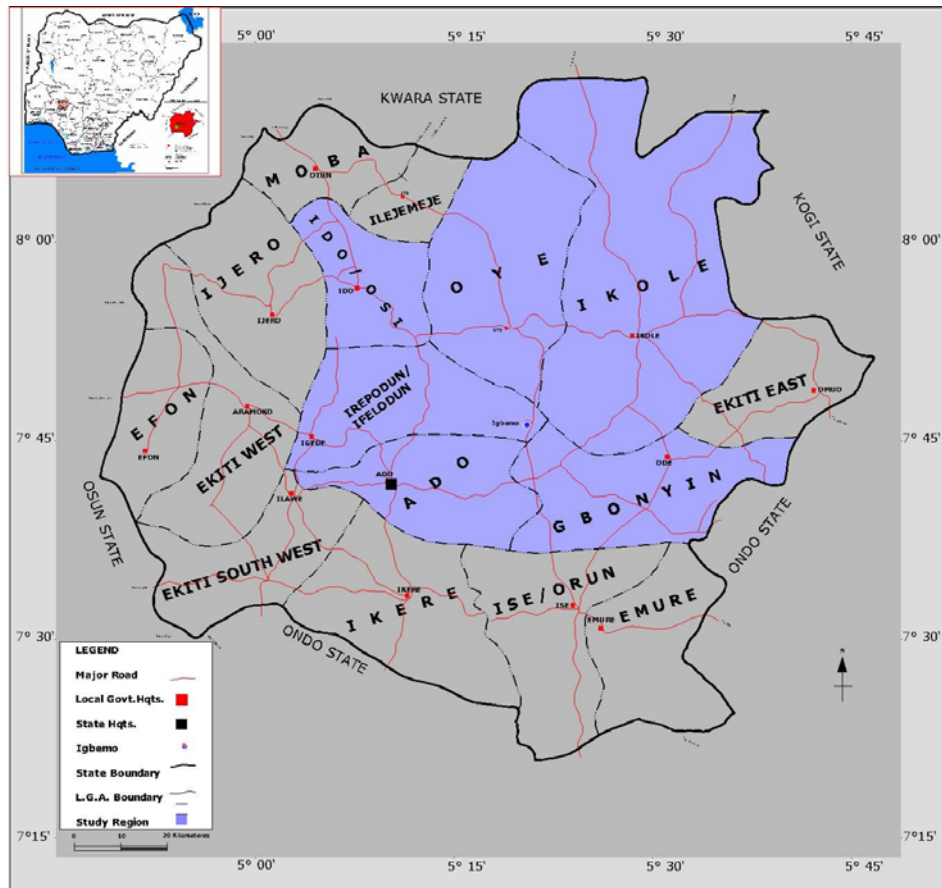


Figure 1. Igbemo and the Region of Study in Ekiti State

Source: Author's Finding, 2007

Database Description: In this study, a random selection of 500 respondents was undertaken in eighteen (18) residential quarters which are coterminous with the independent National Electoral Commission (INEC) political wards in the region. The sample (500 respondents) was disaggregated into the 18 wards according to the number of buildings which were used as proxy population for consumers' population in each ward. Thereafter, samples were randomly chosen from the wards which represent well-defined Data Delineation Areas (DDA). In a targeted house, only one household was interviewed, and the respondent was the household head of age 18 and above. A structured questionnaire was prepared and administered on the household heads (respondents).

About 418 out of the 500 respondents (representing 83.6%) in the study region consume the local rice. Subsequent analysis focused on this group being the targeted population. The variables that were employed in the correlation analysis are: sex of the consumer (SEX), the level of education (EDU), the household, size (HOLD), the level of income (INCOME), and the source of local rice consumed (SOURCE). Others include; the level of availability of the rice (AVAIL), how regularly it is consumed (REGULAR), the quality (QUALITY), the price (PRICE), and the need to strengthen production at source (NEEDS).

These variables have been selected because of their likelihood to impact rice consumption with distance from the production centre (Igbemo).

4. Discussions of Empirical Findings

It is possible to determine the characteristics and behaviours of the consumers through field observation. Another option, though less reliable, is to present only the opinions of this group on rice consumption. The logic in the cross-tabulation of the specific variables is that, the willingness of the consumer to opt for rice is determined by certain socio-economic factors (sex, income, quality, household size, price etc) which satisfy the quantity and quality needs in consumption.

Table 1 (see Appendix 1) reveals that level of education of the rice consumer (EDU) has significant relationship with his sex (SEX). The reality in the region is that, more females (59.8%) seek the rice than males (40.2%). These consumers are fairly educated with 64.1% having secondary education and above, of which 74.1% are under age 45. The flair for the local rice by the females, however, is symptomatic of their relatively low income, occasioned by low education. Generally, they occupy lower-paid and lower-status jobs than men; their unemployment rates are higher than men's and are far more involved in the 'informal sector' occupations like street vending and market work (Ashford, 2001).

Coincidentally, income of the consumers (INCOME), is associating with EDU. No doubt, majority (78.2%) are literates, but quite a significant proportion (70.9%) earn below ₦80,000 (\$640.0) annually. This is suggestive of the prevalence of poverty and preference for the local source which the low income can sustain. In Ekiti, agriculture predominates the occupational structure of the population (72.6%), followed by trading (12.2%); artisans/professionals (7.4%) and the civil servants (5.6%). Only have educational qualification (National Certificate in Education and above) that can attract high income. As expected in this region, most women, who are major consumers of the rice, are less educated than man – a situation that perpetuates their early entry into motherhood, low education and a continued circle of poverty.

Availability of the rice (AVAIL), is of significant relationship with SEX, EDU and source of the local rice (SOURCE). Field survey shows that most consumers (56.0%) consider the rice to be fairly available. Logically, increase in the proportion of females will result in high reproduction rate and lead to increased consumption with corresponding reduction in quantity of rice that will be available. This is in close association with the their level of education earlier explained. In any case, AVAIL has depended heavily on seasonality and low level of production at source at source. At present, the degree of production in Igbemo (source) can still be regarded as peasant as the average per-capital area of land cultivated by the rice farmer (4 hectare) falls short of 5 hectares (Adeola, 2002).

Regularity of consumption (REGULAR) has a significant association with EDU, SOURCE and AVAIL. The strong relationship with AVAIL in connection with source is explanatory. During harvest (usually July to September), the rice floods the market, thus, attracting vast majority of the rural and urban consumers for regularity of consumption. As scarcity of the product sets in during off-season (usually March to June), AVAIL reduces only for REGULAR to diminish. Igbemo remains the major source (82.8%) of the local rice consumed in the region. Given that most consumers are literates (82.8%), there is the

awareness of a popular source which stimulates preference for *Igbemo* rice, and affects REGULAR.

The assessment of quality of the rice (QUALITY) by the consumers is strongly related with their household size (HOLD), AVAIL and REGULAR. Despite the relatively low quality of the local rice to imported rice, many of the consumers (64.4%) see it to be good. In Ekiti, about 73.9% of the consumers maintain household size of up to 8 persons (1- 4 = 22.4%, 4 – 8 = 49.7%). This implies 4 – 6 children including dependants in some cases. Apparently, the consumers associate with large families in which food expenses are moderated by low income. At the market places, the local rice is cheaper than the imported rice while the marketers and consumers tend to have some relationships that promotes sales of the local rice. The most important are credit sales and quantity discount. These clandestine marketing factors account for the association between QUALITY and HOLD. The distribution channels of *Igbemo* rice are considerably wide, even beyond Ekiti. The existence of the neighbourhood markets makes AVAIL possible. The general acceptance of the quality by a diversity of household types therefore, facilitates REGULAR.

The price of the rice (PRICE) exhibits significant relationships with EDU, INCOME, SOURCE, AVAIL, REGULAR and QUALITY. Further analysis of data reveals that the average consumer in the region has secondary education. Subject to this qualification, income would be low. As a consequence, preference for a local source of rice (staple meal) with moderate price is likely to increase. This may have led to the interest in the local (₦250.00 or \$2.0 per Kilogram) which is far cheaper than the imported rice (₦350.00 or \$2.8 per Kilogram). With increased demand for the rice at cheap price, marketers strive to increase AVAIL to upgrade their enterprises and extend their services to aid REGULAR. The cultural preference for the rice is, therefore, not unconnected with the low QUALITY which reduces price.

Interestingly, the need to strengthen production, indicates very high relationship with EDU, HOLD, QUALITY and PRICE. The general response on NEEDS is high (97.2%), suggesting a strong linkage between production and consumption of the rice generally. Given that majority of the consumers are literates who are conscious of a regular source with large families (HOLD); low production at *Igbemo* may not offer the supply that will meet the regional needs. For the regional economies to gain momentum, therefore, a high level of sufficiency must be guaranteed. It is a clear fact that the consumers (usually of low-income) prefer the low-quality rice. This canvasses support services and finance for easier access to supply. The rice marketers enjoy freedom from restrictive local mores (market association that control entry into market and fixing prices) which enable them to operate with relatively stable price. The attitudes of the consumers in relation to PRICE reveals that costs of daily consumption of the local rice is tolerable, thus, indicating the need to strengthen production at source. As noted by Abubakar *et al.* (2008), rice represents Africa's best opportunity for reduction of food imports.

5. Conclusion

It is evident from this study that some associated factors affect rice consumption in the study region in Ekiti State. The study has used the questionnaire to source for data among 500 rice consumers in the region. It has also adopted the Random Sampling Technique to select cases investigated. Data analysis reveals that:

- Sex of the consumer is significant to the level of education.

- Annual income of the consumer has a close relationship with the level of education.
- Level of availability of the rice is dependent upon the sex and level of education of the consumer, as well as source of supply.
- The educational status of the consumer, the source of the rice and level of availability determine regularity of consumptions.
- Quality assessment of the rice is closely associated with the consumer's household size, the level of availability of the rice and regularity of consumption.
- Price of the rice, is of significant relationship with the level of education and income of the consumer, source of rice supply, level of availability, regularity of consumption as well as quality of the rice.
- The need to strengthen production is strongly related with sex and level of education of consumers, the quality and price of the rice.

Of special interest in this analysis are factors like: source of the rice, the level of availability, regularity of consumption, level of income and household size of the consumer and the rice quality. Majority of the regional population (83.6%) consume Igbemo rice. In view of the inter-relationships of these variables in consumption, special regional planning policies by the Federal and Ekiti State Government are required to enhance consumption of the local rice while increasing production. In this regard, a State District Development Commission (SDDC) is proposed to take charge of planning and management of specific projects in the region.

Two major problems limit rice production at source (Igbemo). First, is the predominant use of local implements by the rice producers. Second, is the seasonability of production on account of climatic changes. On this note, the SDDC should see to the possibility of mechanizing rice farming operations at Igbemo. Apart from encouraging modern farming technologies, the irrigated rice system should be introduced through the Project Planning and Implementation Unit of the commission to ensure dependable supply of irrigation water to the rice field during dry season. A collaborative effort of the SDDC and the national agency in the state (Benin-Owena River Basin Development Authority – BORBDA) is a viable option. This will strengthen production at source while creating employment opportunities (in rice farming, processing and marketing) to elevate income for regular consumption.

The spatial distribution of the rice, in most cases, reflects the level of availability – a determinant of price at various destinations. Observation reveals the important roles of the poor conditions and network of roads in this case. The newly constructed Ado-Afao road which links the old Afao-Igbemo roads, is the only route on which most traders prefer to travel. Although it is the shortest link to Ado (the state capital), it turns out to be the longest route to Ido-Osi, Ode-Aye and Ikole – which are major sub-regional centres. Improvement of the transportation infrastructure in the region (particularly around Igbemo) by the State government through the SDDC, therefore, becomes a priority. Fine-grained modified grid of lanes should be introduced to link these sub-regional centres with Igbemo for free flow of traffic. This will generate more trips by traders and make availability of the rice increasingly possible for consumption at different destinations, while reducing post-harvest losses.

A high level of poverty is prevalent among the consumers in the region, majority of who are farmers (72.6%), earning below ₦80,000(\$640.0) annually (70.9%). Traditionally, only self-financing options characterize all enterprises (farming, trading etc). This calls for a change of orientation to 'Competition fund' (CF) to restructure the consumers' enterprises

financing. By this, 4 – 5 people in the same trade should be encouraged by the SDDC to co-invest on projects of interest with a sharing formula for proceeds therefrom. Granting of soft-loans by government to the consumers through the SDDC under a Poverty Alleviation Programme for small-scale businesses will help to enhance their income level for effective rice demand.

The average consumer in the region maintains a large household size, ranging from 6 to 8 people. As a way of satisfying regularity of consumption by the households, an efficient Rice Marketing Centre (RMC) by the SDDC is recommended at source (Igbemo). This will represent a designated depot for receiving the milled rice in the area and discharging to organized marketing cooperatives that eventually pass to sub-regional markets for the urban and rural markets (UMs and RMs). It will also assist in regulating price and minimize the negative influence of emergency rice traders.

The average rice handler (farmer, processor, marketer and vehicle driver) in the study area, lacks necessary knowledge of food hygiene because of low level of education. Government, through the SDDC should collaborate with stakeholders (Ministry of Commerce and Industry, Agriculture, Local Government) and organize regular public enlightenment and training programmes (workshops, seminar etc) for the producers and other handlers of the product for adherence to acceptable standards of food production.

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Appendix 1.

Table 1. Correlation Matrix of Consumers Variables

Variable Code	SEX	EDU	HOLD	INCOME	SOURCE	AVAIL	REGULAR	QUALITY	PRICE	NEEDS
SEX	1.000	-0.111*	0.000	-0.047	-0.065	0.129**	-0.010	-0.029	-0.019	0.014
EDU		1.000	0.069	0.116*	-0.094	-0.118*	-0.117*	-0.088	-0.204**	0.147**
HOLD			1.000	-0.002	-0.042	0.020	0.077	0.147**	0.057	0.234**
INCOME				1.000	-0.052	-0.045	-0.067	-0.065	-0.105*	-0.010
SOURCE					1.000	-0.123*	0.097*	0.076	0.113*	0.029
AVAIL						1.000	0.412**	0.189**	0.232**	0.017
REGULAR							1.000	0.627**	0.506**	-0.082
QUALITY								1.000	0.565**	-0.157**
PRICE									1.000	-0.122*
NEEDS										1.000

* Correlation is significant at 0.05 level (P < 0.05)

** Correlation is significant at 0.01 level (P < 0.01)

Source: Author's Fieldwork, 2007