

Structure and Efficiency of Anti-malaria Medicinal Plants Market in Kwara State, Nigeria

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This study examined the operational efficiency and structure of the anti-malaria medicinal plants market in Kwara state, Nigeria. Necessary data were collected from 102 anti-malaria medicinal plants traders in the study area through interview schedule using a well-structured questionnaire. Analytical tools employed include descriptive statistics, Concentration ratio analysis and Benefit cost ratio analysis. The study revealed that the market has low market concentration and it tends towards pure competitive structure. Trading in anti-malaria medicinal plants in the study area is profitable and the market is operationally efficient. Policy aimed at developing a more vibrant anti-malaria medicinal plants market in the study area demands that all barriers to entrance be removed, traders process and package their products to meet international standards. In addition, a particular agency of government needs to be assigned to oversee and regulate the activities of market players in the industry. Unregulated cutting and felling of medicinal plants constitutes potential source of danger to our environments.

Key words: Anti-malaria, Medicinal plants, Marketing efficiency, Market structure, Nigeria

INTRODUCTION

Medicinal plants play a key role in the world health care in the treatment of diseases such as HIV/AIDS, malaria, sickle-cell anemia, diabetes and hypertension (Okigbo and Mmeko, 2006). According to the World Malaria Report (2011), the demand for medicinal plants is increasing in Africa as the population grows and pressure on medicinal plant resources will become greater than ever. About eighty percent of the populations in developing countries rely largely on plant-based drugs for their health care needs (WHO, 2003).

In Nigeria, there has been a reasonable and noticeable shift from the earlier bias in favor of orthodox medicine to greater acceptance of traditional (herbal) medicines (Akunyili 2002). Many rural and urban people in Nigeria depend on herbs for their medicinal practices. Idu *et al* (2007) noted that there is increased awareness in Nigeria towards the use of medicinal plants and their preparations to combat some common diseases and possibly reduce mortality.

Malaria is highly prevalent in Nigeria. It is a leading cause of morbidity and mortality in the country. Available records show that at least 50 per cent of Nigerians suffer from at least one episode of malaria each year and malaria accounts for over 45 per cent of all out-patient visit (FMH, 2001). Kusemiju (2008) decried the high prevalence rate of malaria disease in the country; he reported that the country loses the sum of N132 billion yearly to the malaria scourge. This, he explained, is due to costs of treatment, transportation, loss of man-hours, absenteeism from school and other indirect costs. The disease is often treated in Nigeria by self-medication, the use of local herbs, use of the services of spiritualists/traditional priests or/and the use of clinic/hospital services (Jimoh *et al*, 2007).

Plants are a potential source of new anti-malarial drugs, since they contain a quantity of metabolites with a great variety of structures and pharmacological activities (Addae-Mensah *et al*, 2011). In Africa and other continents where the disease is prominent, traditional preparations of plants with the use of macerations, extracts, steam baths, concoctions, and decoctions from

plant materials have been the main source of treatment of malaria (Guantai & Chibale, 2011; Cruz, 2013). This has necessitated many research groups in Africa and their foreign collaborators to resort to plant sources in order to expand the anti-malarial chemotherapeutic arsenal (Nogueira & Lopes, 2011; Chin, 2006; Fabricant & Farnsworth, 2001).

In the study area, phytomedicine is often adopted to treat victims of malaria and this probably accounts for the large volume of trade in local medicinal plants such as *Mangifera indica* (Mango), *Enantia chlorantha* (Awopa) and *Momordica foetida* (Awun) which are believed to have abilities to cure malaria.

METHODOLOGY

Study Area.

This study was carried out in Kwara state, Nigeria. Kwara state is located between Latitudes 7° 45' N and 9° 30' N, and between Longitude 2° 30' E and 6° 25' E covering a total land size of 32,500 square kilometers. It shares common boundaries with Ondo, Osun, Niger and Kogi states. The state also has an international boundary with the Republic of Benin. Kwara state comprises of sixteen local government areas and a population of about 2,371,089 people (NPC, 2006). Ilorin is the capital city of Kwara state, other notable communities in the state include Offa, Omu-Aran, Oro-Ago, Igbaja, Erin-Ile (Wikipedia, 2010).

Kwara state lies in the southern guinea savannah vegetation zone of the country. It experiences two (2) seasons in a year; the wet season (April - September) and the dry season (October - March). Annual rainfall in Kwara state is about 1000 - 1500mm. The state is blessed with abundant fertile land and a sizeable area of forestland.

Sampling Design and Method of Data Collection

This study focused on the medicinal plant traders in the study area. Indigenous medicinal plant markets are distributed throughout the rural and urban communities of the study area. A three-stage sampling technique was adopted to sample respondents. The Kwara State Agricultural Development Project (KWADP) divided Kwara State into four agro-ecological zones as shown below.

Zone A: Baruten and Kaima LGA.

Zone B: Edu and Patigi LGA.

Zone C: Asa, Ilorin East, Ilorin South, Ilorin West and Moro LGA.

Zone D: Ekiti, Ifelodun, Irepo-dun, Isin, Offa, Oke-Ero and Oyin LGA.

The first stage of the sampling procedure involves the selection of Zones C and D, which are similar in cultural values, out of the four zones identified by KWADP. The second stage entails the random selection of four (4) communities, namely Ilorin, Offa, Omu-Aran and Erin-Ile from the list of urban communities in the zones. All the major markets in the communities selected were used for this study. The markets include Oja Oba market, Ilorin East; Ipata market, Ilorin South; Oja-Tuntun, Ilorin West; Owode market, Offa; Oja-Omu market, Omu-Aran and Erin-Ile central market, Erin-Ile. The last stage of the sampling procedure involves the random selection of medicinal plant traders from each market. Medicinal plant traders' association exists in all the markets visited. The respondents were sampled from each market in proportion to the size of the trade association in the market. Overall, one hundred and two respondents were sampled. Data were collected from respondents through an interview schedule using a detailed and well-structured questionnaire.

Methods of Data Analysis

The structure of the medicinal plant market in the study area was analyzed in using market concentration, product differentiation, knowledge /status of market players and conditions for entry and exit from the market. Concentration ratio analysis was used to examine the concentration of the market. Concentration ratio is the proportion of the total industry sales contributed by the m largest firms ranked in order of their market shares ($m = 2, 4, 8, \dots$) (Korir, 2005).

$$\text{Concentration ratio} = (\text{cumulative sales of the largest } 2, 4, 8 \text{ firms} / \text{Total sales}) \times 100$$

Marketing efficiency

Marketing Efficiency of medicinal plants trade in the study area was estimated by the use of Marketing Benefit Cost ratio analysis, which is given as the percentage ratio of market margin to marketing cost.

$$\text{Marketing efficiency} = (\text{Market Margin} / \text{Marketing cost}) \times 100$$

Structure of Anti-malaria Medicinal Plants Market

There exist many buyers and sellers of medicinal plants dispersed throughout the various communities of the state. Concentration ratio analysis revealed that the market has a low concentration structure with the largest 4 and 8 retailers having a combined market share of 7.30% and 18.24% respectively. Market concentration ratio is a measure of the percentage share of the market controlled by a specified percentage of firms ranked in order of market share from the largest to smallest (Karugia, 1990). These low concentration ratios suggest that the market structure of medicinal plants in the area tends towards competition (Bain, 1968).

Medicinal plant traders in the study area sell homogenous products. They sell their products in the crude form such as bark, root, rhizome, bulbs, tubers, fruits, leaves and in some cases, the whole plant without any processing or value addition. Traders do not have any special packaging for their products; usually buyers come along with containers such as polythene bags, sack, bottles and cans to the market to pack the plant parts. Hence, the products are not differentiated by pack type, pack weight, label or brand name.

Entrance of a new trader into the medicinal plant market in the study area is not with any serious restrictions. A prospective trader undergoes training under a licensed

trader and he is certified to have finished the training before he can be allowed to sell medicinal plants. Respondents said some were trained by their parents while some were trained by a licensed individual. The average cost of training was estimated to be an average of N5,000 which could take up to 3-5 years, depending on the aptitude and diligence of the trainee. At the successful completion of the training, the prospective trader is inducted into the trade association but not without an induction ceremony. The ceremony, according to respondents, has financial implications both in cash and kind.

Respondents affirmed that the ceremony costs and needs are usually estimated by the boss. Majority (66%) of the respondents believe that a new inductee can begin trade in medicinal plants at the retail level with a capital base of as low as N5,000. A large percentage of traders (94%) started trade in medicinal plants by sourcing capital from their personal savings, friends and relatives as well as assistance from their trainers. There is however no restriction to exit from the market. A trader can quit medicinal plant sale at any time he/she feels like.

Traders organize themselves into trade association, deliberate and take common position on issues of general concern. There is, however, no collusion of any kind in fixing prices of products. All the respondents affirmed that they arrive at their selling prices individually.

The study revealed that the traders have no formal source of information. There are no government regulatory agencies that provide current and unbiased information about the market. They rely on information from other traders and depend on their bargaining strength to ensure a relatively fair deal with their suppliers.

The marketing efficiency of the market was estimated based on the trade of three anti-malaria plant species in the study area namely *Enantia chlorantha*, *Momordica foetida* and *Mangifera indica*.

Table 1: Market Margin Estimate

Plant Species	Producers Price (₦/Unit)	Retail Price (₦/Unit)	Market Margin (₦)
<i>E. chloranta</i>	1,715	2,100	385
<i>M. foetida</i>	1,650	2,035	385
<i>M. indica</i>	1,535	1,880	345

Source: Field survey, 2016

Table 1 presents the market margin that accrues to market participants in the medicinal plant trade. A unit of *Enantia chloranta* is a bundle of average weight of 10 kg. Units of *Momordica foetida* and *Mangifera Indica* are sacks of average weights of 30 kg and 35 kg respectively. Marketing margin ranges between N345 to N385 in the study area.

Itinerant wholesalers employ people to collect plant parts for them from the forest. Therefore, the itinerant wholesalers' price is taken as the producers' price. The city retailers sell a large portion of their stock (70%) to individual patient or final consumers. The average price of the city retailers is therefore the retail or consumer price. The difference between the retail price and the producer price gives the market margin

Table 2: Marketing Cost Estimate

Plant species.	Cost to sedentary Wholesalers ₦/Unit)	Cost to city retailers (₦/Unit)	Total (₦)
<i>E. chloranta</i>	50	86	136
<i>M. foetida</i>	58	116	174
<i>M. indica</i>	59	122	181

Source: Field survey, 2016

The marketing expenses incurred by market participants in the trade of medicinal plant species are generally higher for city retailers. The city retailers bear on the average about 75.24% of the total cost. For the sedentary wholesalers and city retailers, marketing cost is due

mainly to the storage of the plant species. They do not perform any other marketing function on the products; itinerant wholesalers bring the product to the city retailers in the market and they sell them raw in the same market.

Table 3: Estimate of Marketing Efficiency.

Plant Specie.	Market Margin (N)	Average Marketing cost (N /sack).	Marketing Efficiency.(%)
<i>E. chloranta</i>	885	106	506.57
<i>M. foetida</i>	885	144	337.72
<i>M. indica</i>	845	151	285.12

Source: Field survey, 2016

Table 3 presents the result of the analysis of marketing efficiency in the medicinal plant market of the study area. Results indicate that market participants enjoy a good market margin and ensure a low marketing cost. Hence, medicinal plant trade in the study area is operationally efficient and profitable.

CONCLUSION AND RECOMMENDATIONS

A concentration ratio of 7.30% and 18.24% of the combined market share for the largest 4 and 8 retailers respectively indicates a low market concentration structure. Products traded in the market are homogenous. Entrance into the market is not free though exit is free. Market participants do not have perfect knowledge of the

market. Hence, the market is not perfectly competitive but approaches the pure competition type of market structure. The estimation of the operational marketing efficiency of the traders reveals that anti-malaria medicinal plant trade in the study area is operationally efficient and profitable.

It is hereby recommended from the study that policy aimed at conservation of anti-malaria medicinal plants in the study area should be established. This would reduce indiscriminate cutting and felling of medicinal plants. The medicinal plants should also be cultivated as it would enhance proper regulation and reduce the tragedy of the commons.

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