Economic Analysis of Fuelwood Marketing in Enugu State, Nigeria

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ABSTRACT: *The study examined the marketing margin and the profitability of fuel wood business in Enugu State, Nigeria. Cluster random sampling technique was employed in carrying out the study in the three urban areas of the State. A total of 90 traders (middle men) were selected namely 45 fuel wood wholesalers and 45 retailers for the study. Data were obtained through primary sources by use of questionnaires. Information sourced from them included sources of fuelwood, purchasing and selling prices, transfer costs and means of transportation. The data were analyzed by employing marketing and gross margins. The findings of the study revealed that the marketing margin for the traders was 45.9% while the harvesters share was 54.1%. The result of the profitability analysis showed that variable costs were high at both wholesale and retail levels consisting of 84.47% and 91.27% of sales revenue at wholesale and retail levels respectively. The findings showed that the gross margins for wholesalers were ₦77, 998.17and retailers ₦59, 162.88 respectively. The overall result revealed that fuelwood marketing in the study area was inefficient because of high marketing margins and variable costs. The study concludes that to improve on the level of performance on fuelwood business in the study area feeder roads should be improved upon. This will facilitate easy conveyance of fuel wood from the rural areas to urban centres and also credit advancement to the fuelwood sellers is advocated.*

Keywords: *Fuelwood, sales revenue, wholesalers and retailers.*

I. Introduction

Fuelwood is wood burnt directly as fuel [1]. It is obtained from trunks, branches and other parts of trees and shrubs [2 and 3]. It is bulky and heavy to transport. Fuel wood is a material of low unit value and low price compared to conventional fuels. It is very simple and cheap to prepare and use. Fuelwood is sourced from forest, open woodland and homestead trees. The overall direct cost of using fuelwood is generally lower than that of alternative fuels such as kerosene and cooking gas.

Before and about a decade after the Nigerian civil war, there was little commercialization of fuelwood. In those days the demand for fuelwood in the urban areas was small and there were fewer fuelwood harvesters and middlemen involved in this sector. Later about two decades ago, there was rapid growth in urban population [4]. This development led to high demand of fuelwood by both low and middle income groups in urban areas. Other reasons behind the high demand of the tree product in the urban centers are the scarcity of conventional fuels such as kerosene, cooking gas and the subsequent increases in the prices of these fuels.

However, with this increase in the demand for fuelwood in the urban area as well as the existing local consumption and with the development of feeder roads and transportation system, market opportunities for fuel wood emerged. Fuelwood which was previously a free good became commercial products that attract high prices and consumers begun to pay for it [5]. With the new condition for fuelwood, many people both in rural and urban areas centered into the fuelwood business and new employment opportunities were created. The harvesting and selling of fuelwood became a major business in Nigeria. The business provides many poor households with income. With the increase in the volume of fuelwood trade many intermediaries began the trade. The entrance of the middlemen may not have been to the best interest of the poor harvesters as the market may not be well organized to the advantage of the poor households who harvest and supply the product. Middlemen influence the price of the product [6 and 7]. The effect of this is that consumers pay more than they would have paid to the fuel wood harvesters. This situation discourages the fuelwood harvesters to supply more to the market which in turn affect the performance of the market. Also considering the bulkiness of the good and high labour involved in fuelwood business, the marketing cost tends to be high and this variably affects the profits that would accrue to the people involved in the business. Often the fuelwood trade tends to be constrained by poor road networks and high cost of transportation. In the South Eastern States of Nigeria, poor condition of roads especially those linking the rural to urban areas affect marketing of goods that are produced in the rural areas [8]. This situation makes cost of transportation to be high which ultimately reduce the harvester's prices and increase the consumers' price.

Sometimes the problem of transportation compels the fuelwood harvesters to sell their products in the rural areas at low prices instead of conveying the commodity to the urban areas where the price will be relatively higher. The high marketing costs of fuelwood which include cost price of the fuelwood, transportation, cutting, stacking, splitting of the log, storage, loading and off-loading affect the market performance of the good [8].

It is against this background that the study was conducted to determine the marketing margin, profitability of fuelwood business and compare these at the wholesale and retail levels in the study area.

II. Methodology

For the purpose of the study, cluster random sampling techniques were adopted in the selection of the middlemen. In the study, three urban areas where selected. This is because it is in the urban areas that fuelwood traders are concentrated. The three urban areas chosen were Enugu, Nsukka and Oji-River. In the urban centres, fuelwood wholesalers usually stay together at some locations with large sizes of heaps of fuelwood. Their staying together makes them to form associations in the cluster. The registers of associations were used as sample frame. From the register, 15 respondents were randomly selected as fuelwood wholesalers from an urban area. From the three urban areas, 45 wholesalers were randomly chosen and served with questionnaires.

For the selection of the retailers, in the urban centres, fuelwood retailers were often seen scattered in streets with small sizes of heaps of fuelwood. In each of the urban centres, clusters of fuel wood retailers were made. The clusters of the fuelwood retailers used were Abakpa Nike Enugu, Ugwunzu in Oji-River and Odenigbo in Nsukka. A list of the fuelwood retailers in the cluster was compiled to serve as a sample frame. Then from the list compiled, 15 respondents were randomly chosen from the sample frame in each of the urban area. A total of 45 retailers were chosen for the study. In all a total of 90 traders were used for the study.

Data used for the study were collected from primary sources. This was carried out by using questionnaires and oral interview. Information sourced from the respondents included sources of fuelwood, purchasing and selling prices per tonne, transfer cost, and means of transportation.

Marketing margins was used to calculate the marketing margin of the traders. Marketing margin is the difference between the purchasing price and selling price [8]. In the study, the calculation was made by deducting the purchasing price per tonne from sales price of fuelwood per tonne. The margins were determined thus: the harvesters receipt was the price at which the wholesalers and/or retailers buy from the harvesters.

The difference between retail price per a tonne of fuelwood and wholesale price per a tonne of fuelwood represented the retailers receipt per toonne of fuelwood.

The harvesters share of the consumers spending or retail price is the retail price less the value of marketing margin.

The marketing margin in this study is expressed as a percentage of the retail price.

The profitability of the fuelwood business was computed by employing gross margin. Gross margin is the difference between total revenue (TR) and the total variable cost (TVC). Then net profit is the difference between the gross margin and fixed costs. The variable costs included were cost price, transportation, loading and off-loading, splitting of log, association dues, toll fees, and security. Fixed costs included rents, local government rate, and depreciation on barrow, axe and matchets used on daily bases.

III. Results and Discussion

Marketing Margin

Marketing margin is the prices of activities and functions performed by the fuelwood traders. The prices included the marketing costs incurred and the middlemen profits.

Table 1: Marketing margins of the middlemen in the fuelwood market

Function	Harvesters	Wholesalers	Retailers
Selling price		5770.83	7291.67
Purchase price		3950.00	5770.83
Receipt	3950.00	1820.83	1520.84
Marketing margin		25.0	20.9
Harvester's share	54.1		

Table II: Profitability Analysis of the fuelwood business in the study area

Item	Wholesalers	Retailers
	Amount (₦)	Amount (₦)
Revenue		
Annual sales	536687.17	678125.31
Total revenue	536687.17	678125.31
Variable costs		
Cost price	367350.00	536687.17
Transportation	69026.46	18622.32
Loading	9765.00	–
Off-loading	9765.00	6510.00
Security	461.28	–
Association dues	461.28	–
Toll fees	1860.00	–
Splitting of log	–	57142.92
Total variable costs (TVC)	458689.02	618962.43
Gross margin (TR-TVC)	77998.17	59162.88
Fixed costs		
L.G. Rate	150.00	–
Annual rent	5400.00	3600.00
Depreciation on barrow	883.00	883.00
Deprecation on axe	160.00	160.00
Depreciation on matchet	175.00	175.00
Total fixed cost	6768.00	4818.00
Net profit	71230.17	54344.88

Table III: Wholesaler

Function	Charge/cost (₦)	Percentage of Sales	Percentage of TVC	Percentage of TC
Total Revenue	536687.17	100	117.00	115.30
Cost price	367350.00	68.44	80.09	78.92
Transportation	69026.46	678125.31	15.05	14.83
Loading	9765.00	1.82	2.13	2.10
Off-loading	9765.00	1.82	2.13	2.10
Security	461.28	0.09	0.10	0.10
Association dues	461.28	0.09	0.10	0.10
Total fees	1860.00	85.47	0.41	1.40
TVC	458689.02	14.53	100.0	98.55
GM	77998.17	1.26	17.00	16.55
FC	6768.00	86.73	1.48	1.45
TC	465457.02	13.27	101.48	100.00
Net profit	71230.17		15.52	15.30

Table IV: Retailer

Function	Charge/cost (N)	% of sales Revenue	% of TVC	% of TC
Total Revenue	678125.31	100.00	109.55	08.72
Cost price	536687.17	79.14	86.71	86.04
Transportation	18622.32	2.75	3.00	2.99
Off-loading	6510.00	0.96	1.05	1.04
Splitting of log	57142.92	8.48	9.23	9.16
TVC	618962.43	91.27	100.00	99.23
GM	59162.88	8.72	9.56	9.48
FC	4818.00	0.71	0.78	0.77
TC	623780.43	91.99	100.78	100.00
Net profit	54344.88	8.01	8.87	8.71

The analysis of marketing margin as shown in table 1 shows that the receipts for the harvesters, wholesalers, and retailers were ₦3950.00, ₦1820.83 and ₦1520.84 respectively. The marketing margin for the wholesalers was 25.0% which was higher than the margin of retailers (20.9%). The higher margin recorded by the wholesalers was attributed to good number of functions performed by the wholesalers. Secondly retailers perform less marketing services. The total marketing margin for the middlemen was 45.9% while the harvesters share was 54.1%. The high marketing margin shows that high marketing cost was incurred in the provision of marketing services in the course of running the business. This indicates that the fuelwood marketing is inefficient in the study area.

The analysis of the profitability as shown in table II indicated that cost structure consisted of

variable and fixed costs. The variable costs included cost price, transportation, loading, off-loading, security, association dues, and toll fees. This amounted to N458689.02. The charges as shown in table III for variable costs were very high at wholesale and retail levels, being 85.47% and 91.27% of the sales revenue or 98.55% and 99.23% of total costs respectively.

Among the variable costs, cost prices were the highest which were 68.44% and 71.14% of the sales revenue or 78.92% and 86.04% of total costs of the wholesalers and retailers respectively. This was followed by cost of transportation (12.86%) at wholesale level and cost of splitting log (8.71%) of the sales revenue at retail level. The high cost of transportation was attributed to poor condition of roads or inaccessibility of some of the roads especially during raining season while the reasons adduced for high cost of splitting the log is

because it is labour intensive as a result of poor working tools and this makes the job to be high energy demanding hence the labourers charge very high. Wholesalers did not incur much cost in splitting the log because most of them sell their goods at large pieces. On the other hand, retailers' cost of transportation was not high compared to wholesalers because some of them buy from the wholesalers   instead of buying from the harvesters direct.

The variable costs show that retailers did not incur association's dues and security fees because the retailers did not have associations and on security, most of them sell the fuelwood near their residence or in the residences of close associates or neighbours.

The component of fixed costs were rent, local government rates, depreciation on barrow, axes and matches that were used in the daily activities of the business. Fixed cost was relatively of lower magnitude to the variable cost. Fixed cost as a percentage of the total costs were 1.45% and 0.77% at the wholesale and retail levels, or 1.26% and 0.71% of the sales revenue respectively. The analysis shows that wholesalers had gross margin of N77998. 17 which was 14.53% of the sales revenue or 16.76% total cost, while retailers made N59,162.88 which was 8.7% of annual sales revenue or 9.14% of total costs respectively. The profit analysis show that the net profits for the wholesalers and the retailers were 13.27% and 8.01% of the sales revenue or 15..30% and 8.71% of total cost respectively. The profit analysis shows that fuelwood marketing is profitable. The overall result shows that though the middlemen made profit but the fuelwood marketing in the study area is not efficient because of high marketing margin and variable costs.

IV. Summary and Conclusion

The study determined the marketing margin and profitability of the fuelwood in the study area.

The data was collected through primary sources. The data collected were analyzed by employing marketing and gross margins.

The result showed that the marketing margin of the traders was 45.9% while the harvester's share was 54.1%. In determining the profitability of fuelwood business at wholesale and retail level, the result showed that cost consisted of variables and fixed costs. The variable costs were very high at both levels showing 85.47% and 91.27% of sales revenue or 98.55% and 99.23% of total costs respectively. Among the variable costs, cost price was the highest in both wholesale and retail levels. This was followed by cost of transportation (12.86%) at wholesale and splitting of log (8.71%) at retail levels respectively. Fixed costs were relatively lower, 1.45%, 0.77% of total cost or 1.26% and 0.71% of sales revenue in wholesale and retail respectively. The analysis showed that gross margin for wholesalers was 14.53% of sales revenue or 16.7% of total costs while for retailers it was 8.7% of sales revenue or 9.4% of total cost. The net profits for both wholesalers and retailers showed 13.27% and 8.01% of the sales revenue or 15.30% and 8.7% of total costs respectively.

The study therefore concludes that for improvement in the marketing of fuelwood in the study area, feeder road network should be improved upon. This will facilitate easy transportation of the fuelwood from the rural to the urban areas. Also to further improve on the efficiency of the trade, credit should be advanced to the fuelwood sellers.

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