Analysis of *Rhizophora Racemosa L* Plant Business among Rural Dwellers in Southern Nigeria

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Abstract

The study was designed to identify the constraints to *Rhizophora Racemosa* business among rural dwellers in Southern Nigeria. Sub objectives were to; identify the socio-economic characteristics of traders; ascertain influence of socio economic characteristics and growth of the business and determine the constraints to the business. Structured copies of questionnaire and interview schedule were utilized to elicit information from a sample of sixty (60) respondents. Collected primary data were analyzed using descriptive statistics regression and factor analysis. Results revealed that elder people above the reproductive age (40%), illiterates (63.6%) and females (78.2%) dominated the business. There was a direct significant relationship between growth of *Rhizophora racemosa* and age (t=2.14), education (t=2.07), income (t=2.01) and years of experience (t=2.02). The processing efficiency of the production of 5 baskets was 1.79 which indicated a profitable business. Identified constraints include, lack of funds and absence of government support also affected the profitability of the business. It was concluded that government support in form of loans would increase the level of production.

Keywords: Constraints, *Rhizophora racemosa*, business, rural dwellers

1.Introduction

Rhizophora, meaning root bearing in Greek because of the presence of stilt root are amongst the most conspicuous of the trees inhabiting mangrove swamps, always growing at the edge of the water and disappearing as soon as the mud is converted into reasonably dry land (Keay, 1989). There are three species represented in Nigeria (Rivers State); they are *Rhizophora racemosa, Rhizophora mangle* and *Rhizophora harrisonii*. According to Kabii and Spensar (1996) *Rhizophora racemosa* is the most commonest and largest of the three species. It colonizes the mud on the other most fringe of vegetation between high and low tide. The plant can grow up to 40m high and 2.5m in girth in favourable conditions but often forming shrubby tangles up to 10m high, with stilt roots and slender aerial roots hanging down from high up. The leaves of *Rhizophora racemosa* are 7.5-15cm long by 2.5-6cm broad tapering to the bluntly pointed apex, narrowly cuneate: stalk stout, up to 2.5cm long.

Rhizophora racemosa is a reddish and very hard wood. Some of the local names for it are as follows: Yoruba: Ogba; Edo; Odonowe; Itsekiri; Odo; Urhobo: Urhe Nwerim; Ijaw: Agala; Igbo: ngala and Efik and Ibibio: nonung. *Rhizophora mangle* grows in a firmer and peatier soil on the landward side of a mangrove zone in West Africa and seldom attain a height of more than 15ft (Wall and Reid, 1993). The leaves are distinctive with abundant small corky warts on the under-surface. The third species *Rhizophora harrizonii* inhabits the middle belt of the mangrove forest, seldom competing with *Rhizophora racemosa* at the water edge. It can be distinguished by the longer, more slender and less compact inflorescences. The leaves of *R. harrisonii* are similar to those of other species unless that the mid-rib of *R. harrisonii* is being distinctively reddish.

The benefits derived from the use of *Rhizophora* are enormous and can be viewed from different aspects in relation to its usages; such as the stem, bark and root. Inyang (2000) described *Rhizophora racemosa* as a very durable plant hence its usage for different purposes. The stem serves as a suitable material for building construction. It is used as support poles during casting, ceiling support and also as fences and walls of the corners of local houses because they rarely die and they give strength to the houses. The roots are used to make different local products some of the products include: basket, fish traps, fish racket among others (Giwa & Okeke, 1986).

The rate of investment in the plant (*Rhizophora racemosa*) has not been encouraging over the years in Rivers State, despite the enormous investment potentials to it. This could be attributed to a number of factors; the poor state of the Nigerian economy and the over increasing rate of fund for business start-ups coupled with lack of awareness of the investment potential of the plant. The socio-economic wellbeing of a people is very important and this cannot be over emphasized. Government all over the world is giving particular attention to rural dwellers with emphasis on

their socio-economic development. The Nigeria government in an attempt to achieve the above aim, has in the last decade intensified effort aimed at initiating programmes such as rural electrification roads among others. However, not much has been done in encouraging rural dwellers to improve their social and economic development through the use of their local resources. It is therefore necessary to find out if there are people engaged in the utilization of the plant? What products are made from the plant- *rhizophora racemosa*? What are the challenges faced by the traders engaged in the *Rhizophora racemosa* plant as a source of livelihood.

2.Purpose of the Study
The study was designed to find out in detail the constraints to *Rhizophora racemosa* business in southern Nigeria. Specifically, the study was designed to:
1) identify the socio-economic characteristics of *rhizophora racemosa* traders;
2) ascertain influence of socio-economic characteristics of the respondents on the growth of *rhizophora racemosa* business ;
3) determine the cost and returns of *R. racemosa* ; and
4) find the major constraints to the growth of the *rhizophora racemosa* business.

3.Methodology
The study area was carried out in Rivers State, Nigeria. Rivers State is in the tropical mangrove swamp and rain forest zone of the nation. The mangrove swamp belt diminishes from the coast northwards giving way to thick rain forest that has become secondary forest in some places. It is made up of twenty-three local government areas (LGAs.) Sixteen of these are predominantly upland areas while seven are predominantly riverine areas. Two riverine LGAs were randomly selected-Degema and Akuku-toru LGAs. The two LGAs are made up of seven communities each. Degema LGA has: Bakana, Degema, Tombia, Bukuma , Bikana, Bille and Ifoko while Akuku-toru has: Abonnema, Abisse, Idama, Kula, Sangama, Obonnoma and Soku town communities'. Six communities were randomly selected-three from each LGA. A proportionate sampling technique was employed to select sixty (60) respondents for the study. A structured copy of questionnaire and interview schedule was used in obtaining relevant information from the respondents. The variables considered under the socio economic characteristics of the respondents included: age, gender, marital status, educational level, years of business experience and income level. Three main analytical methods were employed to analyze data. They include; descriptive statistics, regression and factor analysis. Budgetary technique was utilized to determine costs and returns accruing to each of the traders. According to Alimi and Manyony (2002), a budget is the quantitative expression of total farm plan summarizing income, cost and profit (residue of total cost from total revenue).Gross margin is the difference between TR and TVC
Budgetary technique
NP= GR-TPC=GM-TFC;
GM=GR-TVC;
GR=Q.P;
TPC=TFC-TVC
where; GR=Gross Revenue;
GM=Gross Margin;
TR=Total Revenue;
Q=Quantity;
P=Price/unit of output;
NP=Net Profit;
TPC= Total Production cost;
TFC= Total Fixed Cost and
TVC=Total Variable Cost.
Multiple regression analysis was employed in ascertaining the relationship between *rhizophora racemosa* business growth (dependent variable) and the socio-economic characteristics (independent variable) by the equation: $y = a + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + b_6 x_6 + e$

Where y = business growth, a = intercept, b_1-b_6 = regression
Coefficients: x_1 = age, x_2 = gender, x_3 = marital status, x_4 = educational level, x_5 = income, x_6 = years in business and e = error term. For factor analysis, variables with loadings of 0.03 and above was used in running the factors (Avwokeni, 2007) while factor mean values of 1.0 was used to determine the degree of acceptability. The response

options and values assigned were as follows: Great constraint (GC) = 2; Little constraint (LC) = 1 Not a constraint (NC) = O, Nine major constraints variables to business identified by Chukuigwe *et al* (2008) were adopted and used for the study. A varimax rooted factor matrix was then employed to identify the most important constraints to the business. Acceptance scores were calculated by using 0.03. Any variable up to 0.03 or above was considered a constraint while the variables below 0.03 were considered not a constraint.

4.Results and Discussion

4.1 Socio-economic characteristics: The study showed that majority (78.2%) of the respondents was females showing that the *rhizophora racemosa* business favoured mostly females (Table 1). A higher percent (40%) of the respondents were aged between (51-60) years. This means the respondents were old people who were no longer active or reproductive in the system and this would influence their attitude toward the business

With regard to education, 63.6% of the respondents had no education. The implication is that *rhizophora racemosa* was dominated by illiterates in the study area who would find it difficult to learn new technologies thereby leading to low productivity of the product in the study area.

Research results revealed that 45.5% of the respondents had 9-11 years *rhizophora racemosa* business experience. This showed that *rhizophora racemosa* business had been long in the study area. The study further revealed that a higher percentage (56.4%) had an average income range of ₦20, 000 – ₦ 25,000. This showed that the income accrued from the business was high enough for them to take care of their family.

Table 1: Percentage distribution of respondents according to their socio-economic characteristics

Variables	Percentage (%)	Mean
Age		
21 – 30	18.2	
31-40	14.5	
41-50	10.9	
51-60	40.0	
61-70	16.4	
Total	100.0	48yrs
Sex		
Male	21.8	
Female	78.2	
Total	100.0	
Marital Status		
Married	42.8	
Single	14.2	
Divorced/Separated	34.7	
Widow/Widower	18.3	
Total	100.0	
Educational Level		
No formal education	32.7	
Primary school dropout	63.6	
	9.1	
Primary school completed	18.2	
Secondary school completed	5.5	
Secondary school dropout	100.0	
Total		
Income level(₦,000)		
5,000 – 10,000	3.6	

10,000 – 15,000	12.5	
15,000 – 20,000	16.4	
20,000 – 25,000	56.6	
Total	100.0	117.73

Years of business(yrs)		
0-2	14.5	
3-5	10.9	
6-8	29.1	
9-11	45.5	
Total	100.0	6yrs

4.2 Relationship between the socio-economic characteristics of respondents and *rhizophora racemosa* business
 Table 2 shows the multiple regression of the relationship between the socio-economic characteristics of the respondent (age, sex, marital status, educational level, income level and years in business) and *rhizophora racamosa* business. The result shows that four (4) independent variables – age (t=2.14), education (t=2.07), income (t=2.01) and years of experience (t=2.02) were significant at 0.05. The estimated value of *rhizophora racemosa* business (Y) is shown as follows: *Rhizophora racemosa*(Y)= $3.61-O.03x_1+ 0.02x_2+0.08x_3+0.06x_4-0.05x_5$

The age was correlated with the business because youths, who were active, vibrate and full of energy would produce more and benefit more from the business. Okolo (2004) noted that age is considered as an important variable because of its influence on people's attitude, skill and aspiration.   Another significant variable was education. The more literate the respondents were, the more likely they would be able to improve on the business. According to Onu (1991) education enhances behavioural change (knowledge, skill, attitude and aspiration) because it informs and leads to the understanding of complex materials and value and use of innovations. Also, the years of experience in the business showed a positive relationship with the *rhizophora racemosa* business. When a person is involved or does something over and over for a long period of time, the person becomes perfected in that process technically and mentally and this would affect the productivity of that product. Income had a positive correlation with the business. When the income of the respondents is high, there will be the willingness for them to invest in the business in order to increase productivity and profit.

Table 2: Multiple regression analysis on the relationship between socio-economic variables and *rhizophora racemosa* business

Independent variables	Coefficient	T- value	f-ratio	R^2 (adj)
Constant	3.61(0.25)	11.14*	3.01	0.67
Age	-0.03(0.01)	-2.14*		
Marital status	-0.05(0.03)	0.65		
Education	0.02(0.03)	2.07*		
Income level	0.08(0.04)	2.01*		
Years of experience	0.06(0.03)	2.02*		

Values in parenthesis are standard errors S*$P \le 0.05$

4.3 Costs and Returns for basket
 From the gross margin of the budgetary analysis, the results showed that the total revenue (TR) was ₦12500 while the total variable cost (TVC) was ₦7000. The gross margin was calculated using the production of 5 baskets which revealed the cost incurred in the production of 5 baskets to be seven thousand   naira (₦7000). The net return for these 5 baskets was twelve thousand five hundred naira (₦12500). The profit was ₦5500 which gave a processing efficiency of ₦1.79 which indicates that for every ₦ 1.00 invested in the production of basket, the turnover was 79 kobo. This implies that the business is profitable.

Table 3: Cost profit analysis on fish racket production

COST	AMOUNT
- Raw materials	
The cost of 1 bundle of raw material ngala (*Rhizophora racemosa*) containing	
20 pieces	- ₦ 5,000.00
- Transport	
Transportation cost to market	- ₦ 1,000.00
- Nunu (Pneumatophore of *R. racemosa*)	
One bundle containing 10 pieces	- ₦ 1,000.00
Total variable cost	**₦ 7,000.00**

TOTAL REVENUE

1 bundle of nunu (Pneumatophore of *R. racemosa*) produce and 1 bundle of ngala (*R.racemosa*) produce 5 baskets at - ₦ 2,500.00 each

cost of 5 baskets	**- ₦ 12,500.00**

Profit: TR – TC
$$= ₦ 12,500 – N7,000$$
$$= ₦ 5,500$$

Processing Efficiency = $\frac{\text{Total Revenue(TR)}}{\text{Total Cost(TC)}}$

TR $= ₦ 12,500$
TC $= ₦ 7,000$
CBr $= \frac{12,500}{7,000} = ₦ 1.79$

4.4 Constraints to Rhizophora Racemosa Business

Data in Table 3 shows the challenging factors to *rhizophora racemosa* business in the study area. Based on the item loadings, factor I was named financial and economic challenge while factor 2 was named logistic challenge. Thus the two factors represent the major obstacles encountered by *Rhizophora racemosa* business people in the study area. The major constraints to the business were lack of funds, lack of government support and lack of awareness of its profitability and benefits. The finding is in agreement with the findings of Allison-Oguru *et al* (2001) who pointed out that among the major constraints to successful business is the challenge from lack of fund and government support. This is because government has not known the profitability or the benefits accrued from the business.

Table 4: Constraints to *rhizophora racemosa* business

Challenging factors	Factor 1 financial challenge	Factor 2 logistic challenge
1. Lack of funds	0.91*	-0.02
2. Poor market	0.21	-0.51
2. High cost of input (raw material)	0.11	0.62
4. Low patronage	0.31	0.09
5. Transportation	0.47	0.31
6. Distance from market	0.22	0.09
7. Lack of government support	0.71	0.82*
8. Scarcity of input material	0.28	0.05
9. Lack of awareness of its profitability and benefits	0.53	0.85*

* Varimax rotated factor matrix

5.Conclusion

The relationship between the socio-economic characteristics and *rhizophora racemosa* business showed that age, education, income, and years of business experience were significant. Also, lack of fund was the major constraints to *rhizophora* business.

In the light of the major findings of this study, the following recommendations are suggested as a panacea to the constraints encountered by *rhizophora racemosa* artisans in Rivers State. *Rhizophora racemosa* plant is of great importance to the rural people in Rivers State, economically and socially. There should be a linkage between the rhizophora racemosa artisans and the local government. It is for government to raise awareness on the profitability of the plant (*Rhizophora racemosa*) in order to encourage its citizen to go into the business as a means of livelihood. Also, government should support the business in form of loans to the artisans that would increase the level of production.

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