Journal of Economics and Sustainable Development
ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online)
Vol.4, No.5, 2013

Economic Analysis of Cane Furniture Production in Rivers State, Nigeria

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Abstract

Cane furniture business has provided support for households for decades in the tropical rainforest regions due to the utilization, aesthetic and durability of its products. This study evaluates the viability of the enterprise among cane furniture producers in Eleme, Obio Akpor, Oyigbo and Port Harcourt city Local Government Areas (LGA) of Rivers State, Nigeria. Data obtained from the randomly administered questionnaires were analyzed using net income to assess the profitability of the enterprise. Benefit cost analysis was used to determine the viability of the enterprise while Rate of Returns on Investment (RORI) was calculated to determine the rate at which the money invested on the enterprise could be realized. Results revealed that cane furniture production is profitable in all the four (4) LGAs assessed. Mean profit margins over three years were lower in Eleme (₦225,933.00) and Port Harcourt (₦170,334.00) LGAs because the entrepreneurs were mainly on part time production, while producers in Obio Akpor (₦1,621,386.00) and Oyigbo (₦1,061,219.00) LGAs had higher profits because they operate on full time basis. Computed RORI showed that the enterprise is worthwhile in the area, with 210.72%, 182.72%, 66.32% and 29.82% in Obio Akpor, Oyigbo, Eleme and Port Harcourt city respectively. Also benefit cost analysis showed viability of the business. Majority of cane furniture producers were males (98.75%) and mostly middle-aged individuals between 20 and 49 years old. Awareness of the prospects in the business will create job opportunities for the teeming population; investment in cane furniture production is capable of generating good income for households. Incentives in form of improved and affordable tools from poverty alleviation agencies are recommended as panacea for higher profits in cane furniture production.

Keywords: Cane furniture, profitability, RORI, Rattan, Nigeria**.**

1. Introduction

Non Timber forest products (NTFPs) play significant roles in livelihood sustenance especially in rural communities of sub - Sahara Africa. Over centuries, people in developing tropical regions globally have relied on forest products for food, medicine and shelter. Several thousands of people depend on harvesting, processing and sale of rattan alone in Cameroon for livelihood sustenance (Dione *et al*., 2000). The forests are of great importance for socio-economic development of the rural areas in developing countries. In addition to wood products, they are a major source of fodder, protein, fruits, gums, resins, dyes, bamboo, rattans, mushrooms, medicinal plants and many other NTFPs. Rattans, being important NTFP play a significant role in the international market place with over US $6.5 billion annual trade (Oteng-Amoako and Obiri-Darko, 2002**)**. Although many NTFPs including rattans are collected on a local level by peasant rural households (Sunderland, 2001), some have been successfully domesticated for large scale production, (Tesoro, 2002).

Rattans or Canes are the stems of climbing palms which belong to the family Palmae. It is widely distributed in wetlands of the tropical rainforest ecosystems of West Africa and Asia, (Uhl and Dransfield, 1987). The most important commercial canes come from the genus *Calamus, Eremospatha,* and *Laccosperma.* Most rattans differ from other palms in having slender stems, 2cm – 5cm diameter, with long internodes between the leaves, also they are not trees but are vine-like, scrambling through and over other vegetation. It also grows much faster than most tropical wood, has light weight, durable and to a certain extent-flexible, (Mabberley, 1997).

Adewole and Onilude (2011) reported abundance of rattan in the Niger Delta regions of Nigeria including Rivers State. Rattans are much easier to harvest, transport and process for immediate income. It can also be an important and rewarding off farm activity for subsistence farming communities among the rural populations of developing countries especially in sub-Sahara Africa.

Rattan-based economic activities are an intrinsic part of both rural and urban life in southern Nigeria. The importance of rattan in the predominantly agricultural economy, and in particular in the rural economy of southern Nigeria, is widely acknowledged, (Sunderland, 2001). Raw rattan and cane products enjoy high patronage among farmers, artisans, and informal sector enterprises and small businesses, especially for furniture, handicrafts, building and stall construction, and for several other domestic uses, including traps for artisanal fishing.

Rattan-based enterprises are an important source of employment for both the rural and urban residents. According to FOS (1999), the agriculture and forestry sector accounted for about 60% (18.9 million) of total gainful employment in Nigeria in 1998. However, the share of rattan and cane products is negligible and barely above zero in the estimated contribution of agriculture and forestry to the gross domestic products. This is because most rattan operations are carried out without any form of mechanization and without following standard processing procedures for the products to meet export standard (Ogunwusi, 2012). At present cane furniture is experiencing boom and providing job opportunities for the teeming population in Nigeria, more and more young people are venturing into the cane craft, spurring markets especially dedicated to the sale of cane items such as Maryland cane furniture market in Lagos.

Rattan cane can be crafted into numerous products like baskets, tray, kitchen cabinet, dining table, flower vase, chair, bed, table, lampshades, designer chair, book shelves, souvenirs and sofa-set. It can be used to produce iron chair when combine with metal or glass.

Cane furniture can be aesthetically pleasing, fits overall interior design scheme and also last for longer period. This type of furniture is considered as ideal as it can bear toughest weather conditions and is water resistant. Hence, cane furniture can easily be used for the outdoor usage like garden and conservatory. This study investigates the profitability and viability of rattan cane industry in Rivers State, Nigeria to elucidate its contribution to household income in urban and peri-urban set up.

2. Methodology

2.1 Study area

Rivers State is situated between latitudes $4^{0}45^{1}$N and longitudes $6^{0}50^{1}$E East of Greenwich Meridian in the south-south region of Nigeria. The state is bounded on the North by Imo State, on the south by the Atlantic Ocean, on the East by Abia and Akwa Ibom States and on the West by Bayelsa and Delta States, (Fig. 1). The inland part of the state consists of tropical freshwater rainforest vegetation and mangrove swamp towards the coast. It is made up of various ethnic groups, such as, Ekpeye, Ikwerre, Etche, Ogoni, Kalabari and Okirika. The people are largely engaged in peasant and subsistence farming, fishing and trading. Port Harcourt, the administrative headquarters is a cosmopolitan city and has witnessed the influx of professionals of different nationals due to exploration of crude oil and associated industries. All these activities led to high population and urbanization, the population of the state was 5,198,716 during the 2006 census, (FGN, 2009)

2.2 Data Collection and analysis

A reconnaissance survey of cane furniture producers and marketers in the state was carried out to identify cane production sites in the state, Four (4) out of Eight (8) Local Government Areas (LGA) of the state that have cane furniture enterprise were selected through the use of simple random sampling technique. Selected LGA comprised of Eleme, Oyigbo, Obia Akpor and Port Harcourt city. Twenty (20) cane furniture producers were randomly selected for interview in each of the LGAs for data collection through the use of structured and open

ended questionnaires. Questions were interpreted to the respondents in Pidgin English (a variant of Nigerian English) for proper understanding and responses adequately recorded for analysis.

Net Income was used to evaluate the profit level of cane furniture enterprise.

Net Income (NI): Gross income (GI) less Gross cost (GC)

Mathematically: NI = GI – GC…… Equation 1

Cost-benefit Analysis was used to establish the viability of the enterprises. This is a technique that allows project evaluators and entrepreneurs to determine whether benefits exceed costs for a given project or enterprise when monetary values are assigned to costs and benefits.

$$B/C = \frac{\sum_{t=0}^{t=n} \frac{R_t}{(1+r)^t}}{\sum_{t=0}^{t=n} \frac{C_t}{(1+r)^t}} \quad \text{…… . Equation 2}$$

Where R_t = revenue over time t, C_t = cost over time t, r = discount rate, l = constant, t ≤ 3 years.

Rate of Returns on Investment (RORI): This was calculated to determine the rate at which the money invested on the enterprises could be realised. This measures the rate at which the invested capital could be recouped.

$$\text{RORI} = \frac{TR - TC}{TC} X \frac{100}{1} \quad \text{…… ….. Equation 3}$$

Where: TR = Total Revenue, TC = Total Cost.

3.0 Results

Demographic characters of cane furniture producers in the selected LGAs of Rivers State are presented in (Table 1). Cane furniture producers were mostly males (98.75%), their age range between 40 - 49 years (58.75%) and 30-39 years (26.25%) in most cases. Average family sizes of the respondents were relatively large comprising 4 - 6 individuals (55.00%), households with extremely large numbers of people - above 10 were few (3.75%). Educational status of cane furniture producers showed that 77.50% of respondents attained secondary school level, while 18.75% stopped at primary (elementary) school stage, only few (3.75%) did not experience formal education at any level.

In all the LGAs surveyed, profitability analysis showed that cane furniture production is a profitable enterprise in Rivers State, (Table 2). Mean profit levels were highest at Obio Akpor LGA (₦1,621,386.00) and least at Port Harcourt LGA (₦170,334.00) for the duration of three years studied.

Benefit – Cost ratio showed viability of cane furniture enterprise, Net Present Value and RORI were positive and relatively high in the four LGAs. The picture of economic indices for cane furniture production in the study area is presented in (Table 3). An enterprise with benefit-cost ratio greater than one (1) and positive net present value is considered viable.

4.0 Discussions

Furniture is one of the most important accessories in the house because it adds style and elegance. Utilization of cane furniture cut across all classes of the population, hence cane furniture markets exist in rural and urban centres of Nigeria. Cane furniture production provides economic support for several poor families in terms of employment and family income especially in the tropical rainforest region of sub-Sahara West Africa and south-east Asia. Producers of cane furniture in Rivers state are mainly males, aged between 30 – 49 years (Table 1). Collection of rattan in the swampy forest and the processing into different products are usually tedious and require physical strength. Harvesting of some NTFPs such as Raphia wine and chewing sticks, have been observed to be mostly done by men in Nigeria, (Aiyeloja *et al*., 2012). A good percentage of the respondents attained secondary education (77.5%) and are gainfully engaged by cane furniture industry in the study area, this

has helped job creation, reduce rural urban migration and improved household income, (Theophile, 1996). Though the trade may seem not dignifying enough, the proceeds therein surpasses income from white collar job accruable to people with equivalent qualifications. In all the LGAs studied (Table 2), the enterprise revealed to be rewarding financially in a deregulated economy such as Nigeria, profit margin over three years was highest among cane producers in Obio Akpor (₦1, 621,386.00, approximately USD $10,809.24), cane producers on part time in Eleme made (₦225, 933.00, approximately USD $1,506.22) aside their normal routine jobs such as commercial driving, artisans and petty trading. Similar work in Ghana showed that local processing and sale of rattan products was observed to yield between 20 – 50% profits (Oteng – Amoako *et al*., 2000). Most NTFPs trade such as rattan cane seems financially viable because cost of nurturing the species to maturity (production) are usually not considered in the production cost but only collection and processing cost are always the focus. A good example is Cameroon, where rattan is considered an 'open-access' resource that can be collected from wild forests (Sunderland, 1998), very few traditional laws regulates its harvest and state control often does not adequately monitor the exploitation of the resource, (Kwaku, 2006). In most cases NTFPs are collected from community/family lands in southern Nigeria where land tenure is mainly through inheritance, market prices only reflect cost of collection and processing. Rattan production is more profitable in Oyigbo and Obio Akpor because the producers are on full-time and products' marketing has high commercial status in the area, (Edafe, 2008), FAO (2000) also observed that Market demand for rattan furniture is growing in Africa and Asia.

Benefit – Cost ratio showed viability in the four LGAs (Table 3) with highest value in Oyigbo (B/C = 2.45) and least in Eleme (B/C = 1.14). Olugbenga (2002), noted cane furniture production in Rivers state could be lucrative and rewarding if properly managed. RORI of the enterprise showed that money invested in production of cane furniture in the study area could be recouped at minimum of 29.82% (Port Harcourt city) and maximum of 210.72% (Obio Akpor). If funds are sourced from financial agencies within the reach of rural inhabitants such as Cooperative Societies, Community Banks and Agricultural Development Banks, there are prospects that the business will yield a good return for loan repayment in scheduled period. Trade in rattan and other NTFPs have been observed to be profitable and capable of supporting family income in developing countries such as Nigeria, Ghana, Cameroun and Philippines (Oteng-Amoako, *et al*., 2000, Ogunwusi, 2012).

5.0 Conclusions

Rattan is an important NTFP of the rainforest regions of West-Africa and plays an integral part in indigenous subsistence uses. Nigeria is endowed with human capacity and wild rattan resources; commercial rattan and crafts production potentials could improve the quality of life, incomes of subsistent forest based communities and alleviate household poverty. Large numbers of informal workers in the crafts business could be trained to improve their skills. Assistance is required in value-added processing, local and international marketing of their products. Concerned agencies and government departments are encouraged to sensitize and motivate unemployed youths to take good advantage of this important NTFP in the fresh water rainforest and swamp forest of Rivers state for self-employment and poverty reduction.

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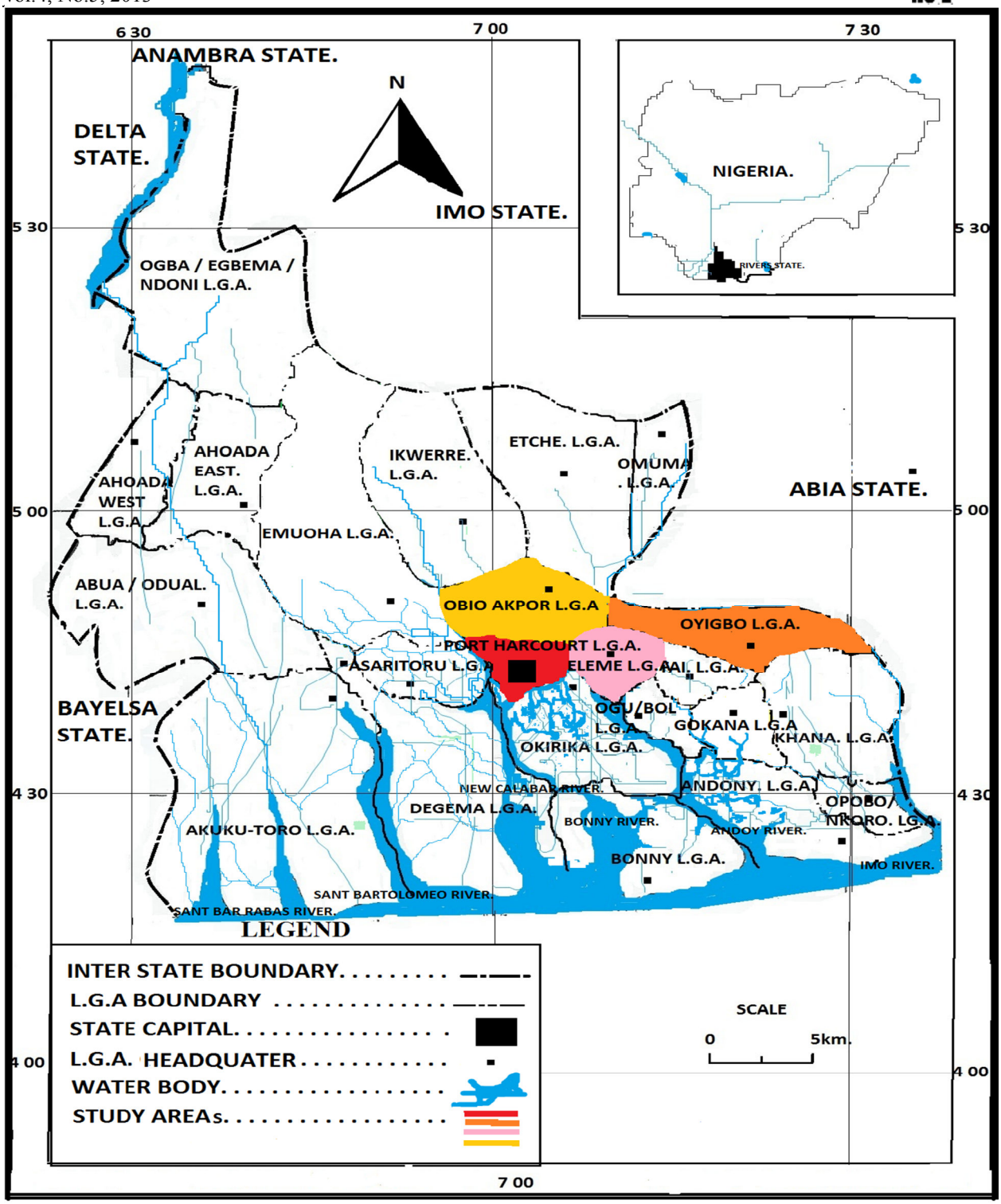

Fig 1: Map of Rivers State showing the research area, Source: Field survey, 2011.

Table 1: Demographic Characteristics of Cane Furniture Producers in Four LGAs of Rivers State

Demographic features	**Eleme**		**Oyigbo**		**Obia Akpor**		**Port Harcourt**		**Total**	
Sex	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
Male	20	100	20	100.0	20	100.0	19	95.0	79	98.75
Female	-	-	-	-	-	-	1	5.0	1	2.25
Total	**20**	**100**	**20**	**100.0**	**20**	**100.0**	**20**	**100**	**80**	**100.0**
Age (Years)										
Age 20-29	2	10.0	1	5.0	4	20.0	2	10.0	9	11.25
Age 30-39	10	50.0	5	25.0	5	25.0	1	5.0	21	26.25
Age 40-49	6	30.0	13	65.0	11	55.0	17	85.0	47	58.75
Above 50	2	10.0	1	5.0	-	-	-	-	3	3.75
Total	**20**	**100**	**20**	**100**	**20**	**100.0**	**20**	**100.0**	**80**	**100.0**
Marital status										
Married	14	60.0	20	100.0	9	45.0	20	100.0	63	78.75
Single	6	30.0	-	-	11	55.0	-	-	17	21.25
Total	**20**	**100.0**	**20**	**100.0**	**20**	**100.0**	**20**	**100.0**	**80**	**100.0**
Family size										
Family Size 1-3	8	40.0	3	15.0	2	10.0	1	5.0	14	31.82
Family Size 4-6	9	45.0	12	60.0	12	60.0	11	55.0	44	55.00
Family Size 7-9	3	15.0	3	15.0	6	30.0	7	35.0	19	23.75
Family Size 10 & Above	-	-	2	10.0	-	-	1	5.0	3	3.75
Total	**20**	**100.0**	**20**	**100.0**	**20**	**100.0**	**20**	**100.0**	**80**	**100.0**
Educational qualification										
Non-Formal Educ.	1	5.0	-	-	1	5.0	1	5.0	3	3.75
Primary School	5	20.0	4	20.0	3	15.0	3	15.0	15	18.75
Secondary School	14	70.0	16	80.0	16	80.0	16	80.0	62	77.50
Total	**20**	**100.0**	**20**	**100.0**	**20**	**100**	**20**	**100.0**	**80**	**100.0**

Source: Field Survey, 2011.

Table 2: Cost and Benefit of cane furniture production in Rivers state (2009-2011)

	Eleme (₦)		Oyigbo		Obio Akpor		Port Harcourt	
Year	**Cost (₦)**	**Benefit (₦)**	**Cost (₦)**	**Benefit (₦)**	**Cost (₦)**	**Benefit (₦)**	**Cost (₦)**	**Benefit (₦)**
2009	100192.5	141937.5	170820	452355	226305	602595	168030	207540
2010	106872	151400	182208	482512	241392	642768	179232	221376
2011	133590	189250	227760	603140	301740	803460	224040	276720
Apprentice fee	-	84000	-	104000	-	342000	-	36000
Total	**340654.5**	**566587.5**	**580788.0**	**1642007.0**	**769437.0**	**2390823.0**	**571302.0**	**741636.0**
Profit margin	**-**	**225933.0**	**-**	**1061219.0**	**-**	**1621386.0**	**-**	**170334.0**
Discounted Cost/Benefit	**22550.7**	**25724.2**	**38447.1**	**94109.7**	**50935.3**	**110295.2**	**37819.1**	**44045.2**

Source: Field Survey, 2011. Standard discount rate $\{(1 + r)^t\}$ = 0.8772, 0.7695 and 0.675 for 2009, 2010 and 2011 respectively being the approved rate by CBN. 1USD = ₦150.0

Table 3: Benefit cost ratio, NPV and RORI of cane furniture production in Rivers State, Nigeria

LGA	Benefit Cost Ratio	NPV (₦)	RORI (%)
Eleme	1.14	3173.49	66.32
Oyigbo	2.45	55662.52	182.72
Obio Akpor	2.17	59359.78	210.72
Port Harcourt	1.16	6226.01	29.82

Note – Discounted rate is $(1+r)^t$; r = 14% (CBN discounted rate for agricultural products), and t = time (3years). Source: Field Survey, 2011.

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