AVAILABILITY OF DIFFERENT LOG AND LUMBER SIZES WITHIN TIMBER MARKET AND SAWMILLS IN BORI AREAS OF RIVERS STATE.

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Abstract
The study appraised theavailability of different log and lumber sizes within timber markets and sawmills at Bori. Two hundred questionnaire forms were administered to respondents at the saw mills. The data were subjected to descriptive statistics and a 4-point Likert scale. The results showed that 56% male, 44% female .The age of respondents-12% fall within the 11-20 years, 21-30 years-14%, 31-40 age bracket-16%, 41-50 years-14%, the older group and oldest age group of 51-60 and 61-70 years was 10% and 0% respectively. No educated respondents were 20%, secondary school leavers-50%, graduates-7%. The result on marital status indicated that the singles 42%, married-56%. The form of ownership of sawmills and timber sale indicated that sole proprietorship and cooperative ownership was 65% and 35% respectively. The staff strength of 3-5 employees was 21%, 6-9 employees was 65%, 10-13 employees was 11%. While 14-20 staff was had 2%. The results types of labourer showed that only skilled labour was 28%. Similarly, unskilled, semi-skilled and skilled labour group was 70%, skilled and unskilled labour was 2%. Sale of commercial species highly transacted at the various sawmill/timber markets in Bori showed that *Eucalyptus species,* Mahagony *(Khayaivorensis), Isobelinadoka*, *Tectonagrandi,Azadirachta indica, Gmelinaarborea,* Iroko, Mahagony *(Khayaivorensis),* Ashe, cedar, Black afara, , *Isobelinadoka, Tectonagrandi, Azadirachta indica, Gmelinaarborea,*Obubra (*Mitragynaciliata*), Obubra (red) *Mitragynasp,* Iroko (*Miliciaexcelsa*), Ashe (*Naucleadideririchii*), Cedar (*Lophiaalata*), Black afara (*Terminaliasenegaliensis*) and other species were 70%, 86%,93%, 84%, 95%,74%,83%, 37%, 79%, 74%, 67%, 79% and 39% respectively. All the dimensions of lumber at various species were in high sale ranging from 56% to 88% while other species unspecified had the lowest in all sawmills 14%. The sources of logs procurement to sawmill in Bori 54% while those that said logs were procured from outside was 44%. There should be serious tree planting in Rivers State to replace those that are harvested to ensure economy and environment sustainability. The Rivers State Government should look into the problems of sawmills/timber markets in order to ensure smooth running of mills and timber markets.

Keywords: **Lumber, Sizes, Sawmills, Logs**

Introduction

Sawmill is an espacement where solid woods (timbers) are processed either primary or secondary into solid products of desirable and marketable sizes used for construction of houses, barns, fences, bridges, furniture items, musical instruments, ship flooring, wooden crates and non-solid product (micro products) mainly extractives such as rayon, tannin, methanol, ethanol, wood adhesives and other wood derivatives (David, 2013).

The wood industry is informal sector of the economy and a major employer of labour in both rural and urban development with cottage settlements around them. Sustainable growth of timber production in the utilization chain is influenced by factors such as availability of market, availability of timber and technology, price and employment. The wood industry is characterized and dominated by small-scale, privately owned establishments. The mills are located largely within or near city centres around Nigeria and, have individual production capacities of about 500 cubic meters of lumber per annum and numbered over 1,500 across the country (Fuwape, 1998). Developing country with its population increase at an alarming rate, requires that sawmills have no other option than to increase production of wood production (Ogedengbe, 1990). To make profit in sawmill business, the timber species, girth, distance of haulage, transportation cost, current market prices, profitability and prospects have to be considered and planned for before investing in sawmill industry (Ogedengbe, 1990). Saleable timber depends on species and lumber sizes, market price and role of government in production forestry, though the market price of timbers are not true reflection or value of the resources, cost of harvesting, extraction, transportation, conversion.

The need to appraise sawn wood marketing strategy to serve as an indicator for interested investor in forest industries (i.e. plantation farmers and sawmill) is stressed by Ogunsanwo (2001). Ogunsanwo (2001) further explained for production to be continuous without a period of break, raw materials have to be in constant supply. In order to achieve this, Ogunsanwo (2001) suggested that information should be obtained on the sources of inputs and ease of procurement before sawmill establishment, while interested investors should be aware of the problems and prospect of wood processing business for evaluation and necessary action.

The demand, available and marketed timber harvested and processed in Africa has increased in modern times at sea ports or major local markets and sawmills where wood merchants procure readily prime species even extinct some (Famuyide,*et al.* 2012). There is lack of well documented compendium on available and traded timber is of major concern to traders and wood end users particularly commonly traded one and those highly prized in Port Harcourt.

Therefore, this study examined availability and marketability of different log and lumber sizes within timber markets and sawmills in Bori in Khana local Government Area of Rivers State, Nigeria.

Materials and methods

The research work was carried out in Bori timber markets of Rivers State in Khana Local Government Area of Rivers State. The LGA is part of Ogoni Land located in the South east of Port Harcourt on latitude $4^{0}55^{1}$ north and longitude $7^{0}15^{1}$ east with average annual rainfall of about 2000mm and covering around 1,000km2 in Rivers State, Southern Nigeria (UNEP Report, 2011).

The major occupations of the inhabitants of the two LGAs are fishing, farming and petty trading.

Research Design

Questionnaire forms were administered to elicit information from wood processors and sellers using questionnaires base on the availability and marketability of timber species at the various sawmills and timber markets. The respondents were selected by identification of owners of sawmills and timber sale outlet, thereafter, wood processors.

Sampling Procedure and Sampling Size

The number of respondents for the study was fifty (25) respondents each for sawmills (4) bring the total to one hundred questionnaires to be administered.

Method of Data Analysis

The data were subjected to descriptive statistics and a 4-point Likert scale. The LS ranged from Strongly Agree = 4, Agree = 3, Disagree = 2, to Strongly Disagree = 1.

Results

Demography Information of Respondents

The socio-economic characteristics of respondents indicated that males were 56% while female respondents were 44% (Table 1). The age of respondents at sawmills 12% within the 11-20 age groups; similarly, within age bracket of 21-30 years were 14%. The 31-40 age bracket was 16% while age group of 41-50 was 14%, no respondent within 51-60years was 10% (Table 1).

On educational terms, highest number of no education was found in Bori with 20%. The primary schoolhad 23% and secondary school leavers was 50% while graduates of tertiary education were involved in the business as well were just 7% graduates.

The result on marital status indicated that the singles was 42% while married respondents 53%. The form of ownership of sawmills and timber sale indicated that sole proprietorship 65% while cooperative ownership was 35% (Table 1).

Table 1: Socio-economic characteristics of Respondents

Socio-economic characteristics	**Percentage**
Sex	
Male	56
Female	44
	100
Age	
11-20	12
21-30	14
31-40	16
41-50	14
51-60	10
	56
Education	
No Education	20
FSLC	23
SSCE	50
Tertiary	07
Marital Status	**100**

Single	42
Married	56
Separated/Divorced	02
	100
Forms of Ownership	
Sole Proprietorship	65
Co-operative	35
100	

Field survey, 2016

Staff strength of sawmills

Table 2 shows the staff strength of the various sawmills in Bori, 6-9 was highest (65%) followed by3-5 employees with 21% and 10-13 was 11%). Generally, 14-20 employee strength was overall total was 2% (Table 2).

Table 2: Staff Strength at the various sawmills

Number of Persons	Bori
3-5	21
6-9	65
10-13	11
14-20	2

Field survey, 2016

The results on the types of labour showed that skilled labour was 28%, unskilled, semi-skilled and skilled labour group was 70% while skilled and unskilled labour 2% (Figure 1).

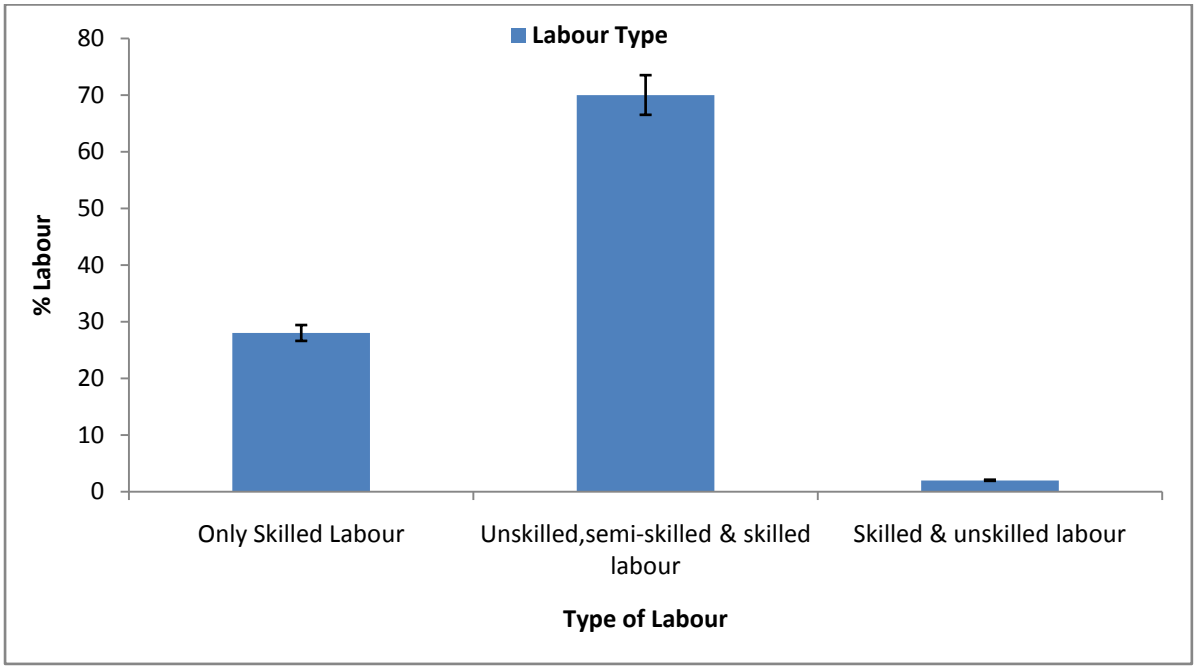

Figure 1: Percentage Labour at the various Sawmills in BoriWood species transacted at various sawmills

Table 3 shows that 14 species were transacted at the various sawmill and timber markets commercial sale of species highly transacted at the various sawmill/timber markets in Bori showed that *Eucalyptus species*, Mahagony *(Khayaivorensis)*, *Isobelinadoka*, *Tectonagrandi*,*Azadirachta indica*, *Gmelinaarborea*, Iroko, Mahagony *(Khayaivorensis)*, Ashe, cedar, Black afara, , *Isobelinadoka*, *Tectonagrandi*, *Azadirachta indica*, *Gmelinaarborea*,Obubra (*Mitragynaciliata*), Obubra (red) *Mitragynasp*, Iroko (*Miliciaexcelsa*), Ashe (*Naucleadideririchii*), Cedar (*Lophiaalata*), Black

afara (*Terminaliasenegaliensis*) and other species were 70%, 86%,93%, 84%, 95%,74%,83%, 37%, 79%, 74%, 67%, 79% and 39% respectively.

Table 3: Timber species available at various sawmills and timber markets

	Sale (%)
Eucalyptus species	70
Mahagony *(Khayaivorensis)*	86
Isobelinadoka	93
Tectonagrandi	84
Azadirachta indica	95
Gmelinaarborea	74
Obubra (*Mitragynaciliata*)	83
Obubra (red) *Mitragynasp*	37
Iroko (*Miliciaexcelsa*)	79
Ashe (*Naucleadideririchii*)	74
Cedar (*Lophiaalata*)	67
Black afara (*Terminaliasenegaliensis*)	79
Other species	39

Field survey, 2016

Dimension of planks of timber species available at various sawmills and timber markets

All the dimensions of timber at various species were in high sale ranged between 14% to 95% with 2"x4"x12ft having 95% sale, 2"x3"x12ft and 4"x6"x12ft with 88% and 80% respectively. 2"x2"x12ft had 65%followed by 2"x1"x12ft with 58%, 3"x4"x12ft had 56% whileother species unspecified had the lowest with 14%. This implies that the operators, traders and buyers knew the species with high quality (Table 4).

Table 4: Dimension of planks of species available at various sawmills and timber markets

Plank dimensions Produced by Sawmills	**Bori (%)**
2"x1"x12ft	58
2"x2"x12ft	65
2"x3"x12ft	88
2"x4"x12ft	95
4"x6"x12ft	80
2"x12"x12ft	84
3"x4"x12ft	56
Others specify	14

Field survey, 2016

Sources of wood processed and sold

The sources of logs to sawmills for processing were locations within Rivers State; 54% of respondents while 44% agreed that logs were procured from outside(Table 5).

Table 5: Source of logs to the various sawmills

Source of Logs	**Percentage**
Purchased from within Rivers	54
Outside Rivers State	44

Field survey, 2016

Problems encountered by timber dealers and processors

At Bori sawmill and timber market; all the outlined problems were hindered the operation of the mills; inadequate electricity (m=3.37), transportation a major problem (m=3.32), electricity supply was also a measure problem while was not all that difficult (m=2.46), Bureaucratic process to obtain logs for processing was a problem (m=2.67) while insecurity of properties (m=2.53), multiple taxation (m=2.51), inadequate labour supply (m=2.41) was rejected, shortage of materials and equipment (m=2.53) while low sales (m=1.61) was not a serious problem in Bori (Table 6).

Table 6: Problems encountered by sawmill operators at Bori

Problems	strongly agree	Agree	Disagree	Strongly Disagree	Mean of Means	Remarks
Inadequate electricity	25	13	1	4	3.37	Accept
Transportation Difficult	21	17	3	2	3.32	Accept
Bureaucratic process to obtain	10	18	6	9	2.67	Accept
Insecurity of properties	13	8	11	11	2.53	Accept
Multiple Taxation	13	8	10	12	2.51	Accept
Inadequate Labour supply	12	8	10	12	2.41	Reject
Shortage of Materials and Equipment	14	5	16	6	2.53	Accept
Low Sales	5	4	3	31	1.61	Reject
Others specify	2	2	1	3	0.44	Reject

Field survey, 2016

Discussion

Demographic Characteristics of Respondents

The demographic characteristics of respondents indicated that males were more 56% while female respondents 44%, respectively. The results showed that both men and female are engaged in the timber business but men were more than female at all sawmills and timber markets in Bori. The age of respondents at all the sawmills/timber markets sampled showed that the 11-20 age group, 21-30 years and 31-40 age bracketswere involved in the business. On educational terms, high number without education was found was 20%, FSLC (23%), holders of SSCE with 38%. The graduates of tertiary education were involved in the business as just 7% graduates. This implies that the primary school leavers were more involved than other groups.

due to the high number of young school leavers scouting for menial jobs and paid employments.

Nature of Ownership of Sawmills

The sole proprietorship formed of ownership of sawmills and timber sale outlets dominated 65% while cooperative ownership was 35%. This implies that at there was no much cooperation amongst traders which accentuated by their not being beneficiaries of loans from banks. They were more of sole proprietorship than cooperatives.

Staff strength of the various sawmills

The staff strength of the various sawmills in which 3-5 employeeswas 21%, 6-9 employees was 65% and 10-13 was 11%. Generally, the 14-20 staff was overall total of 2%.

This development shows that location and availability of logs influenced staff strength. This is because Bori seemed to be favoured by factors like availability of raw materials round logs sourced from Bayelsa State, Abua by water. The labour and number of staff are important in the working of sawmills- skilled or unskilled are all involved in the log depot, sale, processing and other activities within the log yard. Sawmills and timber markets that had number of unskilled, semi-skilled and skilled and highest in the engagement of labour. This might be

Wood species available at the various sawmill and timber Markets

Few timber species were transacted at the various sawmill and timber markets probably due to because of high utilization values. They were Obubra,Obubra (red), Iroko, Mahagony, Ashe, cedar, and Black afara while *Eucalyptus species, Khaya species, Isobelinadoka, Tectonagrandi, Azadirachta indica and Gmelinaarborea*. This result agrees with Idumah and Awe (2011) who stated that the choice of wood species by furniture makers within Ibadan Metropolis was based among other things on the strength and durability.

Although some species could not be properly identified, few of them were not available because they are said to be extinct which agrees with Sotanndeet *al.,* (2010) who observed that species like *Milicia excels, Khaya spp., Afzeliaafricana, Naucleadideriichii, Triplochitonscleroxylon* and *Terminalia spp*. were scarce in the market as a result of their over exploitation. To meet increasing demands Lucas (1983) reported that *Naucleadideriichii* has been listed alongside other

most common economic wood species that is fast disappearing from of forests located in the Southwest Nigeria. Knowledge of the wood species is key but more importantly their availability and utilization gap filling is necessary (David, 2013).

Different timber sizes

The various sawmills processed and produced different timber sizes; 2"x1"x12ft had 58% of sale while from 2"x2"x12ft to 3"x4"x12ft had high patronage. It was observed that larger the volume and size, the higher the price and sale. Though, problems encountered by sawmill and timber markets varied common problems were inadequate electricity supply, transportation difficulty, multiple taxation, bureaucratic bottlenecks to log procurements and shortage of equipment militate against efficient operation of mills.

Conclusion

The study has established that various sawmills and timber markets process and produce different lumber sizes of different wood species and that the bigger the volume and size, the higher the sale in all sawmills and timber markets sampled. These wood species were purchased from Rivers State and beyond. Some problems were common to all sawmills while few were sawmill specific and peculiar.There should be serious tree planting in Rivers State to replace those that are harvested to ensure sustained economic usage and environmental sustainability.

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