

AN ASSESSMENT OF THE MANUFACTURING CAPABILITIES OF NIGERIAN FURNITURE MAKERS: CASE STUDY OF LAGOS, NIGERIA

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ABSTRACT

This study examines the manufacturing capabilities of the Nigerian furniture industry. An extensive review of literature was carried on wood; structure, seasoning types, properties and finishing. Also, a review on wood furniture manufacturing processes, in terms of tools, equipments, design, ergonomics, finishing was carried out. Interview, observation, discussion and survey methods were used for data gathering from some selected furniture workshops in Lagos. An assessment of the furniture industry in Nigeria in terms of processes, finishing techniques, aesthetics, tools and equipment, was carried out and compared with standards furniture manufacturing processes from literature and practices obtained in some developed countries. The study concludes that improvement and investment in the areas of equipment, machines, improvement in power supply and a programme to train the local furniture makers are required to improve the output from the sector.

Keywords: Wood, Furniture, Evaluation, Finishing

INTRODUCTION

Nigeria's limited capacity for national development has been attributed to the mono-resource based nature of the Nigerian economy. With unprocessed crude oil as the major source of foreign exchange Nigeria urgently needs to bring her locally manufactured goods to internationally accepted level in order to effectively diversify the economy. Nigeria must exploit her natural competitive advantage by improving the nation's capacity to add value to the abundant natural resources of the nation. Nigeria's

abundant but fast depleting wood resources (with its huge economic potentials) has not been tapped into and properly developed. This can be ascertained by the level of importation of furniture products.

According to a 2000 report (FAO, 2000) from the Nigerian Federal Department of Forestry the number of wood based industries in Nigeria has been increasing except for sawmills which declined from 1700 in 1993 to 1349 in 1997. Studies on the wood based industries revealed that there were altogether 1715 wood industries in Nigeria in 1993, consisting

of 1700 sawmills, 8 ply mills, 4 particleboard mills and 3 paper mills. By 1997 the number of wood industries had declined from the level of 1715 in 1993 to 1373. These comprised of 1349 sawmills, 10 ply mills, 4 particleboard mills, 3 paper mills and 7 match and splint factories. The major wood processing industries in Nigeria are typically large capacity facilities such as large sawmills, plywood mills, pulp and paper plants. These sawmills are essentially distributed between small, medium and large scale in the proportion of 81%: 13%: 6% (Sumonu, 2009).

The Nigerian furniture industry draws inspiration from styles from all over the world. From stylish Italian design to traditional British furniture, wooden furniture today is a blend of furniture making styles from all over the world. In essence, the furniture industry has evolved into a multi-national enterprise. Compared with the well organized factory based furniture industry of the United States of America (Stevenson, 2007) and other industrialized economies, the Nigeria furniture industry is mostly dominated by small scale ("roadside") carpenters who are grossly under resourced in terms of tools and equipments and face stiff competition from imported furniture products. Aside these local or small scale furniture manufacturers, there exists a number of standard furniture industries in the country (though mostly owned by foreign investors). Most of which are involved in the importation of finished furniture products with few involved in the actual manufacturing of furniture items in the country. This study seeks to assess the manufacturing capacity of the nation's wood furniture industry in order to add value to nation abundant wood products.

METHODOLOGY

Study Location and Technique:

Lagos State, the commercial nerve centre of Nigeria, was chosen for the study. Saw mills, furniture factories and showrooms were visited in some strategic locations. Various workshops visited at different locations in Lagos included; Epe, Festac, Mile 2, Lagos Island, Alakija, Ojoo, Ikeja and Surulere. Interviews, discussions, and observations were adopted for data gathering. Data on the manufacturing capabilities of these workshops were collected under the following areas: Design capability, Tools and Machines, Finishing Techniques, Input Materials and Level of personnel Technical know-how.

Evaluation of the Sawmills

Basic standard machines and equipment necessary for sawmill operations are available and used in most of the sawmills visited in Lagos area. The most common of these machines are circular saw, band saw, frame saw. These saws, used for cutting timber or wood to various sizes, are powered by electricity and require constant maintenance due to old age. Most of the saw mills are located along the Lagos water fronts. The milling operations are much about the same in all the mills visited. The steps, illustrated in Figure 1, involved in the milling operations are as outlined.

Logs are transported on water and the logs are weighed on arrival at the mill and sorted by species, sizes and end use. The logs are then mechanically debarked and in some mills are crosscut to length. Breakdown is done by using a combination of circular and frame saws or two saws in series. The first saw or head saw breaks the log into unfinished logs to be further processed and also unfinished planks (flitches) with a smooth edge. The second saw further breaks down the unfinished logs into multiple flitches and/or boards. Edging is done to take the flitch and trim off all irregular edges leaving a four sided lumber. Trimming is done to square the end and remove defects. After production or milling, the lumber may be treated with preservatives chemical to prevent attack by fungi and insects and then measured and graded and piled to dry.

Sawmill Seasoning Techniques: All the mills adopt air drying for wood treatment. It was also observed that more 95% of the wood workers are unaware and unfamiliar with modern treatment like drying by kiln while the few that are aware do not have access to wood seasoning equipment.

Evaluation of Furniture Making Tools and Machines

The basic tools used in most furniture workshops and factories around the world are used to a large extent by the local furniture industries in Nigeria. These tools which are either hand tools or power tools include Jig, Saw, Mitter saw, Spoke shaves, planers, scrapers, gauges, power sanders, bar, claw, edgers, trimmers, foam cutters.

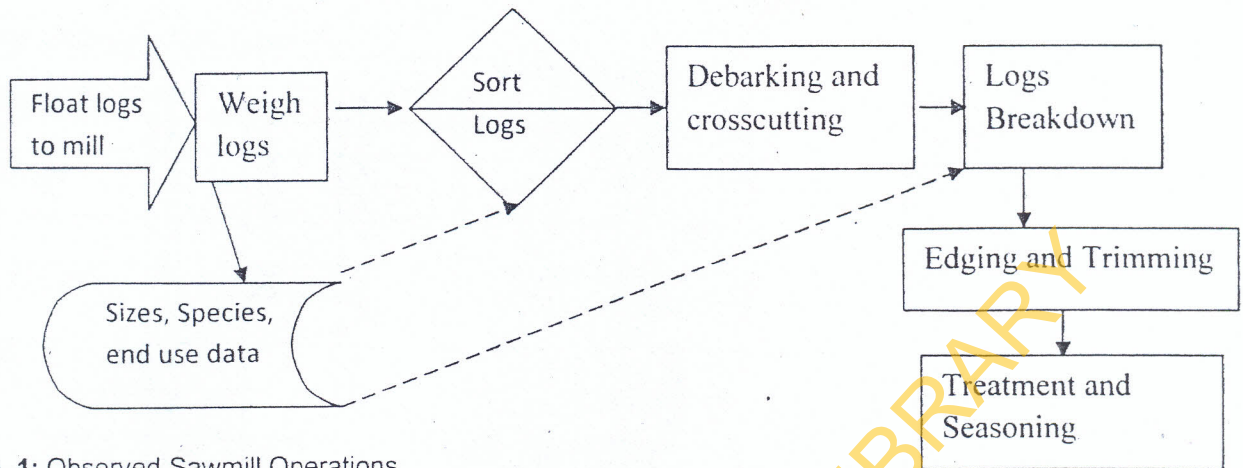


Fig. 1: Observed Sawmill Operations

However most of the workshops evaluated use hand tools instead of power tools for all their operations. The use of these hand tools reduces their efficiency, production rate and product output. Basic machines such as nail guns, Computer Numerical Control (CNC) router, CNC lathe, laser guided cutting tools and also upholstery stapler (Budakci et al, 2007) are either not used due to lack of capital or ignorance on the existence of these machine, on the average the companies have access to just 45% of the basic tools required for quality job. The summary of the survey on tools and machine capability is summarized in Table 1.

Evaluation of Design and Aesthetics Capability

Originality: Design and aesthetic capacity are two important factors which affect the quality level of any products are to compete fairly well against the foreign or imported furniture items. In the study, it was found out that most of the designs are influenced and obtained from foreign catalogues. This indicates that most of design by furniture maker in the country do not reflect the local culture and also reduces the creative abilities of the maker. This also affects international competitiveness because the local furniture lacks design originality.

Design Tools: Most of the shops carry out construction without any engineering drawings. Ideas are usually put roughly on loose papers and then transcribed to the wood board or plank to be used. If a complex design is involved (such as curves), the design is drawn to the desired dimensions on a paper board or cardboard and the shape is cut out to form a pattern. The cut out shape

or pattern is then placed on the wood board or plank and the outline is traced out on the wood. The outline is then cut out using a saw. At most of the workshops visited, jig saw is used to cut out the shape, although some workshops still use the conventional hand saw; which is very time consuming and prone to errors and also reduces output produced per piece. Dimension taking and measurement are done using tape rules and measuring gauges with many, measurement "gauged" with eye. These result in errors when fitting the pieces of wood together to make a complete piece. Generally these shops lack modern design tools and Computer Aided Design (CAD) facilities. Most of the workers are unaware or unfamiliar with such modern tools.

Evaluation of Finishing Operations

Basic finishing processes observed involve surface preparation using sand papers or power sanders, staining using ammonia, application of finishes such as lacquer and polishing. It was observed that locally made finishes such as lacquer, shellac, oil finishes and stains are readily available and of high quality.

The finishes are mostly applied using electrical powered compressor spray guns. However these finishing operations are carried out in sheds located mostly by the roadsides where the process is susceptible to dust and other particles; this greatly affects the final quality of the job. The ideal practice is for spraying to be carried out in spray rooms or booth using protective mask.

Table 1: Availability of Tool Types

POWER TOOLS	WORKSHOP								
	1	2	3	4	5	6	7	8	9
Table saw	X	X	X	X	X	X	X	X	X
Radial arm saw	X	X	X	X	X	X	X	X	X
Band saw	X	X	X	X	X	X	X	X	X
Mitter saw	X	√	√	√	√	√	X	X	√
Reciprocating saw	X	X	X	X	X	X	X	X	X
Planer	√	√	X	X	X	X	X	X	X
Drilling m/c	√	√	√	√	√	√	√	√	√
Nail gun	√	√	√	√	√	√	√	√	√
Lathe	H	H	H	H	H	H	H	H	X
CNC lathe	X	X	X	X	X	X	X	X	X
CNC router	X	X	X	X	X	X	X	X	X
Spray gun	√	√	√	√	√	√	√	√	√
Power sander	X	X	√	√	X	√	√	√	√
Jig saw	√	√	√	√	√	√	√	√	√
Circular saw	√	√	X	X	√	√	√	√	√
Total	7	8	7	7	7	8	7	7	7
% Availability	44%	50%	44%	44%	44%	44%	44%	44%	44%
KEY:	X: Not available, √: Available, H: Available on hire								

CONCLUSIONS AND RECOMMENDATIONS

While the Nigerian wood industry has the potential to contribute to national economy, the export value of the *Made in Nigeria* furniture is low due mainly to low aesthetic and finishing qualities. The interplay of factors such as lack of access to capital, high cost of imported inputs, epileptic power supply and mass influx of cheaply priced imported finished furniture products has impacted negatively on the manufacturing capability of the Nigerian local furniture industry. The dynamics of these factors have created suppressed demand for the local furniture industry, thereby discouraging further investment by willing Nigerian entrepreneurs. In order to realize the huge potential of the wood furniture sector as a major contributor to the nation's economy, adequate investment in modern tools and equipments, computer aided manufacturing tools and human capital is required. Particularly, there is the need to train the local furniture makers in order to improve the output from the sector.

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