



PREFERENCE OF WOOD SPECIES USED FOR FURNITURE MAKING IN ABEOKUTA, OGUN STATE, NIGERIA

OGUNJOBI KM* • SHITTU AT • GAKENOU OF • ASHADE OC • ADETOGUN AC

Department of Forestry and Wildlife Management, Federal University of Agriculture Abeokuta,
Nigeria.

*Corresponding Author's e-mail: ogunjobikm@funaab.edu.ng

ABSTRACT: There has been increasing pressure on the forest resources for the production of lumber needed for the construction of furniture. This study assessed the preference of wood species used for furniture making in Abeokuta South, Ogun State, Nigeria. Pre-tested structured questionnaires were administered to fifty furniture producers purposively selected in the study area. Data were analyzed using descriptive statistics such as percentage and frequency while chi-square was used to relate the factors influencing the choice of wood species. From the study, 19 species were found to be available for the production of furniture in the study area. *Gmelina arborea* was mostly preferred (80.0%) followed by *Mansonia altissima* (32.0%), *Azelia africana* (22.0%) and *Tectona grandis* (20.0%). The preference criteria of species for furniture in Abeokuta South are knowledge of the species (86.4%), visual appearance (82.5%), durability (70.8%), availability (65.4%), price (63.5%), easy machining (50.6%), strength (48.2%), furniture type (30.5%) and resistance to pests (25.8%). Visual appearance and knowledge of the species significantly ($P < 0.10$) influences the preference for the species. Chair was the commonest furniture (34.0%) followed by Wardrobe (32.0%), cupboard (24.0%) while both table and bed stand had 20.0% each. Other species should be utilized for furniture making so as to reduce pressure on the species preferred. Adequate efforts through afforestation should be put in place to ensure continuous availability of species for the furniture industry.

Keywords: *Gmelina arborea*, furniture, preferences of wood species, visual appearance, knowledge of species

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1. INTRODUCTION

Man has been making use of wood for diverse purposes from time immemorial. It is known that the earliest humans used wood to make shelters, cook food, construct tools, and make weapons. Wood has remained an important substance throughout history because of its unique and useful properties as well as its versatility (Rowell 2005). There are 600 known wood species in Nigeria out of which only 60 wood species have been found to be of market value while others are neglected or destroyed during harvesting (Beak Consultants 1999).

Furniture are in various forms, such as doors, tables, chairs, decorations, cabinets and shelves, cupboards, beds and others. Ngui *et al.* (2011) reported that furniture has the highest value-added component among the major wood-based products. Wooden furniture industries make a substantial contribution to development in tropical countries, producing important economic benefits and

playing a significant role in promoting economic growth (ITC/ITTO 2005). Furniture adds value, style and elegance to the edifice they occupy whether it is home, office and other social infrastructures such as schools, hotels, hospitals and others. Their contributions to the beautification and aesthetics of anywhere they are used cannot be overemphasized. In the recent times, there has been a monumental increase in the value of furniture.

The choice of wood species for a particular purpose or utilization potentials varies and is due to different features and characteristics of the wood. Some of these features are wood strength, natural durability, colour (appearance), ease of machine and workability, cost of construction, hardness and availability (Rowell 2005).

Several sawn wood consumption-based studies have already been carried out in relation to preferences for species across the globe (Luppold 1983; Bullard *et al.* 1988; Pakarinen 1999; Karki 2000; Bigsby and Ozanne

2001; Teisl 2002; Vlosky and Shupe 2002; ITC/ITTO 2005; Sandberg and Johansson 2005; Ilce *et al.* 2010; Sood 2014; Boampong *et al.* 2015). All these studies reported divergent factors for preference ranging from wood intrinsic factors to environmental labeling regarding the security of treated wood. Luppold (1983) and Bullard *et al.* (1988), in their extensive studies revealed high preferences for open grain species such as Oak, Cherry, Maple and others for bedroom and Youth furniture in Mississippi. Pakarinen (1999) and Sandberg and Johansson (2005) found aesthetic texture, appearance, surface colour and annual ring orientation as key factors in Sweden. Karki (2000) indicated design, species, price, green attributes and finishing, in that order as effective factors for choice of furniture in Southern Germany. In New Zealand, the forest type from which the wood for furniture is obtained (plantation preferred to natural forest), irrespective of environmental labeling, and the warranty period, influenced the consumer preferences (Bigsby and Ozanne, 2001). The preference trend has been towards lighter colors in China (ITC/ITTO 2005). Ilce *et al.* (2010), found surface figure as the most important factor influencing the choice of furniture products in Turkey. In India, wood users have a strong preference for hardwoods that are perceived to be more resistant to termites and decay as well as dark tropical woods (Sood 2014). Boampong *et al.* (2015), reported durability, appearance and processability as the most influential factors in the selection of wood for furniture and joinery products in Ghana.

There are several factors influencing the choice of a species for furniture making in Nigeria. These factors vary from one place to the other. Aiyeloja *et al.* (2010) revealed that timber price, durability, workability and availability were among the key determinants which influenced preference for lesser-known wood species among cabinet-makers in Oyo and Osun States. Similarly, Arowosoge and Tee (2010) indicated durability, design/finishing, colour/grain, and wood species as key factors influencing consumer's choice for wooden dining furniture in Lagos, Ibadan and Osogbo.

Wood furniture industries have been identified as a veritable tool in poverty alleviation because of their potency in revenue generation, job creation, investment attraction and creation of market for local products (Olorunnisola 2000). However, there is a lack of

adequate data and information on the preferences of species by the furniture producers which would have enhanced sawmills in the choice of wood to be sourced and processed. Thus, sawmills need to understand what determines consumers' choice of their products. This study therefore investigated the preference of wood species for furniture making in Abeokuta South, Ogun State, Nigeria.

2. Study Area

The study was carried out in Abeokuta South local government, Ogun State located in Southwestern part of Nigeria (Fig. 1). Geographically, it lies on Latitudes 7° 10' N to 7° 15' N and Longitudes 3° 17' E to 3° 26' E. It is the largest city and capital of Ogun state in southwest Nigeria. The annual rainfall, which normally spreads over eight (8) months between April and November, ranges between 100mm to 200mm, having bi-modal pattern with the peaks at May/June and September/October.

2.1. Data Collection

The instruments used for the data collection were structured questionnaires and interview schedule. The questionnaire contained a uniform set of questions for all the furniture producers. Fifty copies of structured questionnaires were administered interpersonally to the respondents in each of the randomly selected furniture making industries within Abeokuta South. The questionnaires were divided into two parts; Part 'A' addressed the demographic characteristics of the respondents while Part 'B' addressed the preference of wood species utilized for furniture in Ogun State. Furniture centres in the study area were mapped for easy location and description. The preference of the end-users was also determined.

2.2. Data Analysis

Data collected from the administration of questionnaire was processed using Statistical Package for Social Science (SPSS V20). Descriptive statistical tools such as frequency, percentage, mean and chi square were used to determine the factors that influences the choice of wood species.

cupboard (24.0%) while both table and bed stand had 20.0% each.

Preference of species by Furniture Makers

The preference of the furniture producers for the wood species in the study area is as presented in Table 3. The study showed that 19 species were preferred for furniture making in the study area. The study showed that 19 species were preferred for furniture making in the study area. This is lower than 33 and 28 recorded in Lagos and Ibadan respectively (Arowosoge et al, 2006) but higher than 18 and 15 wood species reported for Benin and Nigeria (Arowosoge et al, 2006 and Arowosoge et al, 2009). *Gmelina arborea* was mostly preferred (80.0%) followed by *Mansonia altissima* (32.0%), *Azelia africana* (22.0%) and *Tectona grandis* (20.0%). Preference for *Gmelina arborea* was because of its visual pleasant appearance and other properties. Arowosoge *et al.* (2008) reported that *Gmelina arborea* was found to be suitable for furniture making because of its strength properties and economic value. In another study, Arowosoge *et al.* (2010) reported *Khaya ivorensis* as the highest preferred wood for furniture which increased for 4 years and later declined while *Gmelina arborea* increased yearly for the 6 years of the study. Sotannde *et al.* (2011) reported that in Nigeria, preference for high quality timber has resulted in over exploitation of very strong and durable species like *Milicia excelsa*, *Triplochiton scleroxylon*, *Terminalia spp*, *Nauclea diderrichii* and others. The report attributed the preference to visual appearance and the knowledge of the species. This study, therefore, shows that species like *Gmelina arborea*, *Mansonia altissima*, *Funtumia elastica* and *Ficus exasperata* are majorly sourced after and this has implications on their continuous availability if efforts are not directed towards regeneration.

Preferences are typical for consumer markets. The preferences influence what consumers would buy and relate to the material used for product production, its quality, appearance and functionality (Paluš *et al.* 2012). Results from the analysis indicate that all the nine factors that were put up for consideration with regards to their influence to the selection of the species were influential towards the selection of a particular species for utilisation. The preference criteria of species for furniture in Abeokuta South are knowledge of the species (86.4%), visual appearance (82.5%), durability (70.8%), availability (65.4%), price (63.5%), easy machining

(50.6%), strength (48.2%), furniture type (30.5%) and resistance to pests (25.8%). However, of all the 9 factors considered, only visual appearance and knowledge of species significantly ($p < 0.10$) influenced the respondents' choice of wood species in the study area as shown in Table 5.

Table 1: Socio-economic characteristics of the furniture producers.

Variables	Frequency	Percent
Gender		
Male	48	96.0
Female	2	4.0
Age		
20 - 29 yrs	2	4.1
30 - 39 yrs	10	20.4
40 - 49 yrs	15	30.6
50 - 59 yrs	19	38.8
60 - 69 yrs	3	6.1
Marital Status		
Single	4	8.0
Married	46	92.0
Religion		
Christianity	34	68.0
Islam	16	32.0
Level of Education		
Primary	27	54.0
Secondary	22	44.0
Tertiary	1	2.0
Ethnic Group		
Yoruba	48	96.0
Igbo	1	2.0
Benin Republic	1	2.0
Years of Experience		
1 - 5 yrs	5	10.0
6 - 10 yrs	12	24.0
11 - 15 yrs	14	28.0
16 - 20 yrs	6	12.0
>20 yrs	13	26.0
Membership of Furniture Makers Society		
Yes	11	22.9
No	37	77.1
Monthly Income		
N10,000 - N20,000	1	2.1
N20,001 - N30,000	13	27.1
N30,001 - N40,000	10	20.8
N40,001 - N50,000	8	16.7
>N50,000	16	33.3

Table 2: Production Activities of Furniture industries.

Variables	Frequency	Percentage
Source of Wood		
Sawmill	46	93.9
Imported Board	1	2.0
Forest Reserve, Sawmill	2	4.1
Problem Encountered		
Accident	2	18.2
Dusty wood	5	45.5
Finances, climate & untimely delivery	1	9.1
Lack of apprentice & wood unavailability	1	9.1
Unavailability	1	9.1
Types of furniture made		
Chair	17	34.0
Bed stand	10	20.0
Door	5	10.0
Table	10	20.0
Wardrobe	16	32.0
Roofing	2	4.0
Cupboard	12	24.0
Dressing mirror	3	6.0
Shoe hanger	1	2.0
Window	1	2.0
TV stand	1	2.0
Shelves	1	2.0

Table 3: Preference of Wood Species by Furniture Makers

Variables	Common name	Frequency	Percentage
Wood Species preferred for furniture			
<i>Gmelina arborea</i>	Gmelina	40	80.0
<i>Tectona grandis</i>	Teak	10	20.0
<i>Azalia africana</i>	African mahogany	11	22.0
<i>Holoptelea grandis</i>	Orange barked terminalia	2	4.0
<i>Albizia coriaria</i>	Silk Tree	4	8.0
<i>Antiaris toxicaria</i>	Barked cloth tree	5	10.0
<i>Alstonia boonei</i>	Cheese wood	1	2.0
<i>Funtumia elastica</i>	West African rubber tree	9	18.0
<i>Ficus exasperata</i>	Sand paper tree	8	16.0
<i>Cola spp</i>	Kola tree	2	4.0
<i>Mansonia altissima</i>	Mansonia	16	32.0
<i>Milicia excels</i>	Iroko tree	4	8.0
<i>Ceiba pentandra</i>	Silk cotton tree	5	10.0
<i>Anogeissus leiocarpus</i>	African birch	4	8.0
<i>Entandrophragma spp</i>	Sipo mahogany	2	4.0
<i>Terminalia superba</i>	Shingle wood	2	4.0
<i>Cyperus esculentus</i>	Yellow nuts edge	3	6.0
<i>Nauclea diderrichii</i>	Brimstone tree	3	6.0
Laminated boards		1	2.0

Table 4: Chi-square analysis showing factors that influence choice of wood species

Variables	%	df	Value
Species * Price	63.5	8	11.473 ^{ns}
Species * Visual Appearance	82.8	8	13.423*
Species * Strength	48.2	8	7.369 ^{ns}
Species * Durability	70.8	8	5.838 ^{ns}
Species * Availability	65.4	8	7.410 ^{ns}
Species * Easy Machining	50.6	8	9.984 ^{ns}
Species * Furniture Type	30.5	8	6.186 ^{ns}
Species * Resistance against Pests	25.8	8	7.909 ^{ns}
Species * Knowledge of Species	86.5	8	14.452*

ns: Not significant at 10% (p>0.10) level

*: Significant at 10% (p<0.10) level

4. CONCLUSION

From the results and findings of this study, the following conclusions could be drawn:

1. Furniture making is predominantly a male job in the study area.
2. *Gmelina arborea* followed by *Mansonia altissima*, *Funtumia elastica* and *Ficus exasperata* were the most sourced species.
3. The preference criteria of species selection for furniture making in the area are visual appearance, knowledge of the species, durability, availability, price, easy machining, strength, furniture type and resistance to pests in that order.
4. Furniture industry in the study area would thrive better if the producers have access to better machines and loan facilities.

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