

The Patronage of Bamboo and Rattan Furniture Products – A Relief of Pressure on Wood use in Ghana

Agyei-Boakye Isaac Quayson Ebenezer Nutassey Kennedy Newton
Department of Furniture Design and Production, School of Engineering, Accra Polytechnic, P.O.Box 561,
Accra

* E-mail : ike64boakye@gmail.com

Abstract

The natural high forest of Ghana has depleted greatly due partly to timber logging for primarily furniture and building construction. Almost all the traditional tree species that are solely harvested for furniture production have grown extinct even in the forest reserves. The lesser used species that are in use as replacement are also gradually becoming scarce, its main source of supply to the timber markets being the ‘bush cut.’ Should there be an implementation of the outright ban on the illegal chain saw operation which unarguably, is behind the dominance of the ‘bush cut’ sources, on the timber markets, acquisition of wood would be very difficult to come by. It is anticipated that if the taste for bamboo and cane products is enhanced and the manufacturing processes made very efficient, the demand for timber (exploitation and depletion) will decline and therefore the supply of timber would also see a corresponding decrease, a very good “omen” for the country to manage the forests at the socially “optimal” level of timber exploitation and trade. The purpose of the study was to ascertain the level of interest of residents of Accra and its environs in furniture products manufactured from local materials other than wood. Using the convenience sampling method 200 people were interviewed using questionnaires. The study revealed that even though the respondents were aware of the negative impacts of wooden furniture production on the environment, more especially on the natural high forest, it is not time yet to develop taste for furniture produced with the other alternative naturally occurring materials such as bamboo and cane.

Keywords : traditional tree species, dominance, manufacturing, environment, Rattan, Bamboo,

1. Introduction

For years wood has been the number one choice of raw material for the Ghanaian construction industry, and the furniture production in particular. In recent times, supply of wood in terms of species, quality and quantity to the domestic market has been erratic. According to current estimates, the Annual Allowable Cut (AAC), which is set annually by the Forestry Services Division (FSD) of the Forestry Commission (FC), and had been pegged at 1,000,000 m³ until 2002, but has seen a shift to 1,400,000 m³. (Ghana Forestry Commission Report, 2005). Thus in response to constant continual demand for wood. It has been reported that certain wood factories do import certain species of wood to meet contract demands. According to Forestry Commission (FC) Report; Council For Scientific and Industrial Research (CSIR) (2009), lumber is obtained from three (3) sources : Bush cut, Bush mill and Sawmill. The dominant source is bush cut representing about 76% . This is against the back drop that it is criminal to produce the bush cut lumber, which is mostly if not always, from the illegal chain saw operations. Should there be an implementation of the outright ban on the illegal chain saw operation which unarguably, is behind the dominance of the bush cut sources, on the timber markets, acquisition of wood would be very difficult to come by. The use of bamboo as a substitute or alternative for wood is in ascendency in several bamboo producing countries (Liese,1999).There is the need for Ghanaians to follow suit. Also cane is used all around the world, and can be used for weaving baskets, for hampers, chairs, beds, tables, cupboards and as walking sticks (Gardenvisit, 2014). It is anticipated that if the taste for bamboo and cane products increases, and the manufacturing processes made very efficient, the demand for timber (exploitation and depletion) will decline and therefore the supply of timber would also see a corresponding decrease, a very good “omen” for the country to manage our forests at the socially “optimal” level of timber exploitation and trade (i.e. sustainable timber management).Ghana is constantly and consistently losing its high natural forest and subsequently most traditional tree species are getting depleted, if not depleted already. Other substitutes to wood (such as bamboo and canes) abound but most people frown at them . It is high time to identify why Ghanaians are hesitant to patronize the furniture products from other locally naturally obtained materials other than wood. The main objective of the study is to ascertain the level of interest of Ghanaians in furniture products manufactured from local materials other than wood. The specific objectives are to find out;

- i. the extent of people’s sensitivity to the environmental impact of manufacturing wood products (furniture).
- ii. the level of preference of people for bamboo products on the market.
- iii. the preference of people to the use of cane-furniture products.

The bamboo culm and the cane are indispensable construction materials for many products such as fences, bridges, shelters, houses and furniture in particular. The wider acceptance of these local natural materials

are hampered greatly due to apparent conservatism or peoples reluctance to shift to the use of new materials. Besides this, the construction components as well as the finished products of these materials are often more liable to biological degradation. However, on the face of the forests getting depleted of traditional or popular tree species, and the immense difficulties in re-afforestation, especially as it takes a longer time for trees to attain maturity ,spells out the need to diversify. Apart from traditional uses, bamboo and canes have many new applications as a substitute for fast depleting wood and as an alternative to more expensive materials. The traditional way of using the bamboo and canes in furniture production has not been attractive to most people in the Middle Class and above in the past. Hence the need to identify the real reasons so that the right antidote could be offered.

1.1 Bamboo and Rattan (cane) as Alternative Furniture Material

Ghana has valuable bamboo resources, notably of two (2) main species; *Bambusa bambos* and *Bambusa vulgaris*. The culms are excellent materials for countless applications. Their wider use for construction is encouraged by the overall scarcity of timber (Liese, 2004). Bamboos are giant woody, grasses which grow several metres long, full diameter, naturally pre-finished, ready-to-use culms (“stems”) annually. It is reported that a single bamboo clump can produce up to 15 kilometres of usable pole (of about 30 cm in diameter) in its lifetime. Bamboo is very adaptable, with some species being deciduous and others evergreen. It thrives in both tropical and subtropical regions(around the equator), and can also be found in elevations as high as 4,000 metres above sea level in the Himalayas. Worldwide there are about 1,200 bamboo species of around 75 genera in existence (Liese, 2004).

Similarly, rattan being a tropical plant also abound in the country. Of the 13 genera of rattan, three (3) are endemic to Africa: *Laccosperma*, *Eremospatha* and *Oncocalamus* (Dransfield, 1992b). The fourth genus, *Calamus* (with about 370 species) is represented in Africa by one variable species, *Calamus deerratus*. (Uhl and Dransfield, 1987). Rattans are spiny climbing palms in the tropical forests that can attain lengths of over 185 metres. They are not trees but vine-like palms, scrambling through and over other vegetation. Most of them have spines which act as hooks to aid climbing over other plants and to deter herbivores. World-wide there are about 600 known species. (Uhl and Dransfield, 1987). Rattan grows much faster than most tropical wood. Long-term studies on the growth rates of rattans in cultivation ranges from 1 – 5.6 m/year for different species of *Calamus*. (Dransfield and Manokaran, 1993).

1.2 Bamboo and Rattan as Materials for Furniture Construction

Bamboo is termed as the “ wood of the poor “ in India; the “ friend of the people” in China; and “brother’ in Vietnam. It is a wonder plant that grows over wide areas of Africa, Asia, the Caribbean and the Latin America. Millions of people depend on this plant for their livelihood. It has become so much a part of the culture and memory of some vast societies around the globe. Bamboo furniture is an expanding business in some countries. In Philippines, exports rose from \$625,000 to \$ 1.2 million between 1985 to 1994. Massive exportation of bamboo furniture from Ghana is yet to take place but the potential is there. Rattan is a ready source of material for the cane industry. It is easy to work with, requiring only simple tools and low-cost machines. Its processing and products manufacturing costs are minimal. Like bamboo, it is environmentally friendly and biodegradable. In the forests, rattan often ‘hugs’ the surrounding trees and often save them from the logger’s axe by providing equal or more benefits than the companion tree. It has a unique beauty in the finished goods form. It’s products have unique elegance and simplicity. Rattan as well as it’s products re lightweight, hence easier to transport. The international trade in rattan dates from the mid-19th century (Corner, 1966) and this trade is now currently worth some US\$6.5 billion a year (ITTO, 1997). In most rural areas, rattan is used for cordage, in construction, basketry, thatching and matting. It provides sustainable income to some of the most disadvantaged group of people living in and around the fringes of forests. (Dransfield 1992d ; Sunderland 1998). It is however estimated that only 20% of the known rattan species are of any commercial value. (Dansfield and Manokaran, 1993).

1.3 Susceptibility of Bamboo and Rattan Products to Pests and Weather

The worldwide acceptance of bamboo and bamboo products is often undermined by the fact that they are more liable to biological degradation. The low durability against biodegradation and its restricted penetrability for preservative solutions are but a few of the obstacles that hinders the utilization of bamboo in construction. Under suitable conditions, the culms are easily attacked by fungi and beetles (Liese, 2004). When in contact with the ground, bamboo structures are destroyed in less than two years, under cover after 4 – 7 years, but they may last for 10 – 15 years and longer in a favourable situation. The bamboo culm which is mostly of parenchyma cells, contain nutritious starch which make it more susceptible to beetles, borers and blue-stain fungi. In most wood the heartwood is often immuned against pest and insect attack. This is as a result of the fact that certain toxic substances (like tannins and phenolics) are secreted and stored in the heartwood. This guarantees some form of

natural immunity. On the contrary, bamboo culms do not produce any toxic substances at all and therefore the whole culm tissue can be destroyed, leaving often only the harder outer skin. The organic cane furniture is not best suited to the changeable climate in the temperate zones (example in the United Kingdom). The constant wet/dry/wet/dry and similar patterns of temperature mean the material soon loses shape and becomes brittle. (Gardenvisit, 2014). It must be noted that almost all the wood pest also can biodegrade canes.

1.4 Preservation of Bamboo and Rattan Products

For bamboo utilization in construction, it is important to reduce its low durability against biodegradation, as well as its restricted penetrability for preservative solutions. For structures with a longer service life and safety considerations, a chemical treatment is required. This approach aims at sufficient preservation of the culm. However the treatment methods for bamboo depend mainly on the intended use, the type of material and the environmental aspects. The use of preservatives for bamboo and the handling of treated products pose potential risks to humans, non-target organisms and the environment (Wong, 1999). Bamboo is treated mostly in rural areas and outside cities in simple installations and often by workers without the required technical skill. It needs not be overemphasized that the chemical preservation of bamboo should only be done at sites where the required skill, experience and control are available. Bamboo handicrafts and other products are often painted with an organic solvent based solution with a toxic component, like cypermethrin. For prophylactic protection of bamboo in storage, insecticides can be sprayed periodically. Fire retardants can improve the resistance to fire, but are hardly applied for bamboo. The lack of durability problem of cane chairs is best solved by treating it with wood preservatives. It needs be mentioned that paint makes cane attractive but does little for its rot resistance (Gardenvisit, 2014).

2.0. Methodology

The purpose of the study was to explore the level of interest of residents of Accra and its environs in furniture products manufactured from local materials other than wood. A survey study was conducted using self-administered questionnaire to collect primary data for analysis.

2.1 Population and sampling technique:

The study target potential consumer of furniture products within Accra Metropolis and its environs as study population. Using Accra Polytechnic (a tertiary institution with over 16,000 population) as a fair representation of the population, a convenience sample of 200 made up of 100 students, 50 lecturers and 50 non-teaching senior staff were selected for the study. The questionnaires were of the Likert's scale format.

2.2 Data Analysis:

180 of the respondents returned the questionnaire but 5 were rejected . Hence 175 responses representing 87.5% response rate were used for the analysis. Using SPSS software [model 16], descriptive statistics were used to analyse the data with respect to the objectives of the study.

3.0 Results and Discussions :

3.1 The Extent of People's Sensitivity to the Environmental Impact of Manufacturing Wood Products.

From the Table 1 below, it is deduced that the respondents are in agreement with all the outlined parameters even though not strongly (mean values of 3.1 – 4.1). It was expected that the apparent high level of awareness of the impact of furniture production on the environment would drive them to generate interest in other materials that could bring relief on the ever-increasing use of wood in furniture production. This is underscored by the fact that the respondents are aware that using non-wooden furniture products could give relief to the natural high forest (mean value of 3.7). The challenge is that the respondents still hold the view of preferring wooden furniture to those of other materials (mean value of 3.9). In any case, the awareness that most of the traditional timber species are getting depleted (mean value of 4.1) is quite laudable.

3.2 The level of Preference of Respondents for Bamboo Products on the Market.

Also considering the Table 2 below, much as the respondents do agree that the duration of bamboo furniture products could be extended through the application of preservatives(mean value of 3.6), their dislike for bamboo furniture does not stem from the fact that it deteriorates faster (mean value of 2.8). Although they do not agree that the bamboo (and cane) products are inferior to wooden ones (mean value of 2.8) , their preference for the former would not be enhanced if sold cheaper (mean value of 2.7) . This is a typical portrayal of absolute dislike for other alternative natural materials that abound in our immediate environment.

Table 1. Respondents' level of awareness of impact of wooden furniture usage on the environment.

Level of Preference	Mean	SD
Aware that timber sold at timber market are sourced from chain-saw.	3.7	1.14
Know that most of traditional timber species are getting depleted.	4.1	1.01
Certain wood use in furniture production contributes to loss of forest.	3.3	1.39
Believe not only tree planting reverses forest loss.	3.1	1.47
Know wrong use of wooden furniture contribute to forest loss.	3.3	1.28
Know prolong use of wooden furniture saves the forest.	3.7	1.15
Preference for wooden furniture over other materials.	3.9	1.17
Aware using non-wooden furniture products could give relief to the natural high forest.	3.7	1.18
Overall Sensitivity to Environment	17.3	3.86

- **Scores Interpretation – 5=Strongly Agree; 4= Agree ; 3= Indifferent ; 2= Disagree ; 1= Strongly Disagree. (This interpretation holds for all the subsequent tables).**

Table 2. Respondents' level of Preference for Bamboo Products

Level of preference	Mean	SD
Preference for Bamboo furniture over others	2.9	1.24
Dislike for Bamboo Furniture because of fast deterioration	2.8	1.22
Know Preservative can prolong life of Bamboo products	3.6	1.20
Dislike for Bamboo and Cane furniture products because of inferiority	2.8	1.33
Preference for Bamboo furniture against Wooden if less expensive	2.7	1.38
Overall Preference for Bamboo	15.1	2.93

Table 3. Respondents' level of Preference for Cane furniture

Level of preference	Mean	SD
Preference for cane furniture over others	2.7	1.06
Dislike for cane Furniture because of fast deterioration	3.0	1.24
Know Preservative can prolong life of Cane products	3.5	1.22
Dislike for Bamboo and Cane furniture products because of inferiority	2.8	1.33
Preference for Cane furniture against Wooden if less expensive	2.7	1.33
Overall Preference for Cane furniture	14.7	2.79

3.3 The Level of Preference of People for Cane Products on the Market

From the Table 3 above, the respondents do agree that the duration of cane furniture products could be extended through the application of preservatives (mean value of 3.5). However, their dislike for cane furniture does not stem from the fact that it deteriorates faster (mean value of 3.0). Despite they also not agreeing to it that the cane products are inferior to wooden ones, (mean value of 2.8) , their preference for the former would not be influenced if sold cheaper (mean value of 2.7) . Another portrayal of absolute dislike for other alternative natural materials that abound in our immediate environment.

Although the use of bamboo as a substitute or alternative for wood is on ascendency in several bamboo producing countries (Liese,1999), the respondents are yet to realize the need to do so. Also cane is used all around the world, and can be used for weaving baskets, for hampers, chairs, beds, tables, cupboards and others (Gardenvisit, 2014), the taste for bamboo and cane products as of now, is not as popular as found else-where.

4.0 Conclusion

There is the evidence that the people appreciate the negative impact of wooden furniture manufacturing on the environment, but they are not ready for the choice of any alternatively naturally available material's for

furniture production; not even bamboo and rattan. Hence timber exploitation and depletion in the natural high forest would continue for some time to come, together with its negative attendant effects.

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Author : Agyei-Boakye Isaac (1)

- Member (M) of Polytechnic Teachers' Association of Ghana(POTAG) since 1998.
- A Senior Member (SM) in 1998.
- Ghana 10/11/1964.
- MSc. Wood Science and Technology, KNUST, 1995, Kumasi, Ghana.
- BSc. Biological Sciences, KNUST, 1991, Kumasi, Ghana.
- Wood scientist.

Author : Quayson Ebenezer (2)

- Member (M) of Polytechnic Teachers' Association of Ghana(POTAG) since 2000.
- A Senior Member (SM) in 2000.
- MSc. Wood Science and Technology, KNUST,1998, Kumasi, Ghana.
- BSc. Chemistry, KNUST, 1992, Kumasi, Ghana.
- Wood scientist.

Author : Nutassey Kennedy Newton (3)

- Member (M) of Polytechnic Teachers' Association of Ghana(POTAG) since 1998.
- A Senior Member (SM) in 2008.
- Ghana 29/09/1973.
- MSc. Construction Engineering, Univ. of Cantabria, 2008, Santa Cantabria Spain.
- BSc. Constructing Architect, VIA University College, 2007 Horsens Denmark.
- HND Furniture Design & Production, Accra Polytechnic, 1998.

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