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## **ECONOMIC ANALYSIS OF DIFFERENT WOOD SPECIES IN MAJOR SAWMILLS IN ABEOKUTA OGUN STATE NIGERIA**

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### **ABSTRACT**

This study involved the economic analysis of different wood species in major sawmills in Abeokuta, Ogun State Nigeria. Two stage design sampling techniques were employed for this study. Descriptive statistics and Cost and Returns were used in the data analysis. Result showed that 62.5% engaged in the business were males, 81.7% were in age group between 31-50years, 48.3% had no formal education, and 88.3% entered into the business through apprenticeship and are mostly full-time. The result also revealed that 95.83% of the saw millers or plank sellers obtain their timber from the private forest and they mostly buy per species i.e. per tree. Moreover, among the timber species that were common in the saw mills include, *Albizia coriaria* (ayinre) has the highest percentage frequency of 66.7%, *Anogeissus leiocarpus* (orin dudu) has 44.2%, *Cleistopholis sp.* (okedo) 32.5% and *Musanga cecropioides* (aga) 1.7% with the least percentage frequency. Average girth sizes of timber species in sawmill, ranged from 3.00cm- 5.60cm and the average number of plank ranged from 6-29. The business could be seen as profitable, as the cost analysis revealed the average profit for each sawmill per month in Abeokuta North, Odeda and Abeokuta South Local Governments' Areas to have these profits (₦982,893.75, ₦790,083.524 and ₦790,083.524) respectively. It was recommended that government policy should be reviewed against illegal felling and over-exploitation of timber by imposing/enacting stiffer penalty or law to illegal feller. Government policy should also encourage individual plantation establishment to ensure continuity of forest products for posterity.

### **Keywords:**

### **INTRODUCTION**

Forests have arguably played a bigger role in the development of human societies than any other resources; the prime direct or marketable product of most forest today is wood used as timber, fuel-wood, pulp and paper. Provided from the forest are 3.4 bil-

lion cubic meters of timber equivalent a year globally. After a 60% increase between 1960 and 1990, global wood consumption fluctuates but rose no further during the 1990s largely due to the more efficient use of timber and Paper recycling (FAO, 2004). Wood is the most versatile raw material the

world has ever known. (Douglas, 1995) Throughout history, people relied on wood for needs varying from farming tools to building materials, from fuel to weapons of hunting and warfare. Wood remains virtually the most predominant material used for construction and energy generation until the last half of the 19th century (Douglas, 1995). People used timber in the construction of houses, barns, fences, bridges, furniture items and musical instruments. In contemporary times, wood is still widely used for constructional purposes. It is also a valuable industrial raw material for the production of pulp, paperboard, rayon, cellophane, photographic films, tannin, methanol, ethanol, wood adhesives and chemical derivatives. The ubiquitous nature of wood has made it a valuable material in every stage of human development, thus man depends on wood right from the cradle to the grave. (Douglas, 1995).

The wood based industries have contributed to the economy of Nigeria and it was pointed out by Adeyoju (1975, 2001) that in 1963 wood based industries employed 17.5% of the labour force in the country, and 17.4% of the indigenous skilled and unskilled labour.

Sawmills account for 93.32% of the total number of wood based industries in Nigeria in 1997 (Fuwape, 2001). These mills are concentrated in the Southwestern part of the country with Ekiti, Ondo, Ogun and Lagos states having the largest numbers. As evidence, demand for plank is rising in almost every part of the country without a balanced supply. Availability of sawn wood have been discovered to be problem that can be attributed to the sawn wood production from the point of felling to the last stage of selling For the wood based industry

to meet the demand and to ensure the stability of the forest ecosystems, Oyegade (2000) suggested some strategies which could be adopted by the wood based sector and these are;

- i. Production and market development for plantation species,
- (ii) Limiting the area of natural forest to be converted to artificial forest,
- (iii) Improvement in wood efficiency,
- (iv) Improvement in logging operation,
- (v) Improvement in wood protection

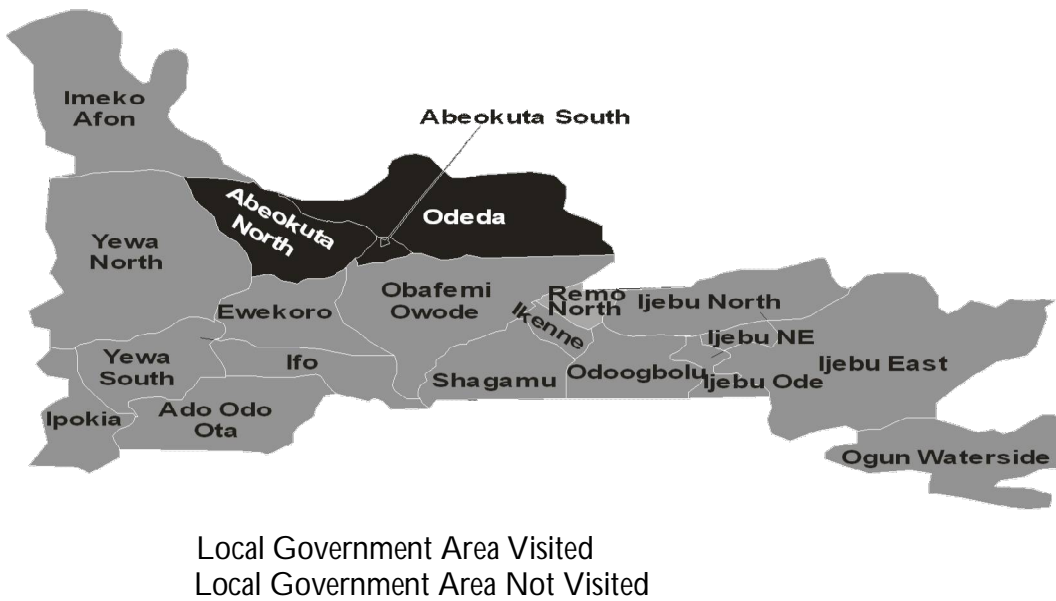
Munro (1974) observed that forest loss is occurring essentially because forest and trees are being used up faster than they are being generated i.e. supply and demand for forest products are not balanced. According to Munro (1974) suggested one way of restoring balance or achieving the balance of proper forest in the economy, is to make all those who use the forest to pay the full economic costs for their activities. This can only be done by guiding against illegal felling of trees which can be done by increasing the number of protection squads and providing them with the required operating equipment and funds. It is therefore necessary to investigate the most common timber species and girth sizes of timber in sawmill and challenges facing the marketers to ascertain the situation in the study area.

## **MATERIALS AND METHODS**

The study was carried out within Abeokuta metropolis in Ogun State. Random sampling procedure was used in the selection of the study area. Three stage design sampling techniques were employed for this study. In the first stage, three Local Government Areas (LGAs) out of six LGAs (Abeokuta North LGA, Abeokuta South LGA and Odeda LGA) were purposively selected because of high concentration of sawmills in these LGAs. In the second stage, in each of the LGAs eight sawmill industries were random-

ly selected making a total of twenty-four major sawmills selected in the study area. In the third stage, in each sawmill, five plank sellers' respondents were also randomly selected making a total of 40 respondents per LGA and a total of 120 questionnaires administered to the plank sellers in the study

area. Girthing tape was used to measure the girth of processed timber and hoppus's measurer; a book which gives the standard measurement of planks that can be found in timber to confirm the number of planks found in a timber as stated by the respondents.



**Fig.1. Map of Ogun State showing the Study Area**

**METHODS OF DATA ANALYSIS:**

Data collected were subjected to descriptive statistics – mean and percentage, and budgetary tool of Cost and Return analysis was used to determine the economic contribution.

**RESULTS:**

The socio-economic characteristics of respondents are presented in Table 1. The result showed that the business is male dominated (62.5%), the respondents fell mostly within the age group 31-50 (81.7%), majority were married (85%), largest percentage were not learned (48.3%), the most frequent year of experience was between 1

and 10 (47.5%), majority (88.3%) entered the business through apprenticeship, start-up capital was mostly between #1000 and #100,000 (55.83%), major problem encountered was cost of transportation (15%). Major suggestion to ensure continuity was afforestation (78.3%).

Table 3 showed the average girth size of available wood species to be less than 5cm and the various numbers of planks from each of the wood species. In Table 4, profits realized by the respondents were presented which showed what the saw millers earned from the business.

**Table 1: Socio-Demographic Characteristics of the Respondent**

Variables N =120	Frequency	Percentage
Gender		
Male	75	62.50
Female	45	37.50
Age Group		
19 - 30	20	16.70
31 - 50	98	81.70
≥ 51	2	1.70
Marital Status		
Married	102	85.00
Single	8	6.70
Divorced	10	8.30
Level of Education		
No Education	58	48.30
Primary	28	23.30
Secondary	34	28.30
Years of Experience		
1 – 10	57	47.50
11 – 20	43	35.80
21 - 30	12	10.00
No response	08	06.60
Entrance into the Business		
Inheritance	12	10.00
Apprenticeship	106	88.30
No Response	02	01.20
Capital Input (₦)		
1,000.00 – 100,000.0	67	55.83
100,001.0 – 200,000.0	31	25.83
200,001.0 – 300,000.	21	17.50
300,001.0 – 400,000.	1	0.83
Problems		
Power Failure	14	11.70
Cost of Transportation	18	15.00
Government Policy	2	1.70
Cost of Permit	1	0.80
No Response	85	70.80
Suggestion		
Afforestation	94	78.30
Government Fund	7	5.80
Government Policy/Penalty	1	0.80
No Response	18	15.00

The timber species available in the sawmill as the most available (66.7%) and *Musanga* is presented in Table 2, with *Albizia coriaria* *cecropioides* as the least (1.7%)

**Table 2: Species of Timber Available in the Market**

S/N	Plants Species	Common Name	Frequency of Hard-wood	% Frequency of Hard-wood	Frequency of Soft-wood	% Frequency of Softwood
	Botanical Name					
1	Anogeissus leiocarpus	Orin Du-du	53	44.2	-	-
2	Albizia coriaria	Ayinre	80	66.7	-	-
3	Daniellia oliveri	Iyaa	7	5.8	-	-
4	Ceiba pentadra	Araba	-	-	32	26.70
5	Musanga cecropioides	Aga	-	-	2	1.70
6	Anthocleista djalonen-sis	Sapo	-	-	16	13.30
7		Kugba	3	2.5	-	-
8	Blighia sapida	Isin	7	5.8	-	-
9	Cola spp	Igi Obi	36	30.0	-	-
10	Cola gigantia	Ogbus	37	30.80	-	-
11	Cleistopholis sp	Okedo	-	-	39	32.50
12	Ficus asperifolia	Epin	-	-	19	15.80
13	Lovoa trichioides	Koko Gbo	18	15.00	-	-
14	Alstonia boonei	Ahun	-	-	6	5.00
15	Terminalia superb	Afara	28	23.30	-	-
16	Afzelia Africana	Apa	24	20.00	-	-
17	Cordia millenii	Omo	-	-	9	7.5
18	Triplochiton scleroxy-lon	Arere	-	-	30	25.00
19	Milicia excelsa	Iroko	12	10.00	-	-
20	Gmelina arborea	Gmelina	10	8.30	-	-
21	Tectona grandis	Teak	7	5.80	-	-
22	Milletia sp	Apako	12	10.00	-	-
23		Babo	-	-	9	-
24	Dioscorea cayenensis	Apepe	12	10.00	-	-
25	Celtis integrifolia	Itaa	14	11.70	-	-
26	Ricinodendron heu-delotii	Putuputu	-	-	11	9.20
27	Antiaris Africana	Oro	-	-	22	18.30
28	Pycnanthus angolensis	Akomu	-	-	4	3.30

Table 3 showed the average girth size of available wood species to be less than 5cm and the various numbers of planks from each of the wood species. In Table 4, prof-

its realized by the respondents were presented which showed what the saw millers earned from the business.

**Table 3: Average Girth Size of Timber Species in the Sawmill and the Average Number of Planks.**

<b>Botanical Name</b>	<b>Common Name</b>	<b>Average Girth Size (cm)</b>	<b>Average Number of Plank</b>
Anogeissus leiocarpus	Orin Dudu	3.56	10
Albizia coriaria	Ayinre	3.71	10
Daniellia oliveri	Iyaa	3.59	10
Ceiba pentadra	Araba	5.60	09
Musanga cecropioides	Aga	3.00	06
Anthocleista djalensis	Sapo	3.54	09
	Kugba	3.90	10
Blighia sapida	Isin	3.93	13
Cola spp	Igi Obi	3.79	10
Cola gigantia	Ogbus	3.70	11
Cleistopholis sp	Okedo	3.64	10
Ficus asperifolia	Epin	3.54	09
Lovoa trichioides	Koko Gbo	3.31	08
Alstonia boonei	Ahun	3.65	10
Terminalia superba	Afara	3.55	10
Afzelia Africana	Apa	3.82	11
Cordia millenii	Omo	3.96	12
Triplochiton scleroxylon	Arere	3.75	11
Milicia excelsa	Iroko	4.69	12
Gmelina arborea	Gmelina	3.80	10
Tectona grandis	Teak	3.73	11
Milletia sp	Apako	3.56	09
	Babo	3.53	07
Dioscorea cayenensis	Apepe	3.29	08
Celtis integrifolia	Itaa	3.25	08
Ricinodendron heudelotii	Putuputu	3.59	09
Antiaris Africana	Oro	3.64	10
Pycnanthus angolensis	Akomu	3.85	10

**Table 4: Average Profitability of all the Sawmills per Month including Overhead**

S/N	Name of Sawmills	Total Revenue (₦)	Total Cost (₦)	Profit (₦)
1	Surulere	1,038,000.00	79,747.00	958,253.00
2	Alhaji. R.A Shomuyiwa	696,000.00	78,590.833	617,409.17
3	Wande	856,000.00	65,916.476	790,083.52
4	Olorunkewa	334,000.00	71,353.334	262,646.66
5	Fajinmi	614,400.00	67,090.00	547,310.00
6	Ogo-Oluwa	750,000.00	89,975.83	660,024.17
7	Shogbade	806,400.00	97,660.84	708,739.16
8	Halleluya	724,000.00	68,087.576	655,912.42
9	Egbamolisabi	810,000.00	72,713.66	737,268.34
10	Ibukun-Oluwa	103,800.00	80,951.67	957,048.33
11	Bada	836,000.00	70,318.584	765,681.42
12	Agbeniyi	1,056,000.00	105,172.92	950,827.08
13	Ayinla-Abiola	820,800.00	73,772.5	747,027.50
14	Oreofe-Oluwa	490,000.00	75,054.5	414,945.50
15	Temitope	499,200.00	99,700.00	399,500.00
16	Olarenwaju	1,004,000	78,345.833	925,654.17
17	Eji-Eyikunle	454,000.00	86,334.00	367,666.00
18	Ranmilowo-Oluwa	406,000.00	151,657.003	254,343.00
19	Okewumi	1,056,000.00	95,542.5	960,457.50
20	Taofeek Adesina	1,088,000.00	82,670.00	1,005,330.00
21	Sotayo	836,000.00	65,910.917	770,089.08
22	Tanimonure	526,400.00	80,070.00	446,330.00
23	Saburi Adeyemi	800,000.00	102,094.163	697,905.84
24	Aina Ganiyu	806,400.00	91,242.5	715,157.50

## DISCUSSION

In the entire sawmill surveyed, men were more involved than women in the business. Men were 62.5% and their female counterpart of 37.5%. This may be attributed to the fact that plank selling business is strenuous and tedious in nature. . This much difference might be attributed to the tedious na-

ture of sorting, carrying and arrangement of products which require lots of energy, the findings agrees with the assertion of Sekumade and Oluwatayo, (2011) that in Nigerian economy, most capital intensive and arduous jobs tend to be male-dominated. Furthermore, it could be seen that 85% of the respondents were married, 8.3% were divorced

while 6.7% were single. The greater involvement of married people in the business was driven by the desire to increase family income, so as to meet the needs of their family members. Greater percentage of middle age men, (31-50 years,) was involved in saw mill business in the Study Area. This could be attributed to the nature of the business which requires a lot of energy and ability to stay longer at work. Majority had no formal education consisting of (48.3%) indicating that there could be difficulties in the adoption of modern technology innovation in processing or conversion of timber into planks. Oladele, *et. al.* (2013) opined that Educational status affects skill acquisition and book keeping positively in small scale business. About 4.5% of the saw millers have 1 – 10 years of experience, 35.8% have 11– 20 years of experience while 10% had 21-30 years of experience.

The different constraints experienced by saw millers are majorly cost of transportation (18%), this could be due to increase or irregularity in cost of fuel, bad road and maintenance cost of the truck. Majority of the people that venture into the business (55.83%) had starting up capital (1000 - 100,000), indicating that the business requires little capital for a start. The abundance and the most common timber species that were available in the market were *Albizia coriaria* (ayinre) (66.7%), *Anogeissus leiocarpus* (orin dudu) (44.2%), *Cleistopholis sp* (okedo) 32.5% and *Musanga cecropioides* (aga) (1.7%) being the least. This means that *Albizia coriaria* (ayinre), *Anogeissus leiocarpus* (Orin dudu) and *Cleistopholis sp* (Okedo) were in abundance supply and were common in the market while all other timber species were present in short supply i.e. rare. This is because other important timber species such as the mahogany, *Nauclea di-*

*derrichii* (opepe), *Terminalia ivorensis* (Odigbo), *Terminalia superba* (Afara), *Triplochiton sceleroxylon* (Obeche) e. t. c. have suffered high intensity of logging and illegal exploitation to posing serious threats to their availability.

Most timber species in the forest are being harvested without allowing them grow to their merchantable sizes because of high demand, which in turn could affect the profitability of the seller, because the larger the size of timber (girth), the higher the number of planks that would be extracted from it and the higher the profit that would be generated from the sales. Munro {1974} observed that forest loss is occurring essentially because forest and trees are being used up faster than they are being regenerated i.e. supply and demand for forest products are not balanced.

The saw mill business could be profitable as the cost analysis revealed the average profit in Abeokuta North Local Government Area and Odeda Local Government Area to be (₦982,893.75 and ₦790,083.524) respectively, this is in-line with Sekumade & Oluwatayo, (2011) while Abeokuta North Local Government recorded the lowest average profit of ₦258,494.8315. This could be in line with the conclusion of Toledo, 2006 that timber trade accounts for a large proportion of total agricultural share of international economics which contributes to socio-economic development. The highest profit recorded in Abeokuta North Local Government could be due to increase in demand of planks for construction in the study area and nearness to urban; Lagos and also Odeda Local Government Area's profit could be due to availability of market, building construction, mechanized farm and institution around the Study Area. Odeda Local Government sawmills lowest profit could be due to low demand of planks and few customers



patronage. Abeokuta North Local Government has the lowest profit because of the area where the saw mills were located. There is no doubt that saw mill industries in Nigeria is an important sector because is a profitable enterprise. The sector is an avenue for increasing the nation's revenue with potentials of providing employment and enhancing income generation for hundreds and thousands of people. This sector is also expected to continue to grow as there are many potentials of industrialization in saw milling/wood based panel industry. But factors such as cost of transportation, power failure, Government policy, cost of permit or stamp duty has a great influence on the business.

### CONCLUSION

Government attention and policies should be directed to the area of electricity supply. Many of the saw mills spend most of their profit on transportation, power supply, Government permit or stamp duty. Forest industry should encourage tree farmers to form forestry co-operative societies and organize them accordingly. It is essential to thoroughly analyze the owners of timber products so that supply could be increased, thereby increasing the production of sawn wood. It should be noted that the number of consumers/buyers is increasing daily thereby affecting the market structure.

Government should also improve wood efficiency, logging operation, limiting the area of natural forest to be converted to artificial forest and production and market development for plantation species through the introduction of lesser known but fast growing wood species to solve problem of timber scarcity.

Government policy must be reviewed to check illegal felling and over exploitation of timber by imposing/enacting stiffer penalty

on illegal felling. There should also be an improvement in educational status through capacity building of the residents to enhance proper accountability. Government policy should also favour plantation establishment.

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