Structure and conduct of natural rubber lump marketing in South- South, Nigeria

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Abstract The study was carried out with three purposes. The first objective included the socio-economic characteristics of rubber lump marketers, the second described the marketing channel; and the third analysed the structure and conduct of the rubber lump market. Multi-stage sampling technique was adopted for the study. 120 Rubber lump marketers were selected and structured questionnaires administered to them. Descriptive statistics, Gini coefficient model and Concentration ratio analysis were used for analyzing the objectives. Most of the Rubber marketers interviewed were males in their active age. Ten (10) marketing channels were identified. There were no barriers to entry and exit in and out of the markets. The value of the Gini coefficient (0.737) and a concentration ratio (C.R) of 8.07%, indicates some level of inequality suggesting the presence of market concentration among the respondents The results indicate that the market was characterized with many buyers and sellers reflecting a pure competitive structure, prices were determined mainly by factors such as the international (world market) price and the purchase price, supply and demand forces and cost of transportation. Market associations existed among the marketers but only 45% belonged to such associations. About 25 % of the marketers had insurance policy. No advertisement, no research and development among marketers to create differentiated products to enhance profit. Based on the findings, it is therefore recommended that marketers should form cooperatives for easy access to loan so as to boost their financial base.

[N.B. Agbonkpolor, G.O. Alufohai and H. Y. Umar. **Structure and conduct of natural rubber lump marketing in South- South, Nigeria.** *Rep Opinion* 2016;8(3):9-14]. ISSN 1553-9873 (print); ISSN 2375-7205 (online). http://www.sciencepub.net/report. 2. doi:10.7537/marsroj08031602.

Keywords: Natural rubber lump, structure, conduct, marketing, marketers.

Introduction

Natural Rubber, *Hevea Brasilensis,* is the world's number one source for natural rubber (Abolagba and Giroh, 2006) and it is an important economic tree crop which ranks third before now, as a major foreign exchange earner after oil palm and cocoa in Nigeria (Aigbekaen, *et al*, 2000). The Nigerian rubber industry has enormous potentials for sustainable growth and development. The cultivation of Natural Rubber provided the bulk of employment for the people of the then Mid-West now Edo and Delta States (Aigbekaen *et al.,* 2000; Umar, Giroh, Agbonkpolor, Mesike, 2011).

The latex from rubber is a vital material in the automobile industry as it is used in the manufacture of tyres, car bumpers, transmission belts, car mats, seats (Abolagbaand Giroh, 2006). The latex is also used for the manufacture of adhesive, baby feeding bottle teats, condoms, domestic and industrial gloves, balloons, balls, erasers among others. Apart from latex, the rubber tree produces seeds and wood which are also of economic value to the grower.

Products (latex and rubber seed) from the natural rubber serve as raw materials hence cannot be used/consumed without processing. These products are sold at an agreed price to both local and international manufacturing industries. These industries along the marketing chain, in turn process crumbs, sheets or crepe and the rubber seed oil into products fit for the ultimate consumer. Agricultural marketing is defined as the performance of all business activities involved in the flow of products and services from the point of initial production until they are in the hands of the consumers (Panda, 2011). The study of agricultural marketing is concerned with the efficiency of the use of the resources in processing, handling, and distribution of food, fibers, and other agricultural products. A marketing channel is a business structure of interdependent organizations that reach from the point of product origin to the consumer with the purpose of moving products to their final consumption destination (Kotler and Armstrong, 2003). The analysis of marketing channels is intended to provide a systematic knowledge of the flow of the goods and services from their origin (producer) to the final destination (consumer). Market conduct refers to the behavior and practice of firms within the industry; it refers to price policies and other policies pursued by the sellers. Firms that are price takers behave differently from firms that are price makers (Ekunwe and Alufohai, 2009). Market conduct is influenced by the market structure.

Market structure refers to certain characteristics of the market which are believed to influence its nature of competition and price formation as stated by Adegeye and Dittoh (1985) citing Giroh *et al*. (2010).

Farmers harvest the latex and sell at the farm gate to the collectors who in turn transport it to processing and manufacturing factories. The specific objectives were to described the socio-economic characteristics of rubber lump marketers, the marketing channel for rubber lump; and describe the market structure and conduct for natural rubber lump in the study area.

Methodology

The study was conducted in South-South Nigeria. The area is the major rubber- growing and marketing belts of Nigeria (Abolagba et al., 2003). Out of the five states which make up South-South Nigeria, Edo, Delta and Akwa-Ibom states were purposively selected for the study. These states have tropical climate with its characteristic high temperature all the year round, heavy rainfall during the rainy season (April to October) and dry wind during the dry season (November to March). This favourable climate account for reason why about 75% of the inhabitants are farmers. They grow both cash and food crops. Apart from farming, inhabitants also engage in other occupations like trading, and fishing.

Primary data which was used for this study was obtained through the use of structured questionnaires administered to the respondents. 4 rubber producing and marketing Local Government Areas from each State namely, Ikpoba –Okha, Uhunmwode, Ovia North East and Ovia South West in Edo State; Utagba – Uno, Ndokwa East, Ethiope West and Ika North East in Delta State; Uruan, Itu, Uyo and Oruk Anam Local Government Areas in Akwa Ibom State were randomly selected.10 marketers also known as collectors and traders were randomly selected from each of the markets. A total of 120 marketers were randomly selected from the three States. 111 were used for analysis.

Analytical techniques

Market structure was estimated based on market concentration (CR_4) and Gini-Coefficient ratio.

Gini Coefficient is given as:

$$G.C = 1 - \Sigma ZQ \quad \text{…………………………….. (1)}$$

Where Z – Proportion of sellers of the different product

Q - Cumulative total sales

(Ekunwe and Alufohai, 2009 and Giroh, *et al.*, 2010)

A Gini Coefficient of 0 implies perfect equality in distribution, while a coefficient of 1 means perfect inequality. The closer the value is to unity, the greater the degree of inequality and the higher is the level of concentration.

The concept of Concentration Ratio was also used to determine the structure of a market.

$$\text{Concentration Ratio } (CR_4) = \frac{\text{Sales volume of largest four firms}}{\text{Total sales volume}} \times \frac{100}{1} \quad \text{…… (2)}$$

(Ajala & Adesehinwa 2008)

If the result is less than 33%, the market is said to be not concentrated or perfectly competitive.0% means perfect competition. 50% to 80% an industry in this range is likely an oligopoly. Above 80% category ranges from an oligopoly to monopoly.

Market conduct was estimated using descriptive statistics; and based on pricing strategies and presence of sharp practices. Traders were asked if they looked for market information and how they used such information in their trade.

Results and discussion

Socio-Economic Characteristics of Rubber Marketers: Results showed that 4.5% of the respondents were under 30 years, 29.73% were within 31-40 years, and 48.65% were within 41-50 years while 11.71% of the respondents were within the age bracket of 51-60. The modal class was the age bracket of 41-50 with a mean value of 43.88 years. This age mean suggests that the rubber marketers are in their active age. This is in conformity with Ojo *et al.* (2014) who reported that who discovered that more number of young people aged between 31-40 years was engaged in agricultural marketing. This is also in line with the finding of Giroh, Umar and Yakub, (2010) who reported that middle age people have relatively higher degree of risk bearing than the young people in agricultural business.

6.31% of the respondents were females, while record for males was about 94%, with 83.78% of the respondents married. This suggests that rubber marketing in the study area were male dominated and with married people. Majority (99.1%) had formal education. This suggests that the marketers is expected to have the required basic knowledge and skill to enhance their marketing performance which will help in the efficient performance of all the marketing functions like effective communication, record keeping and devising strategies on how to enhance efficient marketing activities. About 68% were fully involved in the marketing of natural rubber, few (12.61%) of the marketers were involved in farming. About 88% of the respondents had over 11years experience in natural rubber marketing a mean of 17.59 years. The result suggests that, on average, rubber marketers have been in the business for at least 17 years. This implies that most of the marketers in the study area have been in the rubber marketing business for a long time, are experienced to know the right decision to take and ought to have been contributing to source of income to many families. The rubber marketers were thus expected to be efficient based on their long stay in the business as opined by Umar *et al*, (2013). Thus experience may serve as a useful factor in determining the effectiveness of marketing events among marketers (Umar *et al*, 2013). This is due to the fact that experience creates behavioural confidence in the business and increases buyers – sellers' engagement and stronger relationship.

Marketing Channels for Natural Rubber in the Study Area: The diagrammatic representations of the marketing channels in the study area are contained in Figures 1. Channel comparison for Natural Rubber was also done based on the multiple responses of the marketers. Percentages were used to denote these responses as the products pass through each channel from the producers to consumers.

Natural rubber in the study area had a long marketing chain because lump passes through many market participants and different form of processing before reaching the final consumers. The major agencies in the channeling of natural rubber in the study area included the producers, the marketers, the processors, manufacturers, exporter, the retailers and the consumers. From the Figure the main receivers from producers were marketers/collectors. The majority of farmers (86.43%) sold their produce to marketers. The marketers consisted of village marketers, wholesalers and co-operative societies or fellow farmers. About 46% of farmers sold their produce to village marketer and wholesalers, 35% to co-operative society and 5.0% to fellow farmers. Marketers are the major buyers of rubber produce from producers because they are accessible and available all the time. Five major marketing channels were identified. Study also revealed that this is one product where the final consumer could not buy directly from the producers.

Market Structure: Barriers to entry and exit were low; though, there was a monetary or high start-up capital needed in becoming a marketer. Marketers do not need to buy expensive machines to start trading; however a truck is possibly needed for transportation. with about 49% of the marketers identified capital as the entry barrier to rubber trading. This might be due to the high initial capital. This agrees with the findings of Haliru (2014). He stated that entering into or moving to another status in Gum Arabic marketing is influenced by size of capital Price fluctuation was also identified to be one of the entry barriers in rubber marketing. About 17% of marketers considered price fluctuation as the entry barrier to rubber marketing. Level of product diversification was very low.

The results of the Gini-coefficient estimate are presented in Table 1. Results show the mean value of total Sales for marketers to be ₦ 703,005. Majority (41 marketers) of the respondents were in the sales of ₦500, 001 - ₦800, 000 controlling about 35% proportions of the total sales. Only (11%) of the respondents had sales of over one million naira and controlled 20% of the total sales. This suggests that there is market imperfection, because a few traders handle the bulk of the trade in the rubber market. Results indicate that there were many sellers and buyers who had free entry and exit in and out of the rubber marketing business which indicates a tilt towards pure competitive market structure. The Gini – Coefficient was 0.73, which is close to unity (1). Mathematically, it implies that there was very low variation of sales and revenue generated among the respondents as 0.73 is close to 1(value of equal distribution). This implies a low level of inequality in the sales revenue of respondents indicating some degree of market concentration in the hands of few marketers probably due to their high income. The inequality in the market could also be as a result of variation in the investment level of the respondents, as depicted by the Lorenz curve (figure 2), the curve indicates the extent of deviation of the curve from the line of equality.

Results also showed a concentration ratio (C.R) of 8.07%, which is less than 33%, which further suggests that the market for natural rubber may be perfectly competitive.

Market Conduct for Natural Rubber in the Study Area: Results revealed that 58.6% of the respondents made use of their mobile phone to obtain information regarding stock order and other price related information. None of the respondents made use of mass media. The high use of mobile phone suggests the impact of information technology on rubber marketing in Nigeria. About 69% of the respondents store their products between three weeks and month, about 21% store between two to three weeks, while only 10% of the respondents were able to sell off their products in less than one week. This finding reveals the high financial cost associated with rubber storage. 61.7% of the respondents hired their trucks individually, 25% use shared hired trucks, while only 13.3% owned their trucks for transporting their goods.

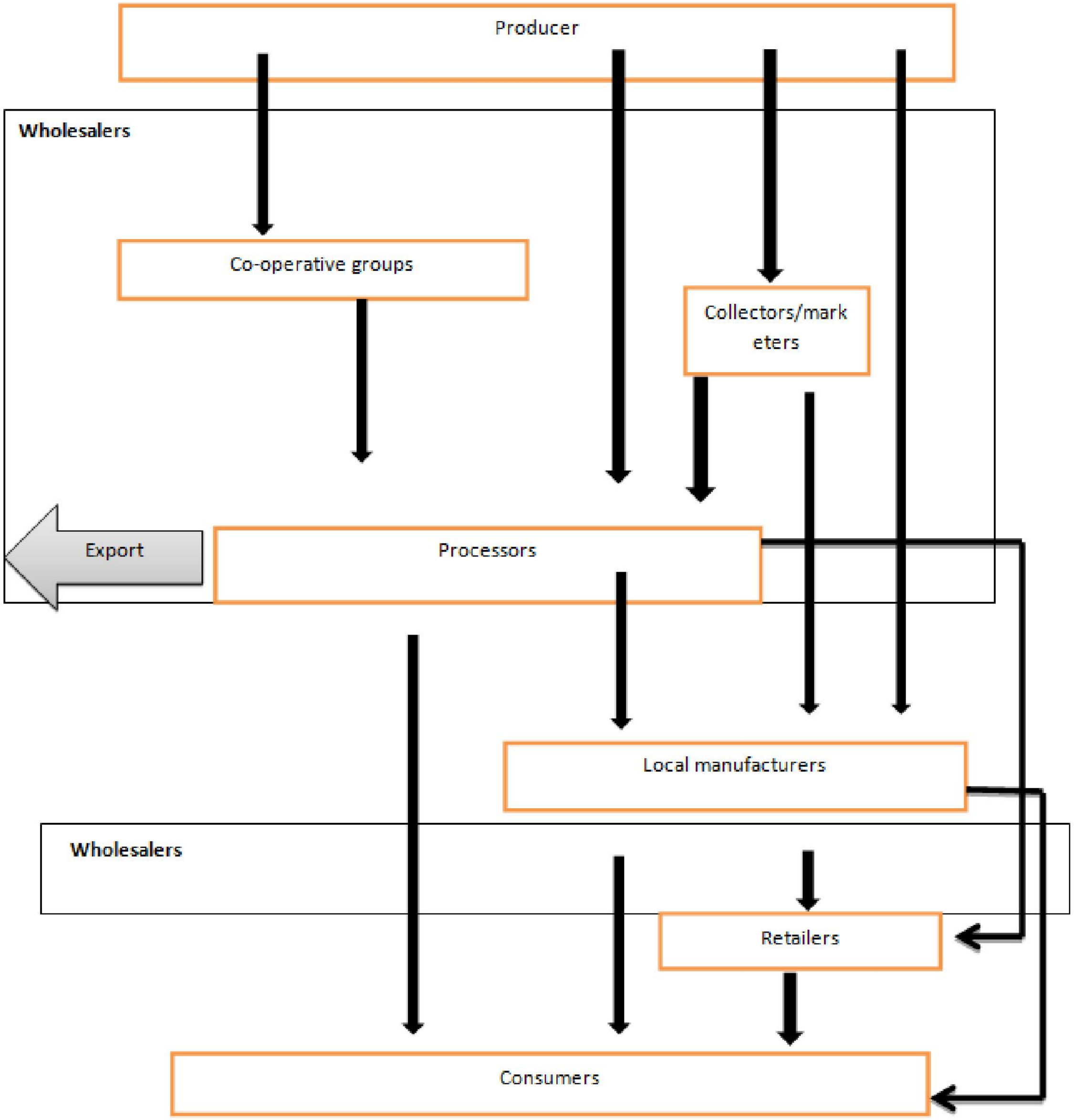
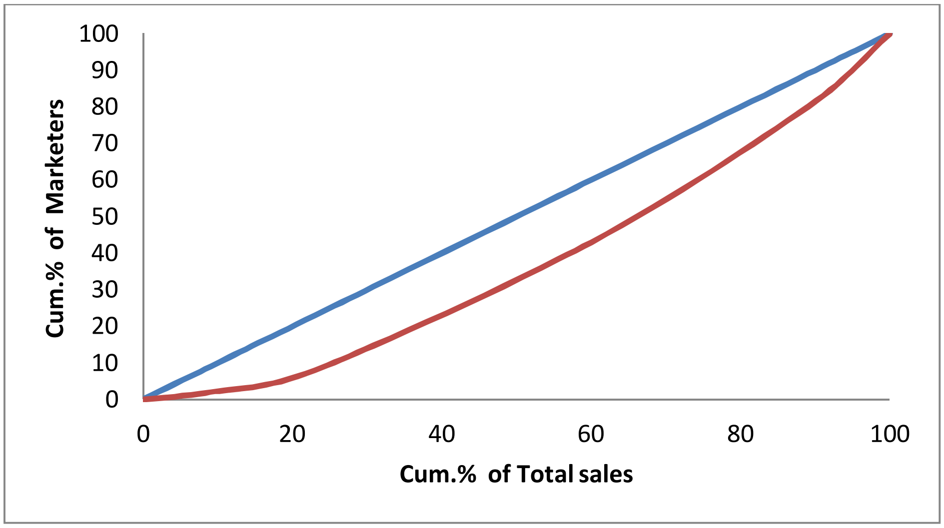


Figure 1: Marketing Channel for Natural Rubber Lump in the Study Area.
Source: Computed from Survey Data, 2015

Table 1: Estimate of Gini-Coefficient for Marketers of Natural Rubber

Income Sales	Freq. of Marketers	Prop. of Marketers (Z)	Cum. Prop. Of Marketers	Total Sales (₦)	Prop. of total sales (Q)	Cum. Prop. of total sales	ZQ
< 200,000	10	0.09	0.090	1,688,725	0.02	0.02	0.00
200,000-500,000	16	0.14	0.234	4,362,852	0.06	0.08	0.01
500,001-800,000	41	0.37	0.604	27,483,760	0.35	0.43	0.13
800,001-1,000,000	32	0.29	0.892	28,998,254	0.37	0.80	0.11
>1,000,000	12	0.11	1.000	15,500,001	0.20	1.00	0.02
Total	111	1		78,033,592	1.		0.27

Source: computed from Survey Data, 2015
Mean value of total Sales = ₦ 703,005
G.C = 0.73
Concentration Ratio = 0.08
CR=8.07%



Figures 2: Lorenz Curve for Marketers who do not process

The most prevailing promotional strategies in the study area were friendly attitude to customers (45%), followed by contact agreement about 27% of the marketers claimed that they have contract agreement with the large scale processors (Michelin) and credit sales (about 14%); while 13.51% of respondents ensure that they sold only good quality rubber. Results in Table 2.show that all the marketers determined their prices mainly by the dry rubber content (DRC) of rubber. About 90% of the marketers determined their prices mainly by the international (world market) price and the purchase price. The results also indicate that the quality of rubber and transportation cost were determinants in fixing prices as indicated by 58.6% of the respondents. 36% agreed that the ability of the buyers to haggle was also a determinant, 31.53% of the marketers also stated that prices were determined by the quantity purchased by buyers while only 13.51% claimed that prices were determined by the quantity supplied. This indicates that supply and demand forces were also determinants of prices. These results imply that price may vary from marketer to marketer since the ability of a buyer to haggle was a determinant of price in the market.

Table2: Market Conduct Analysis

Category	**Marketers (N=111)**	
	Frequency	**%**
Methods of Price Determination		
Weight of DRC	111*	100
International price of rubber	100*	90.1
Purchase price	100	90.1
Quality of rubber lump	65*	58.6
Transportation cost	65*	58.6
Consumer haggling/bargaining power	40*	36
Quantity purchased by buyer	35*	31.53
Quantity supplied	15*	13.51
Members of Marketers' Associations		
Membership of marketers association	50	45.04
Promotional strategies		
Friendly attitude to customers	50	45.05
Credit Sales	16	14.41
Good quality rubber	15	13.51
Contract agreement	30	27.01

*multiple response
Source: Computed from Survey Data, 2015

Market associations existed among the marketers but only 45% indicated membership of such associations; however they did not exclude anybody from buying or selling in the market. In terms of sharp practices the common complaint among the smallholders' producers was that marketers often 'cheat' them out of a fair price either by manipulating the weight of the product sold or the quality. On the part of the traders, similar complaints were that the quality, was not always up to the required standards due to adulteration.

The type of insurance policies done was agricultural insurance and about 25 % of the marketers had insurance policy. No advertisement, no research and development among marketers to create differentiated products to enhance profit.

Conclusion and recommendations

Natural rubber marketing, unlike other agricultural products, is unique for several reasons; it is purely an industrial product hence it is highly technical, involving specifications and quality of the product, which everyone involved in the marketing system, must abide with. Natural rubber lump in the study area passes through several channels before reaching the end-users. The rubber marketing system also gave a unique result as the marketing systems were the consumer does not buy directing from the producer. The market structure of rubber was found to tilt towards pure competition. A Gini-Coefficient and concentration ratio analysis indicated high concentration in the hands of few marketers with a fair conduct and the absence of sharp practices. The marketers should try to source for financial support to enhance their financial status in the marketing of natural rubber lump rather than just leaving the business to only few individuals

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