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AN ASSESSMENT OF THE PERFORMANCE OF WOODEN FURNITURE INDUSTRY IN JOS METROPOLIS PLATEAU STATE, NIGERIA

L.N. Sambe[1*], P.U. Ancha[2], D. C. Goshit [3]

[1,2,3]Department of Social and Environmental Forestry, Federal University of Agriculture, Makurdi.

****leoflondon@gmail.com***

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ABSTRACT

The paucity of information on the marketed wood products has contributed to poor planning and development of wood industry in Nigeria. The study was generally aimed at assessing the performance of wooden furniture industry in Jos metropolis. Specifically, the study assessed wood species mostly used for wooden furniture making and assessed the profitability of wooden furniture in Jos metropolis, and identifies challenges of wood furniture makers in Jos metropolis in Plateau State. The study adopted a survey design while cluster sampling was applied to draw the study sample from the five Local Government areas (LGAs) that comprised Jos metropolis. Applying 30% sampling intensity, 129 respondents were selected from total number of 421 furniture makers. Data was collected using semi-structured interview. Descriptive statistics and budgeting tools were used in the analysis of the data. The result showed that all the furniture makers were males, while their qualifications ranged between primary (78.1%) secondary (19.3%) and tertiary institution (2.6%). The study also revealed that ten wood species were used in furniture making in the study area. Milicia excelsa ranked first, followed by Tectona grandis, Pterocarpus erinaceous while Prosopis africana and Anageissus leiocarpa were the least ranked, (ninth and tenth), respectively. The budgetary analysis indicated profitability in the industry by furniture makers. It revealed a gross margin of ₦38,409.1 and Net income of ₦6,247.84 while Gross ratio (GR) and Rate of return on investment (RORI) were 0.75 and 4.2 respectively. The study revealed that limited wood supply was the biggest challenge while government interference was the least challenge that

affected the industry. The Study thus recommends for deliberate efforts by the private sector and government towards regeneration and tree planting of the species used by the industry. Hence, investment in the resource base will ensure sustainable supply of raw materials for the continued existence of the furniture industry and its contribution to economic growth and development.

Keywords: Furniture industry, Jos Metropolis, Profitability, Timber species

1. INTRODUCTION

Furniture is an inevitable part of human existence. It is used for beautification of both private and public spaces while also providing significant opportunities for income generation, employment and development of craftsmanship. Furniture is made in various forms, such as doors, tables, chairs, decorations, cabinets and shelves, cupboards, beds, windows, roofing and other items (Adedokun *et al*., 2017). Wood is one of the earliest materials used for construction purposes such as building and furniture making and is still one of the most valuable of all materials. It is used in furniture industry because of its beauty, variations in figure and colour blending when compared with other structural materials used for furniture (Metterm, 1986; Ohagwu and Ogwuishiwu, 2011). Ngui, Agrawal and Voon (2011) observed that among the wood based products, furniture value-added part that is most ranked. These characteristics of wood are consistent with the species of tree, such as the strength, hardness, durability and appearance which vary between species (Wood Products, 2008).

In furniture making certain wood species are prioritized for utilization compared to others species. Arowosoge (2006) categorized 39 wood species and listed that 15 of these 39 wood species were commonly used for furniture making while the other 24 species were categorized as lesser used species. This implies that only 15 of the 600 total known wood species that abound in the Nigerian forest are preferred for furniture making. The choice of wood species utilized for furniture making differs due to different features and characteristics of the wood, including utilization potential and tree species availability. These features include wood strength, natural durability, colour (appearance), ease of machine and workability, cost construction, hardness among others (Rowell, 2005; Kozak 2007; Ogunjobi *et al*., 2018).

The furniture industry is one of the largest wood industries in Nigeria. The industry is ranked to be among the top ten major wood-based industries in country. It represents about 80% of the wood-based industries in the country. Wooden furniture industry is reported to be the most widely distributed of all the wood-based industries in Nigeria (Abdullahi, 1999; Alao and Kuje, 2012). The industry is found to be the major market for wood product in Nigeria and thus protect the continued existence and thriving of the primary wood processing industries such as sawmills and plywood mills (Babatunde *et al*., 2017). The furniture industry is very significant sector of the Nigeria economy. This in relation to annual wood consumption, employment generation and socio-economic development (Momoh *et al*.,1999; Aiyeoloja *et al*., 2014).

According to Uzowulu (1990) and Ogunjobi, *et al*., (2018) furniture industry plays a major role in the development of Nigerian economy. This is because it generates income to local players in the industry and also serves as source of employment for significant proportion of Nigerians. Thus, in relation to these two indices, only a few industrial sectors can rival or compete with the furniture industry in the country. These findings are corroborated by Arowosoge *et al*., (2010) report which states that the wooden furniture in Nigeria industry is growing steadily and is solely dependent on sawn wood sector for raw materials. According to ITC/ITTO (2005) 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). Raw Materials and Research Development Council (RMRDC) in 2007 found that sawn wood production from the rich forests of southern Nigeria serves over 1200 furniture factories apart from the small-scale side furniture makers in various parts the country.

Despite these contributions to national economy, the furniture industry is currently constrained by the declining wood resources and escalating prices of the wood used for furniture making which threatens its profitability and sustainability. There is high demand for wood species by the furniture industry and the rising demand for wood products. This is due to factors such as population increase and declining standard of living. This has led to a decline of popular species that have been used for furniture making. This poses serious threat to the performance of the industry in terms of availability of timber species and profitability in furniture making (Ibrahim,

2008; Arowosoge and Tee, 2012). Also, the unprecedented increase in number of timber species harvested and marketed in recent years have led to prime species of timber been largely logged, threatening the performance of furniture industry in respect of its sustainability and profitability (Arowosoge *et al*., 2008; ITTO, 2013).

Several studies have documented wood species used in the timber and wooden furniture industry in Nigeria (Aiyeloja, 2014; Adedokun 2017; Ogunjobi *et al*. 2018, Sambe *et al*., 2018; Okeleke, 2020). These species include: *Gmelina arboreal, Tectona grandis, Afzelia Africana, Mansonia altissima, Milicia excelsa, Anageissus leoicarpa, Terminalia superba, Kaya senegalensis, Nauclea dedirrichii, Daniella ogea, Pterocarpus erinaceus, Prosopis Africana, Parkia biglobosa, Entandrophragma spp, Aningeria altissima, and Cordia millenii*. However, these preferred commonly used wood species have declined both in quantity and quality (Beak Consultants, 1998) due to the extensive depletion of the forest and adoption of some lesser used species. FAO (2010) estimated that Nigeria loses about 3.7% of its forest area yearly mainly due to over exploitation of wood for timber production. Consequently, yield of the most valuable timber species declines as a result of initial over cutting and failure to leave sufficient seed trees (Kellman and Tackabery, 1997) leading to decline in the availability of some tree species like Iroko *(Milicia excelsa), Opepe (Nuclea dierrichii),* Teak (*Tectona grandis*) and many other valuable timber species. Because of the high depletion of forest there has been a decline in the quality and quantity of species in markets. Because of the decline in the commonly used timber species (CUTS) used for furniture, wood industries have been forced to resort to the use of lesser known and predominant timbers species (Lesser-known species, LUTS) available in the locality (General Wood and Veneers Consultants Ltd. (GWVC), 1994).

Studies have also revealed that there is considerable financial cost in the production of wooden furniture. Significant proportions of total cost of production are spent on timber products such as round logs and sawn timber. These seem to be associated with the depletion of forest resources and indiscriminate felling timber by the local population. Also, labour cost and cost of operations seemed to have plagued wooden furniture industry across the countries of the world (Norini, Rohana, Ahmad Fauzi and Mohd Parid, 2009). In Nigeria, wooden furniture is operated

mostly on small and medium scale level with the main aim of making profits and sustenance of livelihood. Therefore, depletion, scarcity and cost of timber is likely to affect the availability of timber and total cost of making furniture, which in turn could affect the economic returns of furniture makers.

Plethora of studies has been conducted on the performance of furniture industry in Nigeria. For instance, Alao and Kuje (2010) study in Lafia Metropolis, Nasarawa State Nigeria, focused on type of wood used in furniture production and profitability of the furniture industry in the area. Aiyeloja, Oladele and Ozoemena (2014) also investigated the profitability of wood furniture industry in study in Port Harcourt, Rivers State. Obembe, Ojo and Ilori (2014) also assessed the impact of technological capabilities and innovations on performance of wooden furniture industry in south-west Nigeria. While Ogunjobi *et al*., (2018) assessed the preference of timber species used for timber making in Abeokuta, Ogun State, Nigeria. These studies revealed positive performance of wooden furniture industry in terms of profitability while also identifying the common timber used in furniture production in the study areas. These studies also showed the importance of wood furniture industries as a veritable tool in poverty alleviation and their potency in revenue generation, job creation, investment attraction and creation of market for local products need to be appraised.

Therefore, this study is tailored to provide reliable market information on the woods species that feed the furniture industry, profitability and challenges. These indicators are invaluable and expedient have to be constantly studied to propel and promote investment in the sector. It will also encourage and trigger government and private sector initiatives and investment in the development of the sector, and stimulate policy response and measures in addressing the declining timber species used by the industry. Also, the information will be useful and help to repositioned the furniture industry to optimally contribute to economic growth and development of the country. This will also build up further evidence on the performance of wooden furniture in across states in Nigeria in order to gain deep insight into the various timber wood used in production of furniture and profitability of the industry in the country especially in Jos where furniture industry is one of the largest in Nigeria.

Therefore, the major objective of the study is to assess the performance of furniture industry in Jos metropolis. Specific objectives include:

a. To identify wood species used for furniture industry in Jos metropolis
b. To assessed the profitability of wooden furniture industry in the study area.
c. To identify challenges facing furniture industry in Jos metropolis, Plateau state

2. METHODOLOGY

The Study Area

The study was carried in Jos metropolis. This is because the area abounds with numerous wood furniture businesses. The area comprises; Jos North, Jos south, Jos East, Riyom and Barkin Ladi. Jos is located in the North central geopolitical zone of Nigeria; it is the capital of Plateau State and was created 1976. Most of the state topography consist of undulating highland of an average height 1200 metres. The land covers about 26,639.5 sq. kilometers and has a population of 2.5 million according to 2006 census.

Jos is located between latitude 80^0 24' and longitude 80^0 32' and 100^0 38' east. The altitude ranges around 1,200 meters (about 400 feet) to a pack of 1,829 meters above sea level in the share hills near Jos. Though situated in the tropical zone, a higher altitude means that plateau state has a near temperature climate with an average temperature of between 18^0C and 22^0C. Harmattan wind causes the coldest weather between December and February. The warmest temperature usually occurs in the dry season months of March and April. The mean annual rainfall varies from 1317.5 mm (52inch) in the southern part to 1460 mm (57inch) on the Plateau. The highest rainfall is recorded during the west season months of July and August. The Jos Plateau makes it the source of many rivers in northern Nigeria including the Kaduna, Gongola, Hadejia and Yobe rivers.

The population of the areas in Jos metropolis are: 1.204, 737 (Jos North 545,000, Jos South 306,716, Jos East 105,173, Barkinladi 175,267 and Riyom 72,581 according to census 2006.

Research Design

This study adopts a cross sectional survey design. This is because the design allows for sampling of few respondents to represent the entire population of furniture makers in Jos metropolis. Also, it is compatible with statistical analysis and generalization of findings.

Population

The population of this study consists of furniture makers in furniture industry in Jos metropolis. Thus, there is total population of 431 furniture makers in Jos metropolis.

Sampling Technique and Procedure

Cluster sampling technique was used to select respondents a sample size of 129 was determined by applying 30% sampling intensity. The first step involved delineation of Jos metropolis into five (5) existing clusters, viz: Jos North, Jos south, Jos East, Riyom and Barkin – Ladi Local Government Areas (LGAs). The second step was purposeful selection of furniture makers in each of the clusters. In Jos north, 29 respondents were selected, in Jos south and Jos east, 38 and 14 respondents were selected respectively. Also, 89 and 70 respondents were selected in Barkin Ladi and Riyom accordingly. In the process the researchers visited furniture making outlets and through his rapport with them were able to identify furniture makers and select them for the study.

Table 1: Sample layout

S/N	LGA's	No. furniture industries	Sample intensity (30%)
1	Jos north	98	29
2	Jos south	126	38
3	Jos east	48	14
4	Barkin Ladi	89	47
5	Riyom	70	21
	Total	**431**	**129**

Data Collection Techniques

Data were collected primarily using semi-structured interview while personal observation was also involved. The semi-structured interview was designed and administered on furniture dealers to obtain the required information. The processes involved the researchers visiting furniture makers in their shops or work places. After the visitation, the researchers interviewed them and recorded their responses in the interview form.

Method of Data Analysis

The data was analyzed using descriptive statistics, gross margin analysis. Descriptive statistics such as percentage and percentages were used to analysis the result. Also, Gross Margin (GM) analysis, Variable costs, (VC) Fixed costs (FC) and Gross Ratio (GR) and rate of Return on Investment (RORI) measures were used to analyze profitability of wood furniture industry. Also

Gross Margin Analysis

Gross margin was used to estimate the margin in terms of revenue and profit that accrue to the furniture makers. The model is shown as follows:

GM= $GI - TVC$

Where:
GM = Gross Margin
GI = Gross income
TVC = Total variable cost

Analysis of costs and returns

Variable costs (VC) – Labour, wages and salaries, value of planks, nails, electricity, transportation
Where:

C = cost of fixed cost
S = Salvage value

n = Economically productive years of fixed inputs

Fixed cost (FC) – Depreciation of structures, equipment, shade, knives and hammers. The straight-line method was adopted. It is represented thus

$$D = \frac{(c-s)}{n}$$

Where:

D = Annual Depreciation
C = Initial cost of fixed assets
S = Salvage value
n = Production life of assets

Gross Ratio (GR) – This is the total expenses divided by the gross income (GI), given as:

$$GR = \frac{GC}{GI} \ or \ \frac{TVC}{GI}$$

The ratio shows the percentage or proportion of total physical cost that constitute gross income. A less than 1 ratio is desirable for any production business. The lower the ratio the higher the return

per naira invested. The gross cost and gross income values calculated are applied in the determination of gross ratio.

Rate of Return on Investment (RORI) – The ratio of return on investment (RORI) depicts the level of profitability of an investment and is important criterion in determining the choice of investment. According to McCarthy (1968), and Alao and Kuje (2012). It is given by the following relationship:

$$\text{RORI} = \frac{TR-TC}{TC} \times \frac{100}{1}$$

Where TR = Total revenue, an equivalent of Gross Income (GI)

TC = Total cost, an equivalent of gross cost (GC).

Thus, the equation becomes

$$\text{RORI} = \frac{GI-GC}{GC} \times \frac{100}{1}$$

3. RESULT AND DISCUSSION

Socio Economic Characteristics of Respondent in the Study of Area

Table 1: Socio-economic Characteristics of Wood Furniture makers in the Study Area

Variables	Frequency	Percentage
Gender		
Female	0	0.0
Male	114	100.0
Total	114	100
Age		
31 – 40	44	38.6
41 – 50	62	54.4
51 – 60	8	7.0
Total	114	100.0
Marital status		
Married	85	74.6
Single	21	18.4
Widowed	8	7.0
Total	114	100.0
Educational background		

Primary	89	78.1
Secondary	22	19.3
Tertiary	3	2.6
Total	114	100
Years of Experience		
< = 10	9	7.9
11 – 20	99	86.8
21 – 30	5	4.4
30 and above	1	0.9
Total	114	100.0

The study shows that all the furniture makers in the study area are male. Age distribution of the respondents showed that most of the furniture makers in the study area were within the active age. Their most dominant age group (41-50 years) was 54.4%. This was followed by those from 31- 40 years with 38.6% while those between 51-60 years of age were 7.0%. This is an indication that the furniture business dominated by the respondents at their active stage in life. The study shows that a greater proportion of furniture makers were married. Data on marital status showed that most (74.6%) of the respondents were married, followed by 18.4% who were single and 7.0% who were widowed. For the level of educational attainment, majority (78.1%) were educated at primary school level, followed by 19.3% who received secondary education while only 2.6% were educated at tertiary level. For years of experience, table showed that a greater proportion (86.8%) of the respondents had 11-20 years experience, followed by those who had less than 10 years of experience (7.9%), while 4.4% and 0.9% had between 21-30 and above 30 years of experience respectively.

Species mostly used in furniture industry in Jos metropolis

The species mostly used in furniture industry are presented in Table 2. *Milicia excelsa* is ranked first followed by *Tectona grandis, Pterocarpus eriraceous* while *Prosopis africana* and *Anageissus leiocarpa* are ranked least (ninth and tenth) respectively for furniture making in the study area. The species were *Milicia excelsa, Tectona grandis, Pterocarpus eriraceous, Khaya senegalensis, Daniella oliveri, Afzelia africana, Gmelina arborea, Monsonia leckii, Propsopis africana* and lastly *Anageissus leiocarpa*.

Table 2: Ranking of preferred used Wood Species in the Study Area

Common name	Scientific name	Frequency	%	Ranking
Iroko	*Milicia excelsa*	104	13.68	1st
Teak	*Tectona grandis*	101	13.28	2nd
Madrid	*Pterocarpus erinaceous*	78	10.26	3rd
Mahogany	*Khaya senegalensis*	76	10.00	4th
Ogea	*Daniella oliveri*	73	9.60	5th
Akalara	*Afzelia africana*	72	9.47	6th
Gmelina	*Gmelina arborea*	69	9.07	7th
Makore	*Monsonia leckii*	67	8.81	8th
Ashwella	*Propsopis africana*	65	8.55	9th
Marki	*Anageissus leiocarpa*	55	7.23	10th
Total		760	99.55	10

Source of Wood Supply in the Study Area

The result in Table 3 indicated that supply of wood species for furniture industries in Jos metropolis are from Plateau State (10.4%) and Niger State (10.4%) followed by Federal Capital Territory (FCT) (10.3%), Nassarawa State (10.3%), Kaduna (10.2%), Delta (10.0%), Taraba and Bauchi (9.9%), Kogi 9.8%) while least proportion of wood species are from Oyo State (4.83%) and Benue State (3.92%).

Table 3: Source of Wood in the Study Area

States	Frequency	Percentage	Ranking
Plateau	114	10.4	1st
Niger	114	10.4	1st
FCT	113	10.3	2nd
Nassarawa	113	10.3	2nd
Kaduna	112	10.2	3rd
Delta	110	10.0	6th
Taraba	109	9.9	7th
Bauchi	108	9.9	7th
Kogi	107	9.8	9th
Oyo	53	4.8	10th
Benue	43	3.9	11th
Total	**1096**	**100.0**	

Economic returns accruable to the industry in Jos Metropolis

The gross revenue obtainable from the study was ₦155,000.00 while the average gross margin for the production of a set of chairs for furniture makers is determined to be ₦38,409.1 while the income is ₦6,247.75 (see Table 4.)

The respective cost and revenue are presented in Table 4. The result revealed that a total of ₦155,000 is received as gross revenue set of executive chairs. The total variable cost was ₦116,840.9 per set of chairs. The fixed cost was ₦116,840.9 per set of chairs. The fixed cost was ₦32,164 while the total cost revealed that foam had the highest cost (30.27%), followed by labour (21.38%), then mattress (19.59%) while the cost was hammer (0.23%), saw (0.49%) and Adhesive (0.85%)

Table 4: Budgetary Analysis of Furniture Production per week in the Study Area

Item/return	**Value ₦**	**Percentage**
Furniture output	155,000	132.90
Gross income	155,000	132.90
(A) Variable cost		
Planks	1,491	1.27
Nails	1,049.1	0.89
Adhesive	992.11	0.85
Foam	35,299.8	30.27
Matrass	22,842	19.59
Sack	1,056.1	0.90
Belt	1,262.3	1.08
Caster	1,793.99	1.53
Baft	1,010.5	0.86
Labour	24,930	21.38
Coupling	14, 811	12.70
Skeleton	10,053	8.62
Total variable cost (TVC)	**116,590.9**	
Gross Margin	38,409.1	
(B) Fixed cost		
Spraying machines	20,458	17.54
Hammer	279,46	0.23

Saw	576.19	0.49
Jack plain	1908.2	1.63
Chisel	8940.4	7.66
Total fixed cost	**32,161.25**	
Total cost	**148,752.15**	
Net income	**6,247.84**	

Analysis of Income from Furniture Industry

The result of analysis of income form furniture industry in Jos metropolis is presented in Tales 5 and 6. The Rate of Return was 104% while the Rate of Return on investment was 4.2%. The Gross Ratio (GR) was 0.75. The RORI measures the speed at which capital invested is able to yield profit or dividend, Table 5 and 6.

Table 5: Analysis of Income from Furniture Industry in the Study Area

Item	**Value (₦)**
Gross revenue (total output x price/unit product	155,000
Gross Cost (TVC)	116,590.9
Gross profit (GR – VC) 155,000 – 116,590.9	38,409.1
Net profit (GR – TC) 155,000 – 148,752.25	6.247.75
Rate of return (ROR) $TR/_{TC}$ X 100= $\frac{155,000}{148,752.25} \times 100$	104
Rate of return on investment (RORI) $\frac{TR-TC}{TC}$ x 100 = $\frac{155,00 - 148,752.15 \times 100}{148,752.15}$	4.2%
Gross ratio (GR) $\frac{TVC}{GI} = \frac{116,590.9}{155,000} =$	0.75

Table 6: Analysis of Income from Furniture Industry in Jos Metropolis

Gross Revenue (₦)	Gross Cost (₦)	Total Variable Cost (TVC) (₦)	Total Fixed Cost (TFC) (₦)	Gross Profit (₦)	RORI Investment	GR
155,000	148,752	116,840.9	32,164	38,409.1	4.2%	0.75

Challenges of Furniture Industry in the Study Area

The result of the challenges of furniture industry revealed limited wood (12.73%), competition among furniture industries (12.62%), followed by finance are the highest challenges to furniture makers in the study area while the least challenge compared to the above are; government policy (10.27%), Taxes (10.05%) and technical inefficiency (10.39%).

Table 7: Challenge of Furniture Industry in the Study Area

Challenges	**Frequency**	**Percentage**	**Ranking**
Limited wood	114	12.73	1st
Competition	113	12.62	2nd
Finance	101	11.28	3rd
Customers shift	100	11.17	4th
High cost of labour	98	10.94	5th
In adequate staff	94	10.50	6th
Technical inefficiency	93	10.39	7th
High taxes	92	10.27	8th
Government policy	90	10.05	9th
Total	**895**	**100.0**	

4. DISCUSSION

Male had total dominance in the furniture industry in the study area. The complete dominance (100%) of males in the furniture industry could be attributed to the physically demanding nature of the work or business. This finding agrees with Kalu *et al*., (2009) and Sekumade and Oluwatoyo (2011), which asserted that the dominance of business by men is due to the fact that the operations

of the business is tedious, and that tends to discourage women from engaging in the business. The higher proportion age distribution within active ages of the respondents implies that the industry provides means of sustainable livelihood to its participants. The greater proportion married respondents implies that furniture business is perhaps a secured economic activity in the area and could sustain their responsibilities to their wives, children and other family members under their care. Furthermore, men aged 41-50 were dominant (54.4%) indicating more years of experience in furniture making. The involvement of all adult age categories also implies that furniture making involve gainful employment and a source of lively hood for different age classes. Large proportions of the furniture makers are semi-literate as 78.1% had primary education. In agreement, Aiyeloja *et al*., (2012) asserted that furniture business needs some degree of literacy due to measurements and simple calculation involved.

According to Ako and Kuye, (2010), the small-scale furniture producers are technically inefficient as they fall below efficiency level of 60%. This justifies fact that majority of the furniture makers attained primary education. This could reflect in their technical abilities in the production quality finished products and hence affect their profitability (Ogunwusi, 2011). This corroborates the view of Ajayi and Ojutiku (2008) that the level of educational attainment is necessary for technology acquisition and utilization.

Furthermore, most of the furniture makers had experience of 11-20 years. This indicates that the business has been source of livelihood of people for many years and also the technical efficiencies in the enterprise. Higher experience and length of training mostly results in better skills on the job and better chances of higher returns on investment (Holzer, 1988).

The findings also show that wood species commonly used for furniture making in the area included *Milicia excelsa, Tectona grandis, Pterocarpus eriraceous, Khaya senegalensis, Daniella oliveri,* and others. This list of wood species is identified in the study is similar to the earlier findings by Popoola (1998), Idoko (2007), Kalu *et al.,* (2009), Okonomo (2010), Arowosoge *et al., (*2011), Tukur *et al.*, (2013) and Awe *et al*., (2019). These wood species are preferred in the furniture industry due to the characteristics they possess such as strength, colour, availability,

durability, aesthetics, quality and price. High proportion of wood species was supplied from other especially *Milicia excelsa, Khaya senegalensis*. Niger state, FCT and Nassarawa States were the major states supplying timber in Jos metropolis. This could be due to the close proximity of the study area to these states. Transportation to tropical areas could be more costly because the farther the distance.

Awe et al., (2018) corroborated that these species are currently being used in Kogi State and as such *Milicia excelsa, Khaya senegalensis* are highly demanded in the state due their durability, high quality and strength and are however becoming scarce due to over exploitation. This includes *Daniella olliveri* which have become general purpose wood in utilized in Nigeria. A study by Ajewole *et. al*., (2016) found *Gmelina arborea, Khaya spp, Tectona grandis* were most preferred while Adedokun, *et al*., (2017) reported that Teak wood (*Tectona grandis*) is used for furniture because it has a leather-like smell when it is freshly milled and hence, valued particularly for its durability and resistance to water. 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*, and others species. Arowosoge *et al.* (2010) reported *Khaya spp* 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. The observed differences in the level of utilization could be attributable to availability of these apart from their properties and preference. Aiyeloja *et al.,* (2010) revealed that timber price, durability, workability and availability were among the key determinants of preference for lesser-known wood species among cabinet-makers in Oyo and Osun States. More recently, Adebara *et al*. (2014) showed availability, customer's preference, strength, and appearance as dominant factors for the utilisation of timber species for building construction in Minna.

Findings showed that wooden furniture industry was highly profitable in the study area. It showed a TVC of 116, 590.9. TC of 148,752.15, Gross Income of 155,000, Gross Profits of 38.409, Net Income (NI) of 6,27.84, ROR of 104% RORI of 4.2% which means for everyone naira invested, ₦4.2 will be earned. This is in the range obtained by Alao and Kuje (2012) which was 3.29% for RORI and 103% for ROR in a study on Economics small scale furniture Production in

Lafia, Metropolis Nasarawa State Nigeria. Similarly, the Aiyeloja *et al*., (2014) recorded a ROR of 148.8%, 103.42%, 104.08% and 194.61% for Artisanal, Cottage, Medium and Large furniture industries respectively. The ratio (GR) shows the percentage or proportion of total physical cost that constitutes the gross income. A less than 1 ratio is desirable for any production business. The lower the ratio the higher the return per Naira invested, this therefore implies that the furniture industry is viable and does not incur cost beyond the benefit accrued from the enterprise. This is considerable close to Larinde, (2017) who reported an Interest Rate of Return (IRR) 29.62% in investing in furniture parts in Nigeria.

From the above challenges identified by furniture makers, the most pressing ones are limited wood supply, competition among furniture makers and problem of finance. The problem of limited wood supply could be due to high transportation cost, long distances to the source of supply, bad roads and ever-increasing price of diesel and petrol. This is because transportation is still underdeveloped in Nigeria and affects cost of production. This agrees with Popoola, (2010) and Sambe (2015) who highlighted transportation as a serious challenge to timber trade which is compounded with ever increasing price of diesel and petrol. This implies that lack of access to and bad roads is a challenge in furniture industry because that can give rise to high cost of timber. Improvement of this infrastructure can and will facilitate the furniture industry. Also, the challenge of limited wood supply could be due to deforestation and unregulated and targeted exploitation of these commonly used timber species (CUTS) and the difficulty in raising them has led to their serious depletion and thus are fast disappearing due to the devastating effect on Nigerian forest which has high diversity of flora and fauna (Cobbinah, 1997; Arowosoge *et al*., 2009).

Competition within furniture makers is yet another problem, that is showing how efficient you are as a furniture maker, because if your product is attractive and below standard, then as a producer you stand the chance of losing customers to another furniture maker, which means low income and profit and hence, inability to make profit easily. This is simply because the higher the number of customers, the bigger the chances of making profit easily.

Another problem of furniture makers is starting capital as the cost of running the business is usually high. This is seriously needed as operating fund for the purchase of variables needed and transportation to markets. Popoola (2001), asserts that wood business is highly capital intensive which is needed for proper marketing and distribution system. In Nigeria, the furniture industry uses simple technologies; the furniture makers have low technical knowhow and low capital input. Most wooden furniture businesses are operated with rudimentary hand tools and equipment (RMRDC, 1991; 2003 and 2009), leading to poor quality furniture (GWV Consultants, 1994).

5. CONCLUSION

Based on the findings, the study concludes that that ten wood species were used in furniture making in the study area. *Milicia excelsa* ranked first, followed by *Tectona grandis, Pterocarpus erinaceous while Prosopis africana and Anageissus leiocarpa* were the least ranked. The budgetary analysis indicated profitability in the industry by furniture makers. The study also concluded that wood furniture industry was profitable in Jos metropolis. It revealed a gross margin of ₦38,409.1 and Net income of ₦6,247.84 while Gross ratio (GR) and Rate of return on investment (RORI) were 0.75 and 4.2 respectively. The study also concluded that that limited wood supply was the biggest challenge while government interference was the least challenge that affected the industry. Challenges of wood furniture industry in the area included limited wood supply, competition among furniture makers and problem of finance, competition within furniture makers is yet another problem, that is showing how efficient you are as a furniture maker and lack of capital to start the and run the business which is usually high.

6. RECOMMENDATIONS

The identified species in the study area for furniture making are both sourced within and outside the State and showed that the industry is economically important and viable. Further studies could look at the demand and supply trend of wood species in the study area. Therefore, it is recommended that;

1 There should be investment in the plantations and fast-growing timber species both by government and by public sector to for sustainable supply of wood raw material.
2 Access to micro-credit facilities and machinery should be provided for furniture production activities to improve and sustain its profitability.
3 There should be training and workshops to meet up the demands of customers and to narrow the gap of the competition among wood furniture makers in the area.
4 The private firms and industries that derived their raw materials from the forest should be made to pay back through investing in tree planting and forest regeneration.

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