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Socio-economic Contribution, Marketing and Utilization of Edible Kolanut (*Cola acuminata* and *Cola nitida*) to Rural Women Livelihood in Abeokuta, Nigeria

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Abstract This study was centred on the edible cola nuts (*Cola acuminata* and *Cola nitida*), often referred to as obi abata and gbanja (yoruba) in Abeokuta metropolis. The study examined economic impacts and various uses of the cola nut. Structured questionnaire with open and close questions was distributed to120 respondents in the study area. Markets were selected from three Local government areas namely Lafenwa, Kuto, Iberekodo and Ishiun at Owode Egba purposively. The markets are local markets where farm produce are being sold in the study area. Descriptive statistics, cost and return analysis was used to analyze the data obtained from the study. The result obtained shows that 88.33% of the respondents were female who engage in the trade, 52.50% were in age group above 45 years which was the largest and were Yoruba. 51.87% had no formal education and are mostly full-time sellers. The result also revealed that traditionally 81.67% uses the nut for wedding and 97.50% for dye. The cost analysis reveals the average profit for each market, at Ishiun ₦3 293.375, Lafenwa ₦8 702.83, Kuto ₦4 869.40, and Iberekodo ₦3 127.20 and the rate of return on investment were at Ishiun 33.24%, Lafenwa 35.96%, Kuto 33.17%, Iberekodo 26.54% , respectively. It shows that Lafenwa has the highest rate of returns on investment and profit. The result also showed that the mean value of profit and return on investment for all the market were ₦4 998.21 and 32.23% respectively, this was due to the level of organisation in transaction in the market. The result also reveals the market margin per market at Ishiun 24.95%, Lafenwa 26.45%, Kuto 24.95%, and Iberekodo 21.00% respectively with the mean margin for all the market at 24.33%. The major problem encountered in business was basically that of storage with insect infestation at 53.33% and heat 51.67% which reduces the value and invariably the price of the product. Hence, a good storage system is important to improve sales. Hence a good policy must be put in place for good storage system to improve quality during storage and enhance income of respondents.

Keywords Socio-economic; Cola marketing; Rural women; Livelihood

Introduction

In the last decades, there has been more research on the roles of forest in the livelihood of the rural population. Much of the research has looked into the gathering of non-timber forest product (NTFPs) which includes resins, fodder, spices, food, medicine, leaves, honey and nuts. Also all by –products of the forest not used in large quantity by the industries and produce from the trees such as *Parkia biglobosa*, *Dacryodes edulis*, *Irvingia* spp., *Afzelia africana, Garcinia cola* etc on fallow or farmland. In the past years people have increasingly recognised non-timber forest products for the important cultural, subsistence and market values that they add to rural forest and individual household worldwide (Community Resource, 2000). Nearly all the ethnic groups around the globe rely on non-timber forest products for household income, food, medicine, construction supplies and materials for decorative and ceremonial purpose. These resources are economically important during times of economic hardship or during lulls in agricultural production. Despite increasing use and recognition of non- timber forest products, they were referred to as rural resources collected from rural areas

and important to rural people. The non timber forest product collectors are from diverse ethnic groups, and the product collected reflects their socio-economic and cultural heritage.

In view of NTFPs social, economic and cultural value in rural livelihoods, various researches have been carried out by different organization (Falconer, 1990,). The significance of NTFPs in terms of social economic and cultural importance in rural livelihood has attracted global attention and consequently various researches have been carried out by different organisation to establish the role of NTFPs in rural community transformation. (Wickens, 1995; Fletcher et al., 1991, http://cfs.nrcan.gc.ca/bookstore_pdfs/23097.pdf; The World Bank, 1992). The products collected are of various uses, some are consumed directly others sold and some processed or manufactures before consumption. Relatively few rural women (household) depend on gathering as their main source of income or subsistence. Most women belong to families that traditionally engage in farming and trading. They often possess the ability to cultivate the land but are often restricted by lack of resources such as capital and land for establishment. They also possess knowledge and skill acquired over time in trading and farming. However, the collection of forest product is particularly important to rural people who lack access to arable land and means to undertake job. Falconer's study (Falconer, 1990) confirmed the role of non-timber forest products as a source of income not only for gatherers but also for traders. FAO (1995, http://www.fao.org/docrep/V8929E/V8929E00.htm) recognises the growing consumers' interest in forest products and shortage of studies on market, supply and policy etc. More so, one of the effective management of forest is to move from focusing on timber as the only profitable commodity from the forest. It is widely known that there are wealth of non timber forest products which play an important role in meeting the nutritional needs of the forest people, and also enable them to earn monetary income through sales at local markets. Just as many non-timber forest products are harvested from trees to meet the increasing demand, yields can even be higher than timber yields. In the early 90'scientist were pushed to take a fresh look at the importance of non-timber forest products (NTFPs) particularly health food i.e. natural foods with therapeutic properties capable of halting or averting the development of certain diseases. These extensively traded products are socially and economically valuable.

Non-timber forest products are among the oldest trade goods in the world (Vantomme, 1991). Therefore, one method has been to encourage the marketing of non-timber forest products. This market based conservation approach strives to provide economic incentives in other to conserve the resource base (Kainer et al., 2003). Consequently, the roles of economic incentives are increasingly been included in conservation practices throughout Africa. According to Carr et al (2000), over 100 non-timber forest products of major importance of have been reported in International market and cola nut is one of the products.

Cola nuts as one of many non-timber forest products provide nuts and pods. It is perhaps second only to palm oil in terms of importance in the list of indigenous cash crops. It occupies a unique place in West Africa and Central Africa e.g. Caribbean Island, Sri Lanka and Malaysia (Eijnatten, 1969). Cola was first noted in Egba division of Ogun State, Nigeria in 1902. From Agege, Cola nitida cultivation presumably spread to the forest area following first the course of the railway line in Abeokuta, Ibadan and Offa replacing the local Cola acuminata and penetrating later along the stream and river banks into the guinea savannah and at present South-South, and Eastern state (Eijnatten, 1969). The case of the cola nut also illustrates more pronounced regional concentration of consumption. Cola nut grows on trees that are raised almost exclusively in the south-western part of the country. Favourable conditions include sufficient rainfall and suitable sedimentary soils found mainly in two states of Ogun and Oyo. Major market is in northern Nigeria. Not only is it comestible of everyday use and the strainer, comforter of weary travellers and toiling labourers but it has also uses in the social life and religious customs of the people. The seeds are chewed as a stimulating narcotic, beverage could be made by boiling powdered seed in water, and also a cough syrup made from the juice extract (Tachie-Obeng and Browns, 2004, http://carpe.Umd.Edu/Documents/2001/report-tachieobeng_brown2001.

pdf). The stem and twig wood is used for chewing stick. It can also be used as flavoring in soft drinks e.g. coca-cola. Several species of cola nut have been recognised in Nigeria. There are about three sub genera that are accepted and cultivated. They are often refers to as edible cola but only two are widely cultivated namely *Cola nitida* (Vent.) Schott and Endl and *Cola acuminata* (P.Beauv.) Schott and Endl they are the two economically important members of the cola genus. They are bitter-tasting nuts known conventionally as Kola nuts. These two species are the true cola nuts. In Western Nigeria, cola nut ranks very high among agricultural cash crops in importance from which the bulk of our revenue can be derived.

According to Momoh et al (2000), 90% of cola nut production in Nigeria is consumed locally. It provides pods and nuts as a major source of food and provides ingredient for various uses and remedies. It meets many challenges and offers a wealth of potential uses, the socio-economic values and utilization functions of resources are all equally decisive in ensuring the quality of people's lives, providing support for the national economies and protecting the environment. Therefore, knowledge on various uses, market strength and sources of the product is required to foster the process of management of the non-timber forest product at high yield in Abeokuta metropolis. This study was carried out to evaluate the utilization and socio-economic value of cola marketing to the livelihood of rural women.

1 Material and Methods

1.1 The study area

The study was carried out within Abeokuta metropolis in Ogun State. Markets were selected randomly from the two Local government areas purposively, because they are local markets where those farm produce are being sold in the study area. The various markets selected were Kuto (South Local Government), Lafenwa (North Local Government), Iberekodo (North Local Government) and Ishiun at Owode Egba as the depot where cola is been collected. Cola marketers were randomly selected and a total of 120 questionnaires were administered to the randomly selected marketers that majored in the sales of colanuts in the study Area.

1.2 Data Analysis

Descriptive statistics was used to present and describe the demographic relationships that exist in the markets. Cost and Return analysis was used to determine the economic contribution. Rate of returns on investment (ROI) was used to determine the profitability of trade.

Market margin: Average market margins
FC= Rent + Tax+…….
VC= Cost price + Transport +.....
TC = TFC +TFC
TR= Total Revenue
NI = TR-TC

$$ROI = \frac{profit}{TC} \times \frac{100}{1}$$

Market margin = SP-CP

Note: TR: Total revenue; TC: Total cost; FC: Fixed cost; VC: Variable cost; TVC: Total variable cost; TFC: Total fixed cost; NI: Net income (profit); ROI: Rate of return on investment; MM: Market margin; SP: Selling price; CP: Cost price

2 Results

Table 1 shows socio-demographic characteristics of respondents as they are essential and fundamental framework of the analysis of study. It includes sex, age, and educational level etc expected to affect the income level of the respondent.

3 Discussions

In all the markets surveyed, the real and potential value of cola nut cannot be over emphasized although it remained grouped as a minor product from the forest within this locality. It is often associated with various uses which can be grouped under traditional, cultural and medicinal value. The mean utilization value reveals that 20.25% uses is for naming, 18.5% for freedom, 24.5% for wedding, 24.5%, house-warming 11%, stimulant 7.5%, rituals 19% and consumption 23.25%.The different purposes derived from the nut, most especially other parts are not widely known, although this depends greatly on location.

Table 1 Socio-demographic characteristics of the respondent

	Frequency					
	Ishiun	Lafenwa	Kuto	Iberekodo	Total	Percentage (%)
Gender						
Female	28	29	24	25	106	88.33
Male	12	1	1	0	14	11.67
Total	40	30	25	25	120	100.00
Age group						
> 25	1	1	0	0	2	1.67
26-35	8	8	2	2	20	16.67
36-45	10	9	5	11	35	29.17
>45	21	12	18	12	63	52.50
Total	40	30	35	25	120	100.00
Tribe						
Yoruba	28	30	25	25	108	90.00
Hausa	12	0	0	0	12	10.00
Igbo	0	0	0	0	0	0.00
Total	40	30	25	25	120	100.00
Marital status						
Single	0	0	0	0	0	0.00
Married	40	30	25	25	120	100.00
Total	40	30	25	25	120	100.00
Educational level						
No forma	27	11	16	18	62	51.67
Primary	12	9	8	6	35	29.17
Secondary	0	10	1	1	12	10.00
Tertiary	1	0	0	0	1	0.83
Total	40	30	25	25	120	100.00
Occupation status						
Part time	21	21	19	8	69	57.50
Full time	19	9	6	17	51	42.50
Total	40	30	25	25	120	100.00
Family size						
0-2	15	13	0	3	31	25.83
3-4	18	9	19	16	62	51.67
>5	7	8	6	6	27	22.50
Total	40	3	25	25	12	100.00
Years of experience						
1-10	5	7	5	1	18	15.00
11-20	23	10	7	7	47	39.17
21-30	4	7	8	10	29	24.17
31-40	4	6	5	6	21	17.50
>41	40	30	25	1	5	4.17
Total	40	30	25	25	120	100.00
Status of sale						
Wholesale	35	5	1	1	42	35.00
Retailer	5	25	24	24	78	65.00
Total	40	30	25	25	120	100.00
Problems/challenges of business						
Insect attack	30	13	12	9	64	53.33
Heat	11	18	16	17	62	51.67
Transportation	24	14	21	14	63	52.5

Table 2 Rate of Return on Investment (ROI) in all the markets

Rate of return (%)	Markets
33.24	Ishiun
35.96	Lafenwa
33.17	Kuto
26.54	Iberekodo

Table 3 Profitability of the average cola specie seller per month in all the markets

Markets Revenue	Ishiun	Lafenwa	Kuto	Iberekodo
Total Revenue	13 200	32 907	19 548	14 912
Total Cost	9 907	24 204	14 679	11 784
Profit	3 293	8 703	4 869	3 127

Table 4 Average plant's parts use

		Markets					
Plant's Part	Uses	Ishi	Laf	Kut	Ibe	Total	Percentage (%)
Leaves	Food	19	18	10	8	55	45.83
	Concoction	25	27	20	11	83	69.17
	Wrapper	15	12	17	5	49	40.83
Bark	Concoction	22	14	19	21	76	63.33
	Cordage	18	16	6	4	44	36.67
Root	Concoction	21	21	8	7	57	47.50
Stem	Chewing stick	17	21	6	12	56	46.67
	Firewood	25	25	19	22	91	75.83
Pod	Feed	12	10	4	4	30	25.00
Filmcoverage	Consumption	11	5	4	6	27	22.50
Others	Drink	30	23	16	22	91	75.83
	Dye	40	30	25	22	117	97.50
	Syrup	7	11	7	10	35	29.16

Table 5 Uses of different plant's parts

Plant's parts	Uses
Leaves	Tonic for diahorrea remedies, wrapper for cooked pap
Stem	Chewing sticks with medicinal value for teeth and gums, fuelwood for domestic purposes
Extract	*Cola nitida* bark extract can be used to inhibit the growth of pathogenic bacteria
Pod	The pod of *Cola nitida* can be used to feed ruminant animals, poultry and snails also confirmed by Hamzat et al (2002)
Bark	Can be used as fertility regulator, relieve diahorea, nausea and heal wound
Timber	The wood can be used in construction industry e.g. houses, boat and images
Root	To clean teeth and sweeten breath
Nut	It is chewed as stimulant, aphrodisiac and healing qualities. Extracts are found in energy drinks and anti-depressant, they are also thought to reduce hunger, aid digestion, and elevation of body temperature, increases blood pressure and respiratory rate and to treat whooping cough. It can be processed into dye which is used in indigenous garment industry, body art and as an ingredient for cosmetics.
Film coverage	Feed supplement for animal

Table 6 Average rate of return and mean for all markets per month

	CP (₦)	SP (₦)	TRSP (₦)	Tax (₦)	Rent (₦)	TVC (₦)	TFC (₦)	TC (₦)	TR (₦)	Profit (₦)	ROI (%) (₦)
Ishiun	9 750	13 200	47.625	40.5	68.5	9 797	109	9 907	13 200	3 293	33.24
Lafenwa	23 587	32 907	232.00	53.5	331.67	23 819	385	24 204	32 907	8 703	35.96
Kuto	13 638	19 548	727.20	87.2	205.8	14 386	293	14 679	19 548	4 869	33.17
Iberekodo	11 520	14 912	108.80	40.0	116.0	11 629	156	11 784	14 912	3 127	26.54
Total	58 495	80 567	1 115.63	221.2	721.97	59 631	934	60 573	80 557	19 993	128.90
Mean	14 624	20 142	278.906	55.3	180.49	14 908	236	15 144	20 142	4 998	32.23

Transactions largely take place in small scale units of which 35% are wholesalers and 65% are retailers. The market operation is seasonal and transaction are more pronounced during the fruiting season, for this reasons it is often overlooked and various local uses go unrecorded. The different constrains experienced by marketers are majorly storage of which insects accounted for 53.33%, heat 51.77% and transportation 52.5%. Majority of the respondents have no formal education constituting 51.67% of the total respondents this hinders the sustainable use and adoption of information available to bring about improvement which somehow compounded losses in the business. It is obvious that environmental and economic viability depends on the nature of harvesting and processing techniques employed as also revealed by (Falconner, 1990). In light of this, all the respondents were involved in wide range of primary process such as soaking in water for several days, exposing the nut to fresh air to dry the moisture content and packaging.

In all the market, women tend to get more heavily involved than men in the trade. Women were 88.3% and male 11.67%. This is due to the fact that activities related to its collection and primary processing tends to be gender biased. Although as market demands for product increases, the size of men often displaces women in certain aspect of the activity as revealed by Kainer et al (1992). The trade is mostly common among the poor household and indigenous communities which tend to be benefactors as an opportunity for additional employment and income even when they are involved in other enterprise with 35% as part- time and 65% full-time traders. This is in contradiction to Carr et al (2000) that it is often undertaken as part-time activity which makes them receives a low returns and makes them more vulnerable to competition as confirmed in (Falconer, 1992). The study also reveals the mean rate of return on investment (ROI) for all the market to be 32.23% which is in accordance to the estimated value that rural non-farm work provides 20%~45% of full-time employment in the rural area and 30%~50% of rural household income (Kilby and leidhoim, 1986, Haggblade and hazel, 1989).

Furthermore, because of the difficulties in compliance with the cooperative organisation (association of marketers), irregularities in price places consumers at the mercies of intermediary's. In consequence, local markets play an important role in household income for selling the product. Urbanization also is an important factor that expands the size of local markets because it creates increase in demand that is the inhabitant has to purchase more during festivals and other related activities. These was visible in the profit obtained in the various market Ishiun ₦3293.375, Lafenwa ₦8702.83, Kuto ₦4869.40, Iberekodo ₦3127.20. Lafenwa has the highest profit as a result of closeness to the people. The trader do not always deal with a single product, there is diversity and if necessary to cross-subsidies among different related products such as Garcina cola, honey etc. which means the profit obtained by selling products can be used to support other activities (purchase, storage and processing) in other to cope with the seasonality and fluctuations of marketing the products (Harris, 1993).

Therefore Colanut played significant role in rural livelihood importance; the tree can be-termed a magic tree with different uses, all the components in terms of the pod, nut, leaves, bark, stem, wood etc are vital raw material. Industrially it is a good source of essential vital chemicals used mostly in confectionary industries; it is used as dye stabilizer and beverage production like coca-cola. Culturally it is used for rituals which play important roles in religious affair. It also contains some nutritive value which can sustain life for some time even if no food is taken. The transport condition and storage facility are the biggest hindrances as mentioned earlier to the expansion of market. Most people reveal that there is no problem associated with the extraction which has 100% record, but that market expansion have been greatly affected by variability in the season and literacy, more so the longer years it takes tree to mature which is considered as capital tie down.

Based on the various facts obtained there is considerable economic potential from these two cola species, they contribute immensely to the household income although only a portion due to diversity in sales with other related products. Therefore, its importance as a commercial product under sustainable management is

reasonable. A quality control measures need to be developed to enable traders sell nut of consistent quality which is able to attract premium prices.

Cola processing activities and trade require good organization at all levels of trade should be in place to reduce variability in price. The government should therefore assist in research information with improved hybrid and also to develop the transportation network to the interior rural areas where the products are purchased. It should be noted that there will be difficulty in bringing innovation to the traders based on the level of education but not withstanding sustainable information should be made available in its simplest forms coupled with much persuasion. Regularity in tax by government should be adopted to alleviate the trader's fear, also appropriate storage methods should be introduced to ensure that cola nuts are available throughout the year and do not deteriorate in storage. This will ensure that traders will be able to store their crop so as to command better prices and sustained income.

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