



*Research Paper*

**EVALUATION OF COST AND RETURN STRUCTURE IN HARDWOOD  
INDUSTRY IN SAGAMU, OGUN STATE, NIGERIA**

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**Abstract**

The study focused on the evaluation of cost and return structure in the hardwood industry in Sagamu, Ogun State. The study made use of both primary and secondary data. The instrument used for collecting the primary data was a set of structured questionnaires. A Multistage Sampling Technique was used in sample enumeration. Descriptive and inferential statistical methods were employed in analyzing the data in the study. The result showed that 44.0% of the industries were retailers while 25% were wholesalers of hardwood timbers and both had regular supply of the products. The operational capital among the timbers business was ₦3,641,905.6 and the annual income was ₦500,000 to ₦2million. The budgetary analysis revealed that the total annual profit for hardwood timber traders ranged between ₦1,273,103.63 and ₦2,394,341.77 for 2010 to 2014. Government policy, high cost of transportation, inadequate credit facilities and high cost of energy and power were some of the constraints faced by timber industries in the study area. The use of modern equipment and machines are needed to replace the outdated equipment in order to increase the output and profit. The level of access to credit facilities should be improved upon by encouraging the respondent to form cooperative societies so that they can mobilize enough working capital for their business.

Key words: Evaluation, cost return, hardwood, industry, constraints.

**INTRODUCTION**

Timber is the most economically important product of the forest. The saw mill is therefore, a critical industry whose performance not only has direct implications for present livelihood but also for the future generation. Timber industry has the potential to improve economic performance and increase state and household revenues. The realization of these opportunities, however, depends critically on the efficiency of utilization and exploitation of products. The upholstered furniture frame industry has traditionally been recognized as a market for low-grade timber and this industry has recently experienced a change from hardwood timber to plywood as the primary raw

material. Sawmills consume the vast majority of the industrial round wood produced in Nigeria. Most existing sawmills comprise old and poorly maintained horizontal band saws that are manually operated. The timber industry in Nigeria is a fragmented industry. It begins with the landowner. There are three basic types of timberland owners: non-industrial private, industrial, and government. Non-industrial private landowners are primarily individual entities that own both the land and the timber. They normally sell their timber directly to a logger. However, in some cases, a consulting forester may be used to value and market the timber for a fee, usually 10% of the sale. In many cases, a forest product company will purchase both the land and timber. Finally, state and federal lands may be used for logging via a bidding process for the right to timber (Okoh, 1999; Okereke, 1998).

The Nigerian government policy on forest industries currently, is meant to increase the domestic value in the processing of wood products and has thus put a ban on the export of logs, rough sawn and clean sawn wood except processed wood. These measures were put in place to make raw materials locally available for secondary processing mill to achieve the desired value-addition for export. Further processing of timber will ensure economic value of timber and other forest products to be fully harnessed (Larinde *et al.*, 2010). It will also reduce the ecological impacts of utilization on the forests for sustainable management. The wood-based industry in Nigeria suffers from production inefficiency as a result of poor integration, poor cost and returns database and non reinvestment of profit (Larinde, 2008).

Timber is by far the highest-valued forest product in most forests. In 2008, the export of industrial round wood, sawn wood and wood-based panels from developing countries accounted for US\$13.1 billion (FAOSTAT, 2010). Against the backdrop of recent evidences that has linked products processing to sustainable forest use, it is therefore imperative to quantitatively analyse the efficiency of timber processing. Timber is the most economically important product of the forest. The saw mill is therefore, a critical industry whose performance not only has direct implications for present livelihood but also for the future generation. Timber industry has the potential to improve economic performance and increase state and household revenues. The realization of these opportunities, however, depends critically on the efficiency of utilisation and exploitation of products. The upholstered furniture frame industry has traditionally been recognized as a market for low-grade timber and this industry has recently experienced a change from hardwood timber to plywood as the primary raw material. In Nigeria today, timber management is at crossroads because the guiding principles of managing the forest sustainably are no more with us. Challenges like illegal activities in the forest, declining manpower and capacity in Forestry Department, inadequate forest patrol, lack of returns from timber felling accruing to local people, outdated forestry laws and regulations and population pressure leading to increased clearing of forest land for cultivation of arable and tree crops are such that pose grave threat to sustainable forest management (SFM) in the country (Adetula, 2008). Sawmills consume the majority of the industrial round wood produced in Nigeria. Most existing sawmills comprise old and poorly maintained horizontal band saws that are

manually pushed against stationary logs. This technology is outdated it is unsuitable for the smaller logs available today, its lumber recovery is estimated at only 40-45%, and it does not allow sawing for grade. For example, Nigeria's timber sector contributes an estimated US\$39 billion annually in foreign exchange by supplying wood fuel to meet 80% of the country's total energy needs. The commercial wood fuel value chain that supplies cities and towns generates over 300 000 fulltime jobs. (FAO, 2005). Several studies on log conversion efficiencies in the saw mills processing centre showed that the total volume of solid wood in a typical saw log is less than 35 percent when converted into sawn timber (Badejo and Giwa, 1983, Larinde 2006, Akande *et al.*, 2007). Timber trade accounts for a larger proportion of total Agricultural share of international economics which contributes to socio-economic development (Toledo, 2006).

This has important implication for economic growth and development, since it favourably affects the terms of trade. In Nigeria, the export revenue from timber industry grew at 4.1, 8.0 and 28.8 percent between 1950-60, 1960-70, and 1970-80 respectively (Singh, 1983). The export value earnings from timber is obtained from products like log, sawn wood, veneer and pulpwood (Kalu and Okojie, 2009) traditionally, Thus, the need to measure the financial performance of timber industry firms' value addition is unavoidable. So far, the existing empirical research on whether value addition improves corporate performance remains inconclusive since no clear positive correlation between the firms' size or their presence in timber industry businesses and their economic performance has been found up to now (Kolo and Vogt, 2003

The furniture industry is strategic in the use of planks from the saw mills. It forms the major market for wood products in Nigeria and protects the continued existence of primary wood industries such as sawmills and ply mills. The capacity utilization of the furniture industry companies in Nigeria. Wooden furniture represents the major market for wood products in Nigeria. Many of the industries suffer from high cost of production due to energy cost and lack of patronage. One of the major specialties of furniture makers in Nigeria is wooden door; which is very popular in the country. The Nigerian government policy on forest industries currently, is meant to increase the domestic value in the processing of wood products and has thus put a ban on the export of logs, rough sawn and clean sawn wood except processed wood. These measures were put in place to make raw materials locally available for secondary processing mill to achieve the desired value-addition for export. Further processing of timber will ensure economic value of timber and other forest products to be fully harnessed (Larinde *et al.*, 2010). It will also reduce the ecological impacts of utilization on the forests for sustainable management. The wood-based industry in Nigeria suffers from production inefficiency as a result of poor integration, poor cost and returns database and non-reinvestment of profit (Larinde, 2008). Therefore, this work asses the cost and return structure in timber industry in the study area.

## METHODOLOGY

### Study Area

The research was carried out in Sagamu local of Ogun State in Western region of Nigeria. It is located in the tropical zone, approximately lying on latitude 2° 6' and 3° 6' East of the Greenwich meridian. Ogun State has a mean annual rainfall of about 1200mm and a mean monthly temperature of 10 °C to 24 °C during raining season which is appropriate for a successful plantation.

### Experimental Design

Multi stage sampling techniques was used in sample collection. In the first stage Ogun East Senatorial District was purposively chosen. The reasons being that it has the largest forest coverage area. In the second stage one Local Government Area was randomly selected from the division which is Sagamu, This LGA was chosen because it was one of the local government in the area that housed the highest number of saw-mills and forest reserves in the area. In the third stage, 10 saw-mills were selected in the area. Ten timber seller were randomly selected from each sawmill.

### Data Collection

The study made use of both the primary and secondary data. The instrument used for collecting the primary data was a set of structured questionnaires. The secondary data was obtained from Ogun State Ministry of Forestry, National Bureau of Statistics, Internet facilities and published Journal articles. The data collected include information socioeconomic characteristics, marketing, nature of business, ownership of business, business working capital, number of workers, income level and expenditure.

The following profitability measures were calculated

$$RMCF = TVP - TC \dots\dots\dots (1)$$

$$RRTI = 100(RMCF/TC) \dots\dots\dots (2)$$

$$GM = TR - TVC \dots\dots\dots (3)$$

$$RRFC = 100 (RFC/TFC) \dots\dots\dots (4)$$

Where; RMCF = Return to management capital and family labour or net income,

TVP= Total value product, TVC= Total Variable Cost

RRTI =Rate of Return on Investment, TC= Total cost, RFC= Return on fixed cost (Gross margin), RRFC= Rate of return on fixed cost.

### Data Analysis

Descriptive, inferential statistical method and budgetary analysis were employed in analysing the data for the study.

**RESULT AND DISCUSSION**

**Table1: Social Economic characteristics of hardwood Industries in the Study Area**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Nature of Business</b>		
Wholesales	25	25.0
Retailers	44	44.0
Producers	18	18.0
Both	13	13.0
<b>Total</b>	<b>100</b>	<b>100.0</b>
<b>Supply of product</b>		
Regular supply	80	90.0
Not regular	20	10.0
<b>Total</b>	<b>100</b>	<b>100.0</b>
<b>Means of Transportation</b>		
Truck	60	60.0
Lorry	30	30.0
Cars	10	10.0
<b>Total</b>	<b>100</b>	<b>100.0</b>
<b>Ownership of lorry/truck</b>		
Own	80	80.0
Hire	20	20.0
<b>Total</b>	<b>100</b>	<b>100.0</b>
<b>Year of establishment</b>		
1-3 yrs	45	45.0
4-6yrs	30	30.0
7-9 yrs	17	17.0
Above 10 yrs	08	08.0
<b>Total</b>	<b>100</b>	<b>100.0</b>
<b>Business operation capital</b>		
Less than ₦500,000	05	05.0
₦ 5,000,001- ₦ 1,000000	45	45.0
₦ 1,000,001- ₦ 5,000,000	41	41.0
Above ₦ 5,000,000	09,	09.0
<b>Total</b>	<b>100</b>	<b>100.0</b>

**Numbers of workers**

1-3 workers	54	54.0
4-5 workers	33	33.0
Above 6 workers	13	8.7
<b>Total</b>	<b>100</b>	<b>100.0</b>

**Annual income**

Less than ₦500,000	27	27.0
₦ 500,001 – ₦ 1,000,000	45	45.0
₦ 1,000,001 – ₦ 2,000,000	20	20.0
Above ₦ 2,000,000	08	08.0
<b>Total</b>	<b>100</b>	<b>100.0</b>

**Nature of business ownership**

Private	100	100.0
Public	—	—
<b>Total</b>	<b>100</b>	<b>100.0</b>

**Source: Field Survey 2015**

Table 1 presents the results of the socio-economic characteristics of the hardwood timber industry. The results showed that 25% of the industries were wholesalers while 44.0% were retailers and 18% were producer's and 13% operate both types of business. This result shows that most of the respondents were retailers in the hardwood timber industry in Sagamu local government. The results further show that 80% of the industry had regular supply in the timber industry while 20% of the industry had no regular supply of their products. This implies that the hardwood timber business is not a seasonal business.

About 60% and 30% transport their products by truck and lorry respectively, while 10% transported their products by car. Based on ownership of truck, the result revealed that 80% of the respondents own lorry/truck while 20% hire truck/lorry to transport their products. The result showed that majority of the respondents owned lorry/truck to transported their product. This result agrees with Agbonlahor (2010) who found that majority of small holder timber mills in Ogun state owned their trucks for transport purposes.

The results again showed that 45% of the industries were established between 1-3years ago, 30% were established between 4-6years back, while 17.0% and 8.0% of timber industries were established between 7-9 years and above 10years back.. The results showed that 41% had access to ₦1,000,000 - ₦ 5,000,000 as working capital and 45% could mobilize ₦ 5,000,000 – ₦ 1,000,000, 9.0% had access to more than ₦ 5,000,000 while 5% of the industry had access to less than ₦ 500,000 as working capital. . This result agrees with Akanni and Adetayo (2011) which found out that the amount of

working capital for business enterprises often determines the level of output and the accruable profit margin.

The results showed that 33% had between 1-3 workers, 54% had 4-5 workers while 13% had more than 6 workers in the timber industries. This result implies that the majority of the industry had between 4-5 workers and this could contribute to the output of their production. The table also revealed that 20% earned ₦1,000,001 - ₦ 2,000,000 per annum, 45% earned ₦ 500,001 - ₦ 1,000,000 per annum, 8% earned more than ₦ 2,000,000 per annum while 27% earned less than ₦ 500,000 per annum.

This result implies that the timber industry are more profitable in the study area. This result contrasts with Akerele (2013) who found that annual income earned by rural farmers household in Abeokuta north Local government was well below the federal government approved minimum wage.

**Table 2: BUDGETARY ANALYSIS OF HARDWOOD TIMBER INDUSTRY IN SAGAMU LOCAL GOVERNMENT.**

Year	2010	2011	2012	2013	2014
<b>Variable cost</b>					
<b>Transportation</b>	38,534.62	35,661.54	32,557.69	30,480.77	32,923.08
<b>Labour</b>	13,055.77	18,057.69	11,853.85	12,832.69	14,142.31
<b>Taxes</b>	151,385.00	1,261.54	2,038.46	3,038.46	4,360.38
<b>Fuel &amp; power</b>	45,209.62	39,157.69	33,503.85	40,373.08	48,242.31
<b>Processing cost</b>	167,100.00	184,538.46	142,207.69	178,076.92	197,615.38
<b>Maintenance</b>	21,771.15	22,117.31	23,280.77	25,536.54	22,442.3
<b>Rent</b>	184,153.85	234,846.15	223,461.54	241,000.00	22,442.31
<b>Membership due</b>	2,905.77	3,228.85	3,661.54	3,538.46	4,115.38
<b>Total variable cost</b>	4,4743.48	538,869.23	472,565.39	534,876.92	54887961
<b>Fixed cost</b>					
<b>Depreciation cost of saw machine</b>	272,727.27	245,454.05	218,181.8	190,909.9	163,636.36
<b>Deprec. Cost on furniture Machine &amp; tools</b>	266,666.67	213,333.33	160,000.00	106,666.67	53,333.33
<b>Deprec. On generating set</b>	33,333.33	26,666.67	20,000.00	13,333.33	6,666.67
<b>Deprec. On vehicle</b>	200,000.00	180,000.00	160,000.00	140,000.00	120,000.00
<b>Total fixed cost</b>	772,727.27	665,454.05	558,181.8	450,909.9	343,636.36
<b>Total cost</b>	1,220,200.75	1,204,323.28	1,030,747.19	985,786.82	892,515.97
<b>Total revenue</b>	3,043,855.3	2,477,426.91	2,429,782.64	3,107,998.19	3,286,857.74
<b>Total Profit</b>	1,823,654.55	1,273,103.63	1,399,035.45	2,122,211.37	2,394,341.77
<b>Profitability indicator</b>					
<b>Rate of return on investment</b>	2.99	2.06	2.36	3.15	3.68
<b>Rate of return on fixed cost</b>	3.94	3.72	4.35	6.89	9.56

*Source: Field Survey, 2015*

### Cost and Return Structure of Hardwood Timber Industry

Table 2 shows the budgetary analysis of hardwood timber industries in Sagamu Local Government of Ogun State. The average revenue for the industry for year 2010 to 2014 ranged between ₦2,429,782.64, and ₦3,286,857.74. The average fixed cost for the industry ranged between ₦343,636 and ₦772,727.27. The average total variable cost ranged between ₦447,473.48 and ₦548,879.61. The net profit ranged between ₦1,273,103.63 and ₦2,394,341.77.

The rate of return on investment were 29.9%, 20.6%, 23.6%, 31.5% 36.8% thus, implying that rate of return on investment (also known as return to capital) was high in hardwood timber industry in Sagamu Local Government. This result indicates that for every naira invested, ₦21 – ₦37 was realised and the rate of return to fixed cost follow the same trend. On the bases of this result it can be said that hardwood timber industries were more profitable in Sagamu Local Government in Ogun State.

**Table 3: Constraints Facing the Timber Business**

Constraint	Frequency	%
Government Policy	7	7.0
Inadequate facilities in market	8	8.0
High cost of energy and power	22	22.0
Inadequate credit facilities	20	20.0
High transportation cost	19	19.0
Government policy and high transport cost	10	10.0
Inadequate credit facilities and high transport cost	14	14.0
	<b>100</b>	<b>100</b>

*Source: Field survey, 2015*

### Constraints facing the Timber industry

Table 3 shows that hardwood timber industries in Sagamu Local Government encountered several constraints. About 22.0% of the hardwood timber industry operators faced with high cost of energy, 20.0% had inadequate credit facilities, 19.0% incurred high transportation cost while about 8.0% and 7.0% complained of inadequate facilities in the market and unfavourable government policy respectively about timber business.

The result implies that the constraints facing the hardwood timber industry were visible. This is due to the epileptic power supply and invariably high cost of procuring diesel and petrol to power their machines, access to credit facility, high cost of transportation resulting from bad road network in many rural area and city. This result corroborates the position of Akanni and Adetayo (2011) who observed that access to credit facilities and high cost of energy affected the timber industries in Ijebu division of Ogun State.



## CONCLUSION

In the context of the results obtained from this study hardwood timber industry are important sources of income to many households in Nigeria and the study area in particular. It is however experiencing major setbacks. The identified constraints to the development of hardwood timber industry need to be addressed if the industry must move forward. For instance, problem of inadequate credit facilities may be addressed by coming together of the timber business men and women to form cooperative societies so that they can have access to sufficient credit facilities that could be mobilized for their business operations.

Adequate investment should also be made in the energy and power sector so that the hardwood industry operators can profitably and sustainably keep on operating their businesses. This will also lower the cost of operation and unit cost of the production.

## RECOMMENDATIONS

Considering the findings and conclusion drawn from this study, the following recommendations were made; To improve the market equilibrium price and supply levels of hardwood timber business in Sagamu Local Government of Ogun State, there is need to improve on the supply of energy and power for production processes in the study area.

Furthermore, Nigeria government should put a policy on hardwood timber industries to increase the domestic value in the processing of wood product and this will put a ban on the export of logs, rough sawn and clean sawn wood expect process wood. This measure will make raw material locally available for secondary processing mill to achieve desired value addition for export and further processing of hardwood timber will ensure economic value of the timber and other forest product to be fairly harnessed

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