

UNIVERSITY OF EDUCATION, WINNEBA

COLLEGE OF TECHNOLOGY EDUCATION, KUMASI

KNOWLEDGE, PERCEPTIONS AND ATTITUDES OF GHANAISANS TOWARDS

BAMBOO AND RATTAN (CANE) FURNITURE

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SEPTEMBER, 2016

UNIVERSITY OF EDUCATION, WINNEBA  
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KNOWLEDGE, PERCEPTIONS AND ATTITUDES OF GHANAIANS TOWARDS  
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to the School of Graduate Studies, University of Education, Winneba in partial  
fulfillment of the requirements for the award of the Master of Philosophy  
(Wood Science and Technology) degree**

**SEPTEMBER, 2016**

## DECLARATION

### STUDENT'S DECLARATION

I **ALFRED MENSAH**, declare that this Dissertation with the exception of quotations and references contained in the published works which have all been identified and duly acknowledged, is entirely my own original work and it has not been submitted either in part or whole for another degree elsewhere.

**CANDIDATE'S SIGNATURE:** ..... **DATE:** .....

**CANDIDATE'S NAME: ALFRED MENSAH**



**SUPERVISOR'S SIGNATURE:** ..... **DATE:** .....

**SUPERVISOR'S NAME: MARTIN AMOAH (PROF)**

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Finally, I am grateful to all people who offered various assistance to make this work a whole. May the good Lord bless you all.

## **DEDICATION**

I dedicate this thesis to my family and children (Benedict, Aseda, Ewuraba and Ohemaa) and my lovely wife Josephine Nana Benson Mensah (Mrs.) for their support, commitment and encouragement during the period of my studies.



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## ABSTRACT

The search for alternative and durable substitutes for timber has made the use of bamboo and rattans receive significant attention lately. This study investigates the knowledge and perception consumers hold for bamboo and rattan furniture products as an alternative to hardwood furniture. Questionnaire was used to solicit information from 384 craftsmen and household heads from Takoradi metropolis in the Western region. The craftsmen were purposively sampled while systematic random sampling was used to sample household heads. Regression models, correlation matrix and t-test among other statistical applications were used to investigate consumers' knowledge, perceptions and attitudes towards bamboo and rattan furniture, its implications for the conservation of tropical forests and prospects for the local wood processing industry. The results showed that respondents do have adequate knowledge on benefits of bamboo and rattan as materials for furniture production and they were ready to purchase the product if information on the product is readily available. Different perceptions exist about the product in relation to environmental issues, social enhancement issues and quality attributes. In all, the most important driver of preference for bamboo and rattan cane furniture were social status, environmental safety and quality attributes of the product. Hence, building positive social image and highlighting bamboo and rattan as environmentally sustainable materials will in turn enhance the product's value and this will culminate in increasing consumers' preference for the product and their intentions to purchase them. The study concludes that respondents have adequate information on the product and their perception on it can influence their purchasing decisions and thus through market segmentation, marketers of the bamboo and rattan cane furniture can target consumers who are pro-environmentalists and those who want to use the product to enhance their social image to attract a price premium for the products.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the study

The major causes of deforestation, as established by Angelsen and Kaimowitz (1999), are first agricultural expansion and second, timber and hardwood harvesting. In spite of the deforestation attributed mainly to timber harvesting, the global demand for timber has been rising while the available global supply continues to shrink (Arcand, Guillaumont & Jeanneney-Gillaumont, 2008). This has generated a trend towards the use of lower quality, but more expensive timber for the manufacture of wood products, and thus makes it imperative to find more environmentally sustainable and cheaper substitutes for timber products (Prestemon & Abt, 2003; Damette & Delacote, 2011).

Some studies into the utilization of environmentally sustainable and cheaper substitutes have revealed that there are renewable resources, such as rattan and bamboo that have similar usability as timber, and also cheaper and more durable than hardwood (Lawson & Hemery, 2008). For example, Lakkad and Patel (1981) and Laws (2010) maintain that bamboo have high strength-to-weight ratios, which are useful for diverse industrial and domestic applications. Sastry (2002) emphasizes that while furniture making is the most popular use of rattan, it is also used for carpet beaters, walking sticks, umbrella handles, sporting goods, hats, ropes, cordage, birdcages, matting, baskets, and paneling. Similarly, bamboo has a wide range of application in culinary arts, medicine, construction, and also in furniture making (Chen & Hua, 1991).

Conventionally, bamboo furniture is made using wood or engineered bamboo boards or medium density compression-glued fiber boards, such as substrates, to which

thin decorative veneers, laminates and end sealing strips are then applied for cosmetic appearance (Qisheng, Shenxue & Yongyu, 2002). However, Malanit, P, Barbu M.C & Fruhwald, A. (2009) asserts that the use of bamboo especially in composite application, as in oriented strand boards (OSB) requires adhesive to bond together the bamboo elements. In Ahmad and Kamke's (2003) study this typically forms about 25 percent of the cost of production, amounts to about \$5 million in annual adhesive cost for a single OSB mill. On the other hand, rattan furniture are often woven by strands and bonded with fibre into what is known as wicker furniture (Belcher, 1995; Qisheng et al., 2002).

There is much diversity in the use of bamboo or rattan species for furniture making due to the wide variety of species of both plants. As emphasis, Laws (2010) maintains that there are about 1,500 different species of bamboo and about 600 species of rattan worldwide, but the choice of species may be determined by the available genealogy and the targeted style of the finished product. In China, Chen and Hua (1991) account that the *Phyllostachys pubescens* is mostly used for making furniture, in addition to many other pachymorph species. In Eastern Africa, the *Yushania anceps* is used for making furniture, but in both regions, giant species of *Dendrocalamus* genera are used for making furniture with large poles.

Patronage of bamboo and rattan wicker furniture has grown in many Asian, American and European countries, and thus, has spurred further production of wicker furniture (FAO, 2006). Thus, there has been a surge in global production and global exports from East-Asia. For example, worldwide, more than 700 million people trade in or use rattan, and the total world trade for bamboo is estimated at \$7bn per year (Mayank, 2008). The global market potential for bamboo is also estimated at \$2 billion annually,

However, some problems have been identified with bamboo and rattan furniture. First, bamboo and rattan furniture tend to brittle and splinter in drier and colder climate conditions (Ariffin, Husain & Salleh, 2001). There is also the property for bamboo and rattan furniture to bleach under direct sunlight. Thus, there is often the need to subject the product to further treatment, for example, Mukherjee (2011) recommends the application of boiled linseed oil to rattan furniture to fill holes and cracks.

According to Seethalakshmi and Kumar (1998), the product design of bamboo and rattan furniture needs to appeal and fit within a wide range of constraints, which cut across developed and developing countries' perceptions of product quality and aesthetics. This may present a challenge to production since the concept of perception is not only underlain by several psycho-social variables, such as experiences, education, emotion, socio-economic exposure and cultural detail, but also characterized by ambiguity and diversity (Promerantz, 2003). For example, studies have pointed out that gender, race, class and occupations can entail distinct perceptual patterns (Weiner & Otto, 2013; Van Ryn & Burke, 2000).

These perceptual patterns influence attitudes, which refer to the mental state of readiness (Pickens, 2005). Like perceptions, Pickens maintain that attitudes are underlain by experience and temperaments, which exert a directive or dynamic influence on the individual's behaviour to all objects and situations to which it is related. Thus, the perceptions of individuals about bamboo and rattan furniture would influence patronage and further production. For example, Rao, Bhargavi and Sanjeev (2009) assert that in the Konkan region of India, the general perceptions that bamboo was a low cost material and

inferior to other hardwood products precluded people from producing and patronising bamboo products.

Although most of the bamboo and rattan furniture are traded from China and other parts of East-Asia, many sub-Saharan African countries, including Ivory Coast, Togo, Nigeria, Cameroon, Gabon, Congo and Chad contribute to the global production of rattan and bamboo furniture mainly through cottage production and small and medium scale forest industries (Chen & Hua, 1991).

In Ghana, bamboo and rattan resource constitute two largest non-timber forest products. According to Oteng-Amoako et al. (2000), the main species of bamboo in the country are the *Oxyantheria abyssinica*, which is indigenous to the north, and the green and yellow *Bambusa vulgaris*, which constitutes about 95 percent of the stock in the south. However, the green *Bambusa vulgaris* is more widespread in the south and thus, constitute the species most collected for commercial use. On the other hand, the commonest species of rattan used is *Eremospatha* genera, which according to Oteng-Amoako et al. (2005) is becoming short in supply.

Obiri et al. (2006) account that the commercial use of bamboo and rattan in Ghana general conforms to manual processing into baskets, serving trays, babies-cot, furniture and other products mainly by small-scale family-based entrepreneurs. There is also a divide between rural and urban artisans in bamboo and rattan products. While rural production is widely dispersed in rural areas in both northern and southern Ghana, urban producers are clustered, mainly in Kumasi, Accra and Cape Coast. In the realms of large-scale industrial production, Osei-Tutu et al. (2012) account there is the Pioneer Bamboo Processing

Company, located in Assin Fosu and the Global Bamboo Products at Enyiresi that produce bamboo furniture and oriented stand boards.

Bamboo and rattan furniture in Takoradi is mostly produced by small-scale craftsmen. Producers on this level, use mainly simple tools such as knives, hacksaws and clamps for cutting culms and bending the raw materials into semi-finished products, while sandpapers and brushes are mainly used in finishing the product (Osei-Tutu et al., 2012). This may preclude the achievement of the ultimate quality of the product and also constrain sales and patronage. However, literature suggests that perceptions of patronisers, gathered from experiences with bamboo and other types of furniture may also inform the general attitudes and sales of rattan and bamboo furniture (Rao et al., 2009). Thus, this study focuses on the perception of bamboo and rattan furniture and examining the underlying attitudes towards these products, by using Takoradi as the study area.

## **1.2 Statement of the problem**

Bamboo and rattan has gained popularity in industrial and domestic usage due to the shrinking global supply of hardwoods, which is exacerbated by an increasing global demand for timber and hardwoods (Arcand, Guillaumont & Jeanneney-Gillaumont, 2008). One particularly use of bamboo and rattan is in furniture making, which were conventionally produced by East-Asian countries, but has rapidly gained popularity among cottage artisans in some parts of sub-Saharan Africa (Chen & Hua, 1991).

In Ghana, bamboo and rattan furniture is not as popular as hardwood furniture, but it is produced on small-scale in rural and urban areas, mostly Kumasi, Cape Coast, Accra and Takoradi (Oteng-Amoako et al., 2000, 2005). The general attitudes towards patronage

of bamboo and rattan furniture may be accorded to the underlying perceptions that the populace has about the quality, aesthetic value and durability of the finished products. Based on assertions that perceptions underlie attitudes (Rao et al., 2009), this study aims to study the perceptions of people towards bamboo and rattan furniture, in order to establish the desirable values of the products that can encourage patronage.

### **1.3 Objectives of the study**

The general objective of the study is to explore the perceptions and attitudes towards bamboo and rattan furniture in the Takoradi Metropolis. Specifically, the study seeks to:

- Explore public knowledge and awareness levels on the benefits of bamboo and rattan furniture;
- Investigate public perceptions of furniture made with bamboo and rattan;
- Assess the factors underlying purchasing decisions and intentions concerning bamboo and rattan made furniture; and

### **1.4 Research questions**

The objectives of the study are augmented with the following research questions:

- What is the level of public awareness and knowledge on the benefits of bamboo and rattan furniture?
- What is the public perception of furniture made with bamboo and rattan?

- What factors influence consumers' decisions to purchase bamboo and rattan furniture?

### **1.5 Scope of the study**

The study was limited to discussions and review of studies on furniture production with bamboo and rattan. Moreover, the main conceptual issues of the study cover knowledge, perceptions, attitudes and factors that account for perceptual values and behaviors. All the empirical studies reviewed this Centre on the perception on bamboo and rattan made furniture. The area or scope of the study is limited to the Takoradi metropolis, and the study includes household heads and craftsmen within the metropolis.

### **1.6 Significance of the study**

The study compares perceptions of furniture made with hardwood on the one hand, and bamboo and rattan on the other. This will bring out pertinent issues on the aesthetic values, quality and costs that the public seeks in their furniture. Such data will be important for artisans and furniture craftsmen in designing, making and finishing their products. The results can also help to strategise application of the bamboo and rattan in furniture making to suit the public preferences and encourage patronage. Moreover, the public awareness of benefits and disadvantages of rattan and bamboo furniture will be highlighted, and the results can help in determining the underlying causes of any possible identified perceptions or attitudes towards these products. The study will also contribute to the academic literature on rattan and bamboo products.



### **1.7 Organization of the study**

The study was organized into six chapters. Chapter One introduced the major concepts of the study, which are perceptions and attitudes. Chapter Two reviewed literature related to perceptions and attitudes on bamboo and rattan furniture production. Chapter Three discussed the methods used in study, which include the techniques for sampling, the source of data, as well as the data collection and data analysis methods. Chapter Four presented the findings of the studies, while Chapter Five discussed the results and the practical implications of the findings. Chapter Six summarized the study and concluded on the research questions.



## **CHAPTER TWO**

### **REVIEW OF RELATED LITERATURE**

This chapter discusses the theories that explain perceptions and attitudes formation and change. Literature related to bamboo and rattan processing into furniture, as well as empirical studies on perceptions and attitudes towards rattan and bamboo made furniture are also discussed. The conceptual framework for the study is presented to conclude the chapter.

#### **2.1 Theories underlying the study**

This section discusses the impression formation paradigm proposed by Asch (1946) and the functional theory of attitudes (Katz, 1960) as the theories explaining the formation of perceptions and attitudes. The theories aim at establishing that perceptions are impressions that individuals form about a target object (Asch, 1946), and attitudes are derived from perceptions (Katz, 1960). The theory of reasoned action (Ajzen & Fishbein, 1975) is also discussed to explain how attitudes and perceptions influence behavior towards an object.

#### **2.2 Impression formation paradigm**

The impression formation paradigm establishes that impressions about an object are formed based on how the object is aligned to an individual's likes and dislikes (Asch, 1946). The theory therefore indicates that every individual has certain latent inclinations and thus, the initial impression that the person forms from an object is often influenced

about the cognitive process of the embedded inclination which may or may not be known to the individual (Himmelfarb, 1972). The theory likens perceptions to impressions, but maintains that the relationship between the two concepts is that, perceptions are formed from the impressions that people have about a specific object, event or another person (Naumann et al., 2009). It therefore holds that if an individual has the impression that bamboo or rattan furniture is durable, that impression translates into the perception that furniture made of bamboo or rattan are indeed durable.

The mainstream idea of the paradigm proposes that the formation of a general impression takes two forms. On the one hand, the gestalt approach views the impression formation as the sum of several interrelated impressions (Banerjee, 1994; Hamilton & Sherman, 1996). In this sense, perceptions are proposed to be formed from a combination of several interdependent experiences. For example, perceptions about bamboo and rattan furniture may be formed from a combination of others' word of mouth, personal use of the products, and observation of the product as others use them (Belcher, 1999). These combine to form a general perception that bamboo and rattan products are better than furniture from regular wood or otherwise.

The gestalt view of perception formation is however criticised on the grounds that perception is often a dynamic concept, which changes based on individual experiences (Schroder, 2011). The cognitive algebra approach, therefore proposes that individual experiences are evaluated independently, and combined with previous evaluations to form a constantly changing impression of an object (Himmelfarb, 1972; Schroder, 2011). This perspective suggests that perception can be dynamic and that, it may change based on

newer experiences. In this view, individual perception about bamboo and rattan products will vary based on newer experiences, which serve as updates to past occurrences.

Perceptions are proposed on negative-positive continuum, and each accumulated perception is either inclined towards negative or positive sides (Gilovich et al., 2006). A strong positive impression created must therefore be discounted by an equally strong negative perception (Gilovich et al., 2006). Thus, the approach assumes that there is a state of neutral perception, where the individual has neither negative nor positive perception about the target object. According to Miller et al. (2009), this often shows in likert-type measurements of perception. The algebraic approach therefore, stems from the perspective that perceptions can be matched with intensity and direction, which can be calculated, as in mathematical terms (Pomerantz, 2003).

Laird (2007) contends that, the algebraic version of the impression formation paradigm reduces perception formation to process of quantification, which belittles the cognitive processes involved in perception formation. Goldstein and Cialdini (2007) also add that the theory eliminates the qualitative dimension of perception, which allows for deeper understanding of the formation of perceptions. The theory has also been criticised for only focusing on the outcome of perception formation, that whether on the negative or positive ends, but it neither pays equal attention nor offers adequate insight into the underlying constructs of perception as a process of the mind (Gaulin & McBurney, 2003). In response to these criticisms, Moskowitz (2005) indicates that critics fail to acknowledge that the theory seeks devise a measure for perception, since cognitive processes are too abstract and intangible to measure. Thus, by aligning perception to positive and negative

poles, it makes it easier to identify, from a person's opinion, the level or direction of his/her perception about an object.

### **2.3 Theory of functional attitude**

According to Green (1953), the concept of attitudes does not refer to one specific act or response of an individual, but it is an abstraction from a large number of related acts. Based on this, Katz (1960) theorized that any attitude is a latent variable rather than an immediately observed variable. The theory indicates that attitudes are predispositions or inclinations to respond or act negatively or positively towards a certain idea, object or situation. Therefore, attitudes can be categorized as negative or positive, depending on the set of social objectives that define the context of positive or negative attitudes (Jones, 1998). For example, if society perceives bamboo and rattan furniture as befitting poor people, then generally people will avoid those products, because they may not want to be associated with poverty.

Functional attitudes, according to Katz (1960) is evident when attitudes influence individual behaviours. For example, the inclination to avoid rattan and bamboo products can lead to the actual avoidance of those products. In this sense, Green (2000) indicates that attitudes can be operationalised through behaviour and opinions, where behaviours reflect the actions that follow the attitudes and opinions reflect the verbal representation of the attitudes. According to Loewenstein (2007), the importance of this theory is established in the fact that, by making attitudes functional, any attitude becomes readily observable and measurable.

Katz (1960) theorised further that, people hold on to attitudes or change their attitudes about an object based on the functions that the object performs for them. On this note, Green (2000) maintains that the theory establishes that Katz (1960) proposes that attitude formation is founded in some rational response to the functions of an object. The functions are those of adjustment, ego-defense, value expression, and knowledge. Loewenstein (2007) maintains that the adjustive category embraces those attitudes which are formed about the tangible benefits derived from an object. For example, if the use of bamboo and rattan products prove to be cost efficient to an individual, that benefit gained will inform the attitude about the product. On the other hand, Loewenstein (2007) indicates that attitudes have affective associations based upon previous experience. This perspective suggests that attitudes are adjustive and thus, subsequent unfavourable experiences with the product can lead to the formation of negative attitudes about the products.

The ego-defensive function is where attitudes are pre-defined within the person, but the individual only uses the objects and situation to which they are attached as merely convenient outlets for the expression of their fixed attitudes (Katz, 1960). Breckler and Wiggins (1992) give the example of an individual who projects hostility to a minority in order to protect himself from feelings of inferiority. One common type of ego-defensive function is transference where an attitude adopted towards a person is not based on the reality of the situation (Green, 2000). For example, an individual may be of the predisposition that bamboo and rattan products are inferior to other wood products without any prior experience with products. According to source, ego-defensive attitudes are usually problematic because, the usual procedures for changing attitudes and behaviour may not cause the individual to modify, but rather reinforce defensive egos.

The value-expressive function gives positive expression to central values and to the type of person an individual conceives himself to be (Loewenstein (2007)). An individual, for instance may have a self-conception that is reinforced by patronising bamboo or rattan products. The person may therefore have positive attitudes towards the products, because they confirm a particular self-identity or helps to mould a favoured image about the person (Loewenstein, 2007). The knowledge function, on the other hand, indicates that an individual may form an attitude in order to acquire more knowledge about an object or the attitude may be informed about the knowledge gained about the object (Katz, 1953, Katz, 1960).

The functional attitude theory, according to Loewenstein (2007), attempts to explain the underlying process of attitude formation, but it still leaves attitudes as, largely an abstract concept of the mind, which is cannot be readily measured. According to Green (2000), the theory, at best, may allow for some qualitative descriptions of the formation of individual attitudes, but falls short of making attempt at concrete measures for attitudes as other theorists propose. Loewenstein (2007) also asserts that the theory leaves much unsaid about how attitudes influence behaviours after they have been formed through adjustive, ego-defensive, value-expressive or knowledge-based functions. Theories, such as the theory of reasoned action better aligns perceptions and attitudes to consequent actions.

## **2.4 Theory of reasoned action**

The theory of reasoned action was developed by Azjen and Fishbein (1975) and it states that a person's behavioural intention depends on the person's attitude and subjective norms about that behaviour. In other words, a person's behaviour is determined by the

person's attitude and perception about the object at which the behaviour is directed (Ajzen, 1991).

According to the theory, behavioural intention measures a person's relative strength of intention to act. Attitude consists of beliefs about the consequences of performing the behaviour multiplied by his or her evaluation of these consequences (Fishbein & Ajzen, 1975). Subjective norm is seen as a combination of perceived expectations from relevant individuals or groups along with intentions to comply with these expectations. In other words, the subjective norm represents the person's perception about the reaction of other members of society towards the behaviour being performed (Fishbein & Ajzen, 1975).

Fishbein and Ajzen (1980) suggest, however, that attitudes and norms are not weighted equally in predicting behaviour. They maintain that, depending on the individual and the situation, these factors might be very different effects on behavioural intention. For example, an individual might be the kind of person who cares little for what others think. In that case, the subjective norms would carry little weight in predicting that person's behaviour (Miller, 2005).

Hale, Householder and Greene (2002) modified Ajzen and Fishbein's theory into the utility model of reasoned action to predict consumer behaviour. Hale et al. (2002) add that the individual's beliefs which form his/her attitudes can be weighted, just as the person's concerns for what others think and what motivates the behaviour can also be weighted. Thus, Hale et al. (2002) derived a model given as:  $BI = (AB)W_1 + (SN)W_2$  where BI = behavioural intention

(AB) = One's attitude toward performing the behaviour

W = empirically derived weights



SN = one's subjective norm related to performing the behaviour

According to Sheppard et al. (1998), the theory provides a means of measuring behavioural intent but disagrees with the use of attitudes and subjective norms to predict intentions and the use of intentions to predict the performance of behaviour. They contend that the presence of choices may dramatically change the nature of the intention formation process and the role of intentions in the performance of behaviour. Moreover, Sheppard et al. (1998) also argue that there are time when what one intends to do and what one actually expects to do are quite different. Thus, there is no linear relationship between behaviour, on the one hand, and perceptions and attitudes, on the other hand.

Critics, such as Sheppard et al. (1988) have noted that more than half of the research to date that has utilised the model has investigated activities for which the model was not originally intended. According to Miller (2005), the critics expected that the model would not fare well in such situations, but they found the model performed extremely well in the prediction of goals and in the prediction of activities involving an explicit choice among alternatives. Thus, Miller (2005) concluded that the model has strong predictive utility, even when utilised to investigate situations and activities that do not fall within the boundary conditions originally specified for the model.

## **2.5 The concepts of consumer perception and consumer attitude**

Oliver (1993) defines perception, generally, as the process of attaining awareness or understanding of sensory information. In consumer behaviour, however, Sweeney and Souter (2001) describes perception as the way stimuli are interacted and integrated by the consumer to produce a mental frame of the product. Consumer perception therefore, refers to the entire process by which an individual becomes aware of the environment and

interprets it to fit a particular frame of reference (Walters et al., 1989; Mozer, 2002). According to Mozer (2002), a person's frame of reference consists of all his previous experiences, beliefs, likes, dislikes, prejudices, feelings and other psychological reactions of unknown origin. However, Blijlevens et al. (2009) maintain that consumer perception is a rather complicated concept due to the possibility that individuals may be stimulated below their level of conscious awareness, which is termed as subliminal perception.

In the consumer perception process, source maintains that individuals face some amount of risk when making a purchasing decision and have a limited capacity to process all the different stimuli directed at them (Hummel & Stankiewicz, 1996). Therefore, consumers make selectively pay attention to some stimuli and then interpret them to conform to their previously held beliefs and attitudes. According to Hsu et al. (2000), this suggests that only messages conforming to held beliefs will be retained, and that consumer attitudes will remain the same. This perspective is challenged by Mozer (2002), that in reality consumer perceptions are dynamic, and so are their purchasing attitudes. According to Blijvens et al. (2009), the customer gained knowledge about products and prices from each purchasing experience. Thus, consumer perception is seen as an accumulation and the outcome of all the good and bad experiences that the customer has encountered with a particular product or service.

Schifferstein (2001) also maintains that the consumer perception is process with cognitive, affective and behavioural components. As a cognitive process, consumer perception consists of the total configuration of beliefs and knowledge about a certain object, as well as previously gained experience. The affective component on the other hand, involves emotions, feelings, and prejudices towards a product or service (Patterson et al.,

1997; Wilcock et al., 2004). The behavioural component, on the other hand, deals with the attitudes, habits, reactions, and intentions of the consumer towards the product. According to Cronin et al. (2000), the cognitive and affective components influence the behavioural components. For example, what an individual thinks and feels about the product affect his/her purchasing intentions and behaviour (Mozer, 2002).

Patterson et al. (1997) maintains that consumer perception often borders on three major components of products or services; which are perceived quality in relation to price, perceived benefits in relation to expectations, and perceived social status that the product places the consumer. Fox (1997) adds that the benefits of the product may be extrinsic or intrinsic. Extrinsically, the customer seeks to obtain the value for his/her money spent, while intrinsically, the customer seeks the fulfilment of an emotion and desire for the product (Erdem et al., 1999; Teas & Agarwal, 2000). Therefore, it helps if the product meets the specification of the customer and helps to reinforce a positive image about the product.

In some cases, Priest et al. (2001) indicate that the perceptions about the products require to be changed in order to encourage positive attitudes about the products. Wilcock et al. (2004) add that, attitudes can be changed through persuasive communication and by communicating persuasive facts about the products, which is devoid of exaggeration. In a sum, Graf and Maas (2008) suggest that the most forward means of changing perceptions and attitudes is through awareness and marketing campaigns.

## **2 .6 Chemical, physical and mechanical properties of bamboo and rattan**

Bamboo is a tribe of flowering perennial evergreen plants in the grass family Poaceae, subfamily Bambusoideae, tribe Bambuseae. In bamboos, the inter-nodal regions

of the stem are hollow and the vascular bundles in the cross section are scattered throughout the stem instead of in a cylindrical arrangement. The dicotyledonous woody xylem is also absent which causes the stems of monocots, even of palms and large bamboos, to be columnar rather than tapering (Kelchner, 2013).

Bamboo has more than 10 genera, which are divided into about 1,450 species (Gratani et al., 2008). It is a kind of grass with rapid growth making it one of the fastest regenerative plants. Following this, Malanit et al. (2009) classifies bamboo as a lignifying giant grass, based on the fact that the leitsysteme lignifies and gained hardness due to the silification of the outer wall after about three years of growth. According to Malanit et al. (2009), the lignifying cell construction of the bamboo texture and its technical conditions are very similar to the original texture of wood. However, whereas wood has got a hard centre and becomes weaker towards the outer parts, the bamboo is hard in its outer parts and weak in its inner parts. A continuous accumulation of fibre can be found from the inner parts of the tube towards the outer parts of the bamboo shoot. Laws (2010) further indicates that the strongest structure can be found at the most dense sections of accumulated fibre.

Olorunnisola et al. (2005) maintain that bamboo culms emerge from the ground at their full diameter and grow to their full height in a single growing season of three to four months, but bamboo is generally considered mature after the third year of growth. Small or young specimens of an individual species will produce small culms initially. As the clump and its rhizome system mature, taller and larger culms will be produced each year until the plant approaches its particular species limits of height and diameter. Bamboo, unlike other trees, has a short life span between five to eight years (Laws, 2010). Thus, it is suitable for harvesting within three to seven years.

Kelchner (2013) indicates that there are two main forms. On the one hand, there are the economically and ecologically important woody bamboos, such as the Arundinarieae and Bambuseae species. On the other hand, there are the non-economical herbaceous bamboos from the Olyreae species. Kelchner (2013) further notes that there are about four major lineages of bamboo recognised for their economic purposes, and they include the temperate woody, paleotropical woody, neotropical woody and herbaceous bamboos.

Janssen (1990) indicates that, mechanically, bamboo is stable because of its cavities and also elastic, given its relatively light weight, as compared to other woods. As a building material, Janssen (1990) is of the view that bamboo is superior to other woods because, it is reinforced by diaphragms and its physical conditions, such as its elasticity and light weight.

Amada (1996) note that, there are several differences between bamboo and other types of wood. They emphasise that bamboo, there are no rays or knots, which give bamboo a far more evenly distributed stresses throughout its length. Bamboo is a hollow tube, sometimes with thin walls, and consequently it is more difficult to join bamboo than pieces of wood. Thus, the physical properties of bamboos, with respect to their hollow structure, make it unsuitable for certain types of construction jobs, such as beaming (Laws, 2010). However, Chen and Hua (1991) indicate the problem of hollow structure of bamboo has been solved with the manufacturing of bamboo lumber, which can applied in any practical way that other wood can be applied.

Some studies show that the chemical composition of bamboo is similar to that of wood (Higuchi, 1957; Tomalang et al., 1957). According to the Department of Forest Research of Nepal (2011), the main constituents of bamboo culms are cellulose, hemi-

cellulose and lignin, which amount to over 90 percent of the total mass. The minor constituents of bamboo are resins, tannins, waxes and inorganic salts. Compared with wood, Chen and Hua (1991) indicate that bamboo has higher alkaline extractives, ash and silica contents. Yusoff et al. (1992) also studied the chemical composition of one, two, and three-year-old bamboo (*Gigantochloascortechinii*). The results indicated that the holocellulose content did not vary much among different ages of bamboo. Alpha-cellulose, lignin, pentosane, ash and silica content increased with increasing age of bamboo. Thus, it was noted that the hardening of bamboo increased with age.

Leithoff and Peek (2001) observe that bamboo contains other organic composition in addition to cellulose and lignin. Landler (2002) further indicates that bamboo contains about 2-6 percent starch, 2 percent deoxidised saccharide, 2-4 percent fat, and 0.8-6 percent protein. The carbohydrate content of bamboo makes it susceptible to fungal and insect attack. However, Leithoff and Peek (2001) maintain an oil-bath treatment can successfully protect against fungal attack, but severe losses in strength have to be expected, after the fungal attack. It is therefore advisable to prevent fungal attack by harvesting bamboo within its third to fifth year of growth (Scurlock et al., 2000; Liese, 1980).

Janssen (1995) observed that bamboo does not contain the same physical properties as wood, in that bamboo's diameter, thickness, and intermodal length have a macroscopically graded structure while the fiber distribution exhibits a microscopically graded architecture. Unlike wood, bamboo has no secondary growth; all gains after it reaches its full height are due to the addition of material to cells after the first year (Lee et al., 1994; Nijhuis, 2009).

The bamboo culm comprises about 50 percent parenchyma, 40 percent fibers and 10 percent vessels and sieve tubes (Liese; 1997; Janssen, 1995). The fibres contribute 60-70 percent of the weight of the total culm tissue. The ratio of length to width varies between 150:1mm and 250:1mm. The fibre length of bamboo species, including some economically viable species like *Bambusatulda* (3mm), *Bambusa vulgaris* (2.3mm), *Dendrocalamus giganteus*(3.2mm), *Guadua angustifolia*(1.6mm) and *Phyllostachys edulis*(1.5mm), is generally longer than those from hardwoods (1-1.5mm) (Liese, 1994; Bardelline, 2009). Bamboos are of notable economic and cultural significance in South Asia, Southeast Asia and East Asia, being used for building materials, as a food source, and as a versatile raw product.

According to Siebert (2012), rattan is used to collectively describe about 600 species of palms in the tribe *calameae*, which is native to the tropical regions of Africa. Physically, most rattans differ from other palms in having slender stems, about 2 to 5 cm diameter, with long internodes between the leaves. Siebert (2012) also differentiates between rattan and bamboo on the grounds that unlike bamboo, rattan stems are solid and most species need structural support, because they cannot stand on their own. However, some genera, such as *metroxylon*, *pigafetta* and *raphia* are more like typical palms, with stouter, erect trunks.

Generally, there are two kinds of rattan anatomical properties, those are macro and micro. Macroscopically, rattan cane consists of massive cylindrical stem with inter-node every 10 – 50 cm. Stem diameter varies from 0.7 to 5 cm. Size of pores and fibre wall dimension can determine the resistance of rattan against degrading organisms attack (Rachman, 1996). Basukriadi and Kramadibrata (1997) reveal that average fibre-wall

thickness of longa (*Korthalsiajunghunii* Miq.) rattan was 4.98 micrometers, while those of seuti (*Calamusornatus* Bl.) and bubuay (*Plectocomialongate* Bl.) rattans were 3.91 micrometers and 3.49 micrometers, respectively. The difference in these varying wall thicknesses can affect significantly the strength of rattan itself.

As a lignocellulosic material, chemical contents of rattan are important for its utilisation (Rao et al., 1998). Generally, rattan stem consists of holoselulosa (71 – 76%), selulosa (39 – 58%), lignin (18 – 27%) and longa (0.54 – 8%) as well as starch (18 – 23%). Given the high content of carbohydrates, rattan, just as bamboo, is also susceptible to fungal attack. Cellulose and lignin contents correlate significantly with rattan strength. In this regard, cellulose can contribute to the tensile strength, of rattan due to presence of strong covalent bonds in the pyranose rings and between glucose units of the cellulose polymer chain (Belcher, 1999). Consequently, the higher the cellulose content the stronger the modulus of rupture of rattan. Almost similar to cellulose content, lignin also provides significant strength of the rattan (Tesoro, 1988; Williams et al., 1991). Likewise, higher lignin content is associated with stronger the bonds between fibres in rattan.

The physical and mechanical properties are the most important properties of rattan (Belcher, 1999). The physical properties of rattan are closely related to its specific gravity. The higher the specific gravity, the greater the content of ligno-cellulosic substances resulting in the thicker fibre wall, thereby increasing the strength of rattan (Brown et al., 1952; Basukriadi & Kramadibrata, 1997). According to Belcher (1999), the various species of rattan range from several millimetres up to 5–7 cm in diameter. Rattan which is over 18 mm in diameter is often classified as large diameter rattan. The strength of those rattans is important for main structure in rattan furniture.



## 2.7 Overview of rattan and bamboo furniture

Bamboo and rattan are some of the most widely used and versatile products (Rachman, 1996). According to the Department of Forest Research and Survey (DFRS) of Nepal (2011), bamboo alone has over 1500 uses in everyday life among 2.5 billion people worldwide. The DFRS emphasizes that bamboo is used for house construction, rafters, pillars, fence posts and weaving materials. The properties of rattan also make it suitable for furniture and making handicrafts and art pieces (Siebert, 2012).

One of the popular uses of bamboo and rattan is in furniture making (Janssen, 1990). According to Gratani (2008), bamboo and rattan-based furniture are increasingly popular because they are attractive, light and cheap compared to similar wood-based products and are also environment friendly. Jenkins (2010) maintains that the cost of treating bamboo and furniture however, adds some significant cost to bamboo and rattan furniture making process. Generally, however, the cost of bamboo furniture is lesser than furniture made with other woods.

Owing to modernisation and improvement in technology, bamboo lumber are also available in many countries, such as those in East Asia and also as imports into other European countries. According to Laws (2010), these lumbers are available in all sizes and can be used in making any kind of furniture without complimenting them with other woods. Comparatively, Jasni and Kirisdianto (2012) maintain that bamboo furniture is as durable as furniture made with other woods. Moreover, bamboo furniture are more resistant to harsh weather conditions and abrasion than furniture made with some types of hard woods.

Rattan has several uses, just as bamboo (McKinnon, 1998). According to Piper (1995), from a strand of rattan, the skin is usually peeled off, to be used as rattan weaving material in the making of some rattan and bamboo furniture. The remaining core of the

rattan can be used for various purposes in furniture making (Sunderland, 1997). Similar to the properties of bamboo, McKinnon (1998) establishes that rattan is ideal for furniture making because it can withstand very the harshest of cold winters and does not split or crack under household conditions. However, the use of rattan is being slowly substituted by other alternatives, such as synthetic rattan wicker. A major benefit of the synthetic rattan is that it only costs a fraction of the price of the natural one and yet it still possesses all the characteristics of its natural counterpart (Mukherjee, 2011). Moreover, synthetic rattan is a resin based plastic compound that could be coloured or dyed in any colour or shade, including real rattan colour. Usually such synthetic alternatives are used for areas or locations with different weather patterns and harsh winters, because synthetic rattan is not degraded by adverse weather conditions in any way (Mukherjee, 2011).

## **2.8 Benefits of bamboo and rattan furniture**

Teruya (2010) maintains that bamboo and rattan furniture has multiple benefits and often entices homemakers and decorators who are on the cutting edge of home design. Environmentally, Mayank (2008) maintains that bamboo is a genuinely renewable resource, because unlike hardwood, which once cut needs replanting to reproduce, bamboo can grow new shoots from its own root system. Thus, bamboo harvesting is more eco-friendly than other types of woods (Mayank, 2008). The same advantage can be said of rattan although the regenerative property of rattan is not as fast as bamboo (Allen, 2009). This is because rattan is a type of palm, while bamboo is a type of grass. Generally, grass grows a lot quicker than palm, however, the germination, harvesting and regenerating period for rattan is still relatively shorter than that of hard woods (Bhattacharya, 2010).

Siebert (2012) also notes that rattan can be planted as replacement crops in areas of where deforestation is a problem, because harvesting rattan does not require the destruction of the entire crop, but leaves it regenerate after a relatively short period, just as other palm species.

Another benefit of rattan and bamboo furniture is their relative higher durability over hardwood. Allen (2009) maintains that bamboo is incredibly strong and durable and this is shown in their use in building boats, bridges and scaffolds. Likewise, bamboo furniture is durable and has the ability to withstand any weather condition given that the appropriate treatment is applied during the curing period of the bamboo stems (Teruya, 2010). Cruz (2013) adds that bamboo furniture is extremely durable and can withstand damage a lot more than traditional hardwoods. Cruz (2013) explains that, bamboo's resistance to abrasion is the basis for using bamboo for cutting boards, as it can take a lot more strokes from a knife before becoming scratched and marked. Page (2013) also indicates that bamboo can also be laminated in strips and sheets to make it even more durable, reaching toughness levels of soft steel. This ensures a very long life for the furniture, avoiding costly repairs and constant replacement as it can handle almost any weight and absorb a great deal of impact.

Manurung and Burgers (1999) maintain that, rattan does not warp under harsh weather conditions, and like bamboo, is resistant to abrasion. Therefore, combining rattan and bamboo in furniture making only helps to reinforce the durable properties of both types of plants in one product. Sunderland et al. (1999) therefore recommend rattan and bamboo furniture for areas that require rough use due to their abrasion resistant properties. Sibert (2012) observes that moisture and dryness can be a problem for most hardwood, and in some cases for rattan, but not bamboo. Natural rattan can therefore rot over time without

proper curing, but synthetic rattan helps to overcome this problem by possessing similar look as natural rattan, but more resistance to fungus and rot (Sibert, 2012). Bamboo is, however, resistant to swelling and shrinking, as it is the case for most hardwoods.

Bamboo can thus, manage its shape and size despite being subjected to extreme weather conditions (Cruz, 2013).

In economic terms, Mayank (2008) maintains that rattan and bamboo furniture are cheaper than furniture made with hardwoods and also has relatively lower maintenance costs. Since bamboo is not wood, it neither rots nor becomes a target for termites. Allen (2009) also indicates that, rattan and bamboo furniture do not need to be frequently treated with oil and preservatives like some other hardwoods, but only need dusting and brushing. Siebert (2012) also indicates that rattan furniture can remain in their original state for long and can easily be adapted to other colors by painting or spraying over their natural brown color.

Lakkad and Patel (1981) observe that rattan and bamboo furniture are lightweight and thus do not cause damage to floors and rugs as some other heavy hardwood furniture do over time. Moreover, they are easier to handle in terms of transportation and moving to redecorate. Mukherjee (2011) maintains that with bamboo, transportation of furniture and redecorating no longer have to be arduous processes as the material is much lighter compared to metal and hardwood furniture.

According to Obiri and Oteng-Amoako (2007), rattan and bamboo furniture have few disadvantages, one of which is rattan's susceptibility to rot after prolonged exposure to moisture. However, Siebert (2012) establishes that the use of synthetic rattan fibre to

replace natural rattan helps to solve this problem. In many developing markets, however, synthetic fibre is not readily available and thus, people are forced to patronise natural rattan.

Jenkins (2010) mentions that, although bamboo may be cheap, the cost of furniture made with bamboo lumber may be expensive because of the further processing cost of bamboo into artificial lumber. There is also the factor of unavailability of the lumber in other developing markets. This reduces customers' choices, thus making customers in such areas to opt for hardwood furniture where they can make several choices.

## **2.9 Challenges in bamboo and rattan furniture production**

Bamboo furniture production is only one of the several applications of bamboo, but it represents the most popular purpose for which bamboo is harvested (Considine et al., 2011). According to Ingram et al. (2011), bamboo is often harvested from the wild and allowed to regenerate on its own due to the rapid rate of recuperation and the fact that some bamboo species have wild growth. The popularity of bamboo usage and the variety of its use have however contributed to immense global pressure on bamboo supplies, and in some areas, concerns about the sustainable supply of bamboo and rattan are being raised.

From a broader perspective there are further environmental issues raised with bamboo exploitation and its consequence for the natural environment. Obiri and Oteng-Amoako (2007) observe that these concerns are also important particularly for the small number of species of bamboo and rattan that have aesthetic and economic value in furniture making. For example, globally, only about 50 of the 600 known species of rattan are utilised commercially (Gratani et al., 2008). However, the rapid growth of bamboo makes it relatively faster in its regenerative properties, in comparison to rattan and other woods.

Thus, most of the environmental concerns are directed towards rattan harvesting and depletion.

In order to preserve the bamboo for 25-30 years a toxic Copper Chrome Boric (CCB) chemical is used at CFC (UNIDO, 2008). Although the CCB is considered not harmful for the customer due to its position on the inside of the product and the protective layer of varnish, it is not an ecological material to use (UNIDO, 2008). Belcher (1998) suggests that there are other different treatments, such as treatment with boric acid and borax, which are not toxic to the environment. However, the International Network for Bamboo and Rattan (2009) notes that they are challenged by short conservation period, as well as expensive and long processing time, in addition to the fact that they become only suitable for indoor use.

Apart from direct harvesting from the forest, other economic and forest activities of man, such as farming and hunting practices contribute to the depletion of bamboo reserves around the world (Ingram & Jam, 2008). Such problems have been reported in Asian countries, such as Indonesia and Sri-Lanka (Belcher, 1999; Rao et al., 1998), where most of the global supply of bamboo can be found, as well as in other tropical regions of Africa, such as Uganda and Cameroon (Ingram, 2009). The challenge is that the limited economically viable species of bamboo and rattan are being overexploited without adequate time for the plants to regenerate.

Considine et al. (2011) mention challenges that are more directly related to the production and marketing of the bamboo products. According to Zarzuela and Malabaguio (2013), one of the challenges in bamboo production relates to how to mainstream the products derived from bamboo in order that they will become a leading commercial product

in the domestic market, and how to globalise the bamboo industry so as to access the more lucrative international market. Rao et al. (2009) assert that enabling the bamboo sector to respond to these two challenges would magnify the contributions of bamboo to the national economy in terms of generating livelihood and export revenues, reducing poverty, and minimizing forest exploitation for timber. However, bamboo production in most countries still follow an orthodox method which is labour intensive and relied mainly on the hollow bamboo stems (Rao et al., 2009). Zarzuela and Malabaguio (2013) maintains that this places a limitation in the design and application of bamboo in furniture making. On the other hand, some industries have manufacture bamboo lumber which can be sewn into various sizes for different applications.

The other challenge with marketing bamboo furniture has to do with the characteristics of the population that often produces the product (Qisheng et al., 2002). Mayank (2008) observes that, generally bamboo products are manufactured in the rural areas where the raw material is readily available. The population in these areas are often characterised by low levels of education, which limit their creativity and knowledge of marketing avenues (Oteng-Amoako et al., 2005). They often rely on tourists and some local populations that have some positive perception about the products. However, little effort is often made to aggressively market the product and to show its superior physical, aesthetic and economic characteristics over other wood products (Obiri & Oteng-Amoako, 2007). Ingram et al. (2010) note that, this particularly leads to the problem of low demand for furniture and other crafts made with bamboo and rattan. Other concerns raised by Ingram et al.'s (2010) included poor storage for the raw materials, the semi-finished and finished

products. This had often led to theft of the finished products and damage to the raw materials.

Mayank (2008) also indicates that the artisans, especially those with non-formal training, often lack the requisite knowledge and skills to process and make products that are different from traditional products. Most of the products are only replicas of replicas. Mukherjee (2011) found that the artisans attributed this to inaccessibility of tools and equipments for making products of higher quality and of different designs.

## **2.10 Common perceptions and attitudes towards bamboo and rattan furniture**

Bamboo and rattan furniture are used globally although they may be more popular in some regions than others. According to Qisheng et al. (2002), generally, people think bamboo furniture has an appealing and natural look. Bamboo and cane furniture is mostly seen as comfortable furniture to relax and is therefore wanted as outdoor furniture for terrace, garden and lounge rooms. Bamboo furniture are often made more comfortable by complementing their seats with cushions (Zarzuela & Malabaguio, 2013). Although traditional designs are still wanted, some up-market restaurants and hotels prefer new design to offer something original to their customers.

Leake et al. (2010) note that some people are of the perception that bamboo is uncompetitive for use in wood panels and other types of furniture. This negative perception, in Leake et al's (2010) opinion, affects prices that people are willing to pay for the bamboo products. Ingram et al. (2011) found that, in Cameroon, bamboo furniture makers priced their products based on the type of buyer and their perception of the price they could or would be willing to pay for the particular product. Others also sold based on



the model, a small proportion were not sure as to what informs their pricing. Perception of the products to some extent, therefore, influenced people's attitudes towards the price and cost of the bamboo furniture.

According to Marsh (2007), first time customers are often those with more negative perceptions about bamboo and rattan products because they have preconception that hardwood is better and more durable than bamboo and rattan. Moreover, Lugt (2008) also indicates that many people are only conversant with outdoor usage of bamboo furniture and thus, opt for hardwood furniture for indoor use. Lugt (2008) explains that, this is partially due to inadequate information about bamboo usage and also, in part, due to unavailability of product choices in some parts of the undeveloped bamboo markets.

Generally, Wang (2006) notes that the perceptions about bamboo furniture border on their durability, aesthetics, purchasing price, and their maintenance costs. Wang (2006) is of the view that, hotels and other customers who seek natural and exotic touch to their lounges or patios often opt for bamboo and rattan furniture. However, most people are more concerned about the cost of maintenance and replacing damaged furniture, thus, the issue of durability and maintenance come to play. Wrong perceptions about fragility of bamboo and rattan furniture can therefore lead to low patronage and negative attitudes towards bamboo and rattan furniture (Rawat & Khanduri, 2001; Lugt, 2008).

In some cases, Rawat & Khanduri (2001) indicate that bamboo and rattan furniture have been associated with a certain low class of people in society. In such some situations, bamboo furniture is labelled as the poor man's furniture. However, Zarzuela and Malabaguio (2013) maintain that much of the negative perceptions stem from poor workmanship and lack of style that the bamboo is put to use. In certain high income

countries, and high-class spas and recreational facilities, Considine et al. (2011) contend that bamboo is applied variably in flooring, furniture and other several products that are subjected to rough use. Thus, much of the perception about bamboo products has to do with the geographical location and the application of the bamboo, as well as the craftsmanship.

### **2.11 Empirical review of literature on bamboo and rattan industry in Ghana**

This section reviews specific studies that have been conducted on the rattan and bamboo furniture trade. The purpose and methods used for conducting the studies are reviewed, as well as the findings of the study. These are to serve as a guide for the current study and as a basis of comparison of results produced by this study.

Oteng-Amoako et al. (2005) conducted a study on the rattan industry in villages and town in Ashanti, Western, Greater Accra and the Eastern regions of Ghana. The purpose of the study was to provide a thorough understanding of the rattan production-to-consumption system in Ghana. The study used a descriptive design and employed purposive sampling of 240 rattan collectors, processors and traders from the four regions. The study also included in the sample, the Forestry Department, Plant Quarantine officers at the Ghana - Cote D'Ivoire border. Oteng-Amoako et al. (2005) used structured interview schedules to collect data from the rattan processors and interview guides to elicit data from the Officers. Mainly, frequencies and percentages were used to describe the results and qualitative interviews were discussed.

The respondents were predominantly (74%) settlers. Natives and migrant traders constituted 18 and 8 percent respectively. The traders were 90 percent males with only 10 percent females. The average age of the traders was 36 years, and ranged from 18 to 62

years. The majority of the traders were aged between 20 and 49 years old. About 91 percent of the respondents interviewed had had various levels of formal education, but 65 percent had been educated to Middle /Junior Secondary School level.

The study identified three commercial rattan species as *Eremospatha* (Mfea), *Laccosperma* (Eyie) and *Calamus* (Demere) from off reserve natural forests of Ashanti, Eastern and more importantly Western regions of Ghana. The demand for *Eremospatha* was very high and reserves of the species was fast depleting. Rattan stems were processed manually into furniture, baskets, serving trays, babies-cots and other products by small-scale family-based entrepreneurs in urban centers that operated with very limited capital. Rural processing largely involved the production of local farm baskets for transporting goods and for storage of food items. The sale of ungraded rattan products was done by either the processors themselves or by retailers who bought from the processors. Most of the products were sold locally with only two relatively large-scale companies exporting significant quantities to Europe.

Several challenges were identified for the rattan industry. They included unavailability of raw rattan, labor intensiveness processing methods, accidents, improper storage, inadequate capital and expensive input costs. Other challenges were no standardization of products, inadequate technical knowhow, and harassment by Metropolitan Assemblies' officials. The study recommended interventions which were needed to sustain improve harvesting techniques to promote natural regeneration, effective preservation methods to arrest fungal deterioration and insect infestation and the introduction of processing machines and better equipment to enhance productivity and quality of the finished products.

Obiri and Oteng-Amoako (2007) also conducted a study to explore the potential for sustainable use of bamboo in national development in Ghana. The study covered six major ecological zones of the country (wet and moist evergreen, deciduous, transitional and the guinea and coastal savannah zones) spreading over nine administrative regions namely, Northern, Upper East, Upper West, Ashanti, Brong Ahafo, Greater Accra, Eastern, Central and Western Regions. The study employed a descriptive design and cluster sampling of 160 respondents across the ecological zones. The study employed structured questionnaires and interview guides to collect data from the respondents. The data analysis was conducted using descriptive statistics in Microsoft Excel.

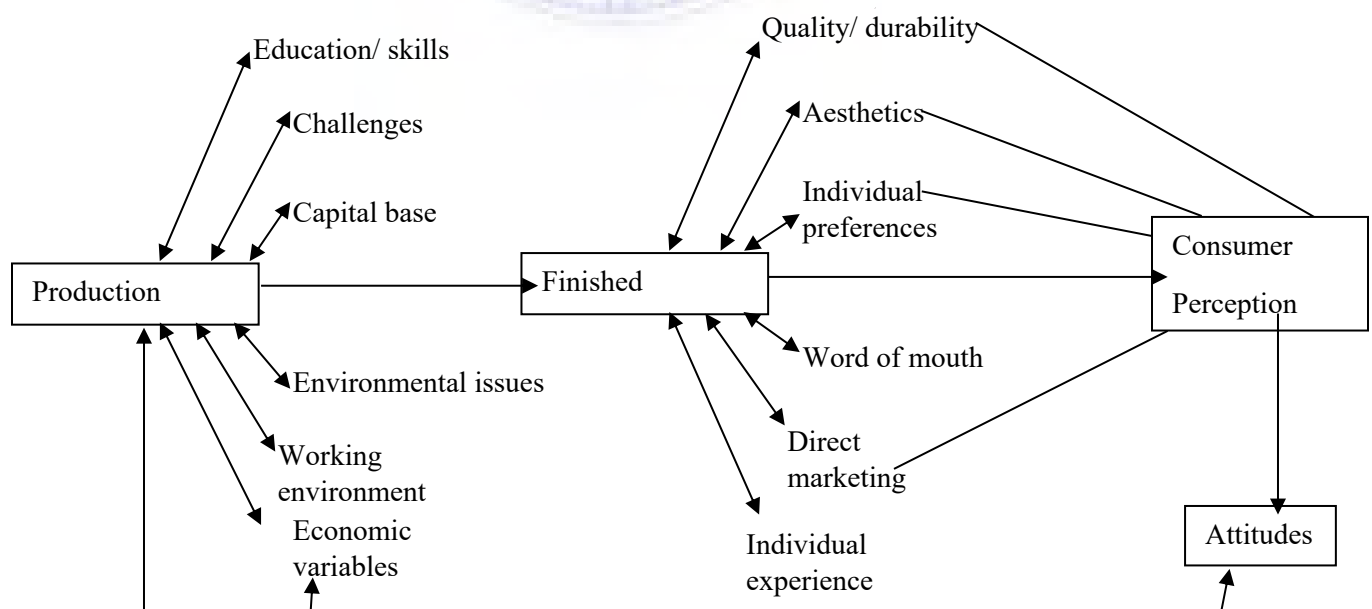
The study found that generally, males dominated the sector, comprising 94 percent of respondents interviewed. It was also found that bamboo was extracted from natural sources mainly from community lands, farmlands and from forest reserves. Two main species of bamboo were identified in natural stands. *Oxyantheria abyssinica*, the indigenous species, is found in the north with smaller culm sizes. *Bambusa vulgaris* is the predominant bamboo species in southern Ghana. The raw or unprocessed culms were either sold as props for construction or used directly by rural households, or may be processed by few large and numerous small scale processors into a variety of products, such as ceiling panels, floorings, window blinds, household and office furniture, and other artifacts.

The challenges of the bamboo industry identified included insufficient knowledge on the extent of the resource available to support the industry. There was the problem of proper regulation on exploitation of bamboo in the country leading to depleting the resource base. The study also noted that the most critical of the challenges encountered by the processing enterprise was ineffective preservation, as this significantly affected product

quality or durability and production cost. It was found that the products deteriorated over a short time from insect and fungal attacks, thus leading to low demand for the bamboo products. The study recommended that, a clear policy for bamboo sector development needed to be put in place.

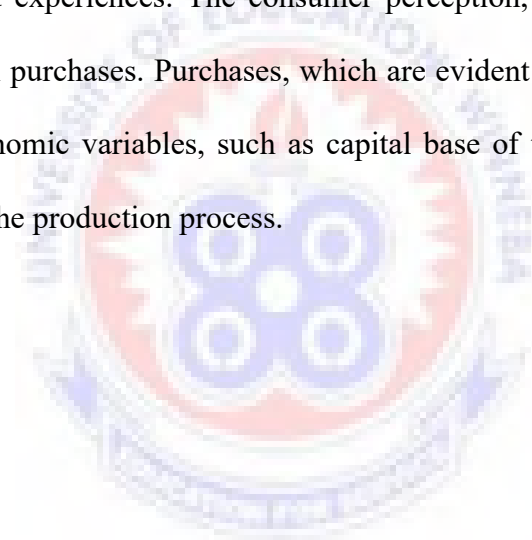
### 2.13 Conceptual framework for assessing the customer perception of bamboo and rattan furniture

The conceptual framework of the study indicates that, several variables interact during the production of the bamboo furniture. The production process is therefore a function of the skills and educational characteristics of the artisan, the environmental and legal process covering bamboo and rattan harvesting, the economic characteristics of the artisan, particularly his/her capital base, and the working environment, including the available of requisite tools and equipment. The challenges encountered in the production process also determines the quality and the aesthetic value of the product



**Figure 2.1: Conceptual framework for analyzing the attitude**

The impression about the products, in theory and in practice, is formed based on the interaction of several variables. Following the gestalt approach, the conceptual framework indicates that communication channels, including word of mouth, message conveyed in corporate marketing of the products, and individual experience from patronizing the product. The conceptual framework therefore aligns with the idea that perception about the product is formed accumulated exposure to the knowledge and experiences. The consumer perception, in turn, informs purchasing attitudes and actual purchases. Purchases, which are evident in the rate of patronage also influences the economic variables, such as capital base of the artisan and reinvestment opportunities into the production process.



## **CHAPTER THREE**

### **METHODOLOGY**

This chapter describes the procedures that were adopted to conduct the research. The issues discussed include study organization, study design, the population and sampling, data collection, instruments design, pre-test, ethical issues, fieldwork and challenges, and data analysis.

#### **3.1 Study area**

The study was conducted in the Takoradi metropolitan area, which is the capital city of the Western Region. The city lies within latitude 4.9167°N and longitude 1.7677°W. Ghana Statistical Service (GSS) (2001) reported a population of 54,772 for Takoradi with an average household size of 4.2 and a district growth rate of 3.25 percent per annum. According to the GSS statistics, females formed about 50.5 percent of the entire population while males formed about 49.5 percent. Based on these figures the projected population of 80,897 is calculated for the end of year of 2012. With an average household size of 4.2, the total number of households amounts to 19,261.

Takoradi is an industrial and commercial area, particularly in timber, plywood, shipping, commerce and recently oil. It also has a large artisanship sector, engaged in a variety of trades such as masonry, carpentry, crafts and arts, and others related to fashion. However, most of these crafts are practiced on small and medium scale, which is characterised by the use of manual labour and simple tools to make and finish products. Given the fact that the general tropical climate of the Western region supports bamboo and

rattan growth, there is abundant supply of green *Bambusa vulgaris* and *Eremospatha* for the bamboo artisanship sector.

In the area of bamboo and rattan products, patches of small-scale artisan shops, mostly in the central business district, are engaged in manual processing of raw bamboo and rattan into mostly kitchen ware and furniture (Oteng-Amoako et al., 2005). According to Osei-Tutu et al. (2012), the profit margins on these products are about 20 to 50 percent of the selling prices depending on the type of product, the market and the season of sale. Some of these products are also exported and the profit margin on them is about 50 to 100 percent of the selling price in the importing countries.

### **3.2 Study design**

An important aspect of any research is the design. It is the logical sequence that connects the empirical data to the initial questions of the study and, ultimately, to its conclusions (Sarantakos, 2005). Over the years, two main approaches, namely quantitative and qualitative, have informed the design of research projects (Babbie, 2005). Quantitative research involves numerical representation and manipulation of observations for the purpose of describing and explaining the phenomenon that those observations reflect. Qualitative research, on the other hand, entails non-numerical examination and interpretation of observations for the purpose of discovering underlying meanings and patterns of relationships (Babbie, 2007). Although all the two approaches have their strengths and weaknesses, the choice between them has attracted considerable scholastic debate.



Researchers have suggested that both quantitative and qualitative methods may be adopted in research (Babbie, 2005). This emphasis has developed with the growing interest in triangulation in research methodology. Contemporary social investigations are becoming increasingly dependent on triangulation in all aspects of the research design, with less emphasis on only one method (quantitative or qualitative). Triangulation is the combination of methodologies in the study of the same phenomenon, on the assumption that the weaknesses of each individual method will be compensated for by the strengths of the other (Sarantakos, 2005).

The study adopted the quantitative approach and a descriptive design, as employed by Oteng-Amoako et al. (2005) and Obiri and Oteng-Amoako (2007). Babbie (2005) reports that methods involved in a descriptive study design range from the survey which describes the status quo, the correlation study which investigates the relationship between variables, to developmental studies which seek to determine changes over time. Sarantakos (2005) confirms that descriptive research aims at describing social systems, relations or social events and providing background information about the issue in question and also to stimulate explanations. A descriptive design was therefore adopted because the study ultimately seeks to describe public perceptions and attitudes towards bamboo and rattan made furniture.

### **3.3 Study population**

The study population comprised all the household heads within the Takoradi metropolis. Exponential projections from population data of Ghana Statistical Service (2001) indicate that there are about 19,261 households in the metropolis. Thus, the study targets the 19,261 household heads of these households. Given the population proportions of males and

females, the target population comprises 9,727 female household heads and 9,534 male household heads. The differentiation is made based on the assertion that gender dichotomy often factors as a significant distinction between perceptual differences.

The target population also comprised the master craftsmen of the bamboo and rattan furniture enterprises in the metropolis. A total of 10 master craftsmen were sampled as key informants. They were targeted for their knowledge in general attitudes exhibited by shoppers towards their products at their enterprises and the challenges in bamboo and rattan furniture making as well as patronage trends.

### **3.4 Sample size and sampling procedure**

The sample size for the study was determined by the Krejcie and Morgan (1970) sample size estimation table, which calculates a theoretical sample of 384 for a population of 19,261. Purposive sampling procedure was used to sample the craftsmen, as used by Obiri and Oteng-Amoako (2007) in their study on the bamboo industry in Ghana. On the other hand, systematic random sampling was used to sample household heads. The list of all household heads was obtained from the Takoradi Metropolitan Assembly, and this formed the sampling frame for the study. The starting number was randomly generated using Q-Basic computer software to randomly generate one number for 1 to 19,261. The sample fraction was determined by dividing the target population by the required sample size. This yielded an approximate figure of 50. This represented the interval with which all respondents were sampled. Therefore, every 50<sup>th</sup> household head from the starting household head on the sampling frame was sampled until the required number was obtained.

### **3.5 Sources of data**

The study employed both primary and secondary data. This was informed by studies conducted by Oteng-Amoako et al. (2005) and Obiri and Oteng-Amoako (2007) on rattan production and bamboo production, respectively. Primary data on the respondents' knowledge and awareness of the benefits using bamboo and rattan furniture were solicited from household heads and the sampled craftsmen.

### **3.6 Instruments for data collection**

Interview schedules were used to solicit data from household heads, because it is assumed that not all the household heads may be literate enough to answer a questionnaire. Obiri and Oteng-Amoako (2007) and Oteng-Amoako et al. (2005) used interview schedules for similar reasons in their studies. The interview schedule was made up of closed-ended and open-ended items and was divided into four sections, from I to IV. Section I covered the demographic characteristics of the sampled respondents, while Section II solicited data on public knowledge and awareness on the benefits of bamboo and rattan furniture. Section III focused comparing respondents' perception of timber furniture and bamboo and rattan furniture. Section IV elicited data on the factors that influence purchasing decisions of rattan and bamboo furniture.

### **3.7 Pre-test**

The instruments for data collection were pre-tested with purposively sampled 20 household heads in Cape Coast, because Cape Coast also has similar crafts shops in bamboo and rattan

furniture making and also shares certain socio-economic and ethnic characteristics with Takoradi. This was done to serve as the preliminary testing of the research questions to provide insights into ideas not yet considered and problems unanticipated, which could challenge the data analysis. Furthermore, it helped to check and try the planned statistical tests of association between variables. Besides these, the pre-test enabled the researcher to revise the contents of the questionnaire and the interview guide, thereby revising the instruments to achieve the reliability standards required in scientific research.

**Table 3.1 Measurement scales and assessment of internal consistencies for pre-test.**

Almost all the constructs shows high reliability consistency (Table 3.1)

		Mean	Cronbach's Alpha if item is deleted	Cronbach's Alpha
<i>Knowledge and awareness on benefits of bamboo and rattan furniture</i>				
1	I have little knowledge on bamboo and rattan furniture	3.86	.904	.897
2	I want to learn more about bamboo and rattan furniture	3.91	.888	
3	Exploitation of bamboo/rattan for furniture production is less destructive	3.98	.887	
4	Bamboo /rattan can be recycled	3.60	.894	
5	Bamboo / rattan are environmentally friendly	3.92	.886	
6	Bamboo / rattan can replace wooden furniture	3.99	.885	
7	Bamboo/ rattan are safe	3.96	.883	
8	Bamboo / rattan are youthful	3.64	.884	
9	Bamboo / rattan are durable	3.88	.888	
10	Bamboo / rattan are attractive	3.86	.880	
11	Bamboo / rattan are natural	3.95	.884	
<i>Perceptions on bamboo and rattan furniture</i>				

1	By using bamboo / rattan furniture I enhance my social status	3.72	.918	.926
2	The use of bamboo / rattan furniture will enhance my social standing in society	3.61	.918	
3	The use of bamboo / rattan furniture will make me feel accepted in society	3.44	.919	
4	The use of bamboo / rattan furniture will make me have good impression on other people	3.37	.920	
5	By using bamboo / rattan furniture people see me as poor	2.76	.937	
6	Increasing the use of bamboo / rattan furniture can decrease deforestation	3.82	.924	
7	Increase use of bamboo / rattan furniture can mitigate global warming	3.82	.921	
8	By using bamboo / rattan furniture I can contribute to the sustainability of tropical forest	3.84	.919	
9	I prefer bamboo / rattan furniture to wooden because of its beauty	3.50	.917	
10	Bamboo / rattan is as durable as hardwood furniture	3.65	.920	
11	Bamboo / rattan is as comfortable as hardwood furniture	3.67	.919	
12	Bamboo / rattan is suitable for indoor use	3.65	.921	
13	Bamboo / rattan furniture is expensive	3.50	.920	
14	Bamboo / rattan is weather resistant	3.62	.923	
15	When it comes to selecting furniture, bamboo / rattan is my first choice	3.59	.915	
16	I prefer bamboo / rattan furniture to all types of furniture	3.54	.915	
17	I will recommend bamboo / rattan furniture to my spouse	3.75	.915	
18	I intent purchasing bamboo / rattan furniture	3.80	.916	
19	My future furniture is bamboo / rattan furniture	3.69	.915	

*Factors underlying purchasing decisions / Intentions*

1	I plan purchasing bamboo / rattan furniture	3.73	.940	.943
2	I have purchased/will purchase bamboo / rattan furniture because it is natural	3.58	.940	
3	I have purchased/will purchase bamboo / rattan furniture because it is easier to repair	3.44	.940	

4	I have purchased/will purchase bamboo / rattan furniture because it is recyclable	3.53	.941
5	I have purchased/will purchase bamboo / rattan furniture because it is eco-friendly	3.71	.938
6	I have purchased/will purchase bamboo / rattan furniture because it is good looking	3.72	.939
7	I have purchased/will purchase bamboo / rattan furniture because it is attractive	3.72	.939
8	I have purchased/will purchase bamboo / rattan furniture because it is safe	3.67	.938
9	I have purchased/will purchase bamboo / rattan furniture because it is durable	3.68	.937
10	I have purchased/will purchase bamboo / rattan furniture because it is modern	3.69	.937
11	I have purchased/will purchase bamboo / rattan furniture because it is colorful	3.49	.939
12	I have purchased/will purchase bamboo / rattan furniture because it is cost effective	3.68	.939
13	I have purchased/will purchase bamboo / rattan furniture because it is timeless	3.59	.937
14	I have purchased/will purchase bamboo / rattan furniture because it is of good quality	3.82	.937
15	I have purchased/will purchase bamboo / rattan furniture because it is healthy	3.77	.940

Table 3.1 shows reliability and validity test of questionnaire items from 7 to 51 as presented on a 5 point Likert Scale coded as “strongly disagree=1”,disagree=2,undecided=3,agree=4 and “strongly agree=5”. The items were subdivided into the three keys headlines of the research work as 1. Knowledge and awareness of respondents on bamboo and rattan furniture,2. Perceptions on bamboo and rattan furniture and 3. Factors underling purchasing intensions and decisions of respondents. From the table, the test for internal consistency for the scale above produced a reliability statistics using Cronbach's alpha ( $\alpha$ ) of .897, .926 and .943(89.7%,92.6% and 94.3%) respectively which indicate a high reliability suggesting a high level of internal consistency for the scale used for the analysis. It must be noted that a reliability greater than 0.70 is considered acceptable. This means that the participants are likely to give the same set of responses to the items should the questionnaire be administered again. From the table, item 5 under perception (By using bamboo/rattan furniture people see me a poor) had the weakest mean value of 2.76, almost

all the rest of the items had average mean 3.49 and above , indicating "agree and strongly agree". Visual examination of the table gives the impression that majority of the mean scores were geared toward the positive end of the scale. From the Cronbach's alpha if item is deleted column, the effect of deleting each item on the Cronbach's alpha is presented. It could be seen on the table that item 5 under Perception which was the weakest (mean value 2.76) when deleted will increase the Cronbach's alpha value from .926 to .937 while item 6 (mean value 3.99) of knowledge and awareness when removed will decrease the Cronbach's alpha value from .897 to .885 an indication that almost all the items were of significant values to the questionnaire development.

### **3.8 Ethical issues**

The research obtained a letter of introduction from the Technical and Vocational Department, of the University of Education, Winneba, Kumasi campus, which was shown to all respondents in order to establish the grounds that the research was for academic purposes only. This enabled the researcher to gain the needed support and co-operation from the household heads and to know those that were not inclined to participate in an academic study. The researcher made sure to explain the purpose of the study to all participants and only included them in the study based on their informed consent. The respondents were assured of the confidentiality of their responses.

### **3.9 Fieldwork**

The fieldwork was conducted from 11<sup>th</sup> November, 2012 to 19<sup>th</sup> December, 2014. The interview schedules were sent to target household heads in their homes during the evening hours, by which time most of them would have returned from work. The researcher paid subsequent visits to their houses until all the targeted respondents were acquired and interviewed.

### **3.10 Field challenges**

A major challenge was getting sufficient number of the interview schedules completed within the time scheduled for the data collection. The scheduling of interviews also posed a major challenge since most of the respondents were workers who only returned from work in the evening. Thus, most of the interviews had to be rescheduled for several times. These challenges prolonged the time frame for the data collection.

### **3.11 Methods of data analysis**

The data were entered, cleaned and checked using statistical tools in Statistical Product and Service Solutions (SPSS version 16). The study employed descriptive statistical tools to analyze demographic characteristics of respondents. Similar analyses were conducted by Amoako-Oteng et al. (1999) and Obiri and Amoako-Oteng (2007). The perceptions and attitudes of respondents towards bamboo and rattan furniture were disaggregated with the demographic background of respondents, using cross tabulation, t-tests, regression analysis models and correlation matrix.



## CHAPTER FOUR

### RESULTS

This chapter presents the results of the study in relation to the perceptions and attitudes towards bamboo and rattan furniture in the Takoradi Metropolis. The statistical significance of the findings is also presented based on the responses of 200 household heads within the Metropolis. The first section of the analysis was on the demographic characteristics of respondents, while the subsequent sections focused on the specific objectives of the study.

#### 4.1 Demographic characteristics of respondents

Almost equal proportions of males and females formed the sample in this study as shown in the demographic characteristics of the respondents (Table 4.1).

**Table 4.1 Demographic characteristics of users and non-users (respondents)**

Items	Frequency	Percentage
<b>Gender</b>		
Male	98	49.7
Female	99	50.3
<b>Age</b>		
20 and below	3	1.5
21-30	49	25.0
31-40	65	35.2
41-50	58	29.6
51-60	17	8.7
60 and above		
<b>Highest education</b>		
No formal education	5	2.5
Secondary education	39	19.5
Post-secondary education	29	14.5
Bachelor	64	32.0

Master	56	28.0
PhD	7	3.5
<b>Do u use bamboo and rattan cane furniture</b>		
Yes (Users)	68	34.3
No (Non-users)	130	65.7

The study sought to provide background information of respondents by examining items under gender, age group, highest educational level and whether respondents use bamboo and rattan cane furniture in the home. A total of 200 respondents answered the questionnaires. Respondents were sharply divided as 98 participants representing (49.7%) were males and 99 participants (50.3%) were females. Majority of respondents were aged between 31-40 and 41-50 with a combined percentage of 64.8%. Analysis of the results found out that, 5 participants making (2.5%) had no formal education, 39 had secondary education (19.5%), post-secondary (diploma) 29 respondents, representing (14.5%), 64 had bachelor degree (32.0%), 56 had master's degree (28.0%) and 7 had PhD (3.5%). Finally, respondents were asked to indicate whether they use the product in their homes, 68(34.3%) responded yes as users and 130(65.7%) responded no as non-users.

#### 4.2 Knowledge and awareness on the benefits of bamboo and rattan furniture

Greater percentages of respondents had little knowledge on the product and are ready to learn more (Table 4.2)

**Table 4. 2 Knowledge of respondents on bamboo and rattan furniture**

Items	Percent					Mean (SD)
	Strongly Agree(5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly disagree(1)	
Little knowledge about bamboo and rattan	36.4	37.9	9.2	7.2	7.2	3.87(1.21)
Want to learn about bamboo and rattan	41.1	28.6	18.2	7.8	4.2	3.95(1.13)

Table 4. 2 shows the report on the level of knowledge of respondents on bamboo and rattan furniture. Thirty-six percent (36%) of respondents strongly agree that they have little knowledge about bamboo and rattan furniture. However, thirty-eight percent (38%), nine percent (9%), 7.2% and 7.2% agree, undecided, disagree and strongly disagree respectively. Respondents were assessed on their readiness to learn more on bamboo and rattan furniture, 41% of respondents strongly agree to be ready to learn more about bamboo and rattan furniture, 28.6% agree, 18% were undecided, 7.8% disagree and 4.2% strongly disagree.

**Table 4.3 Knowledge of respondents on quality attributes of bamboo and rattan furniture.**

Almost all the respondents' view on quality attributes were above the mean rating value of 3.0 as shown below (Table 4.3)

	Percent					Mean (SD)
	Strongly Agree(5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly disagree(1)	
Rattan can be recycled	30.1	30.1	20.4	11.2	8.2	3.63(1.24)
Rattan is safe	38.5	34.4	13.0	7.3	6.8	3.91(1.19)
Rattan is youthful	26.2	35.9	18.5	10.3	9.2	3.59(1.23)
Rattan is durable	34.2	30.6	19.4	10.2	5.6	3.78(1.18)
Rattan is attractive	34.9	38.0	8.8	10.9	7.3	3.82(1.22)
Rattan is natural	41.2	33.5	9.8	5.2	10.3	3.90(1.28)

Table 4.3 assesses knowledge and awareness on the qualities of bamboo and rattan on being able to recycle, safe, youthful, durable, attractive and natural. 30% of respondents strongly agree, 30% agree, 20% were undecided, 11% disagree and 8% strongly disagree. It is worthy to note that a higher percentage of respondents strongly agree and agree to these qualities. 39% strongly agree, 34% agree, 13% undecided, 7% disagree and 8% strongly disagree to it that bamboo and rattan furniture is safe. 34% of participants strongly agree that rattan furniture is durable. This goes to confirm Allen (2009) that bamboo is incredibly strong and durable and this is shown in their use in building boats, bridges and scaffolds.

**Table 4.4 Knowledge and awareness of bamboo and rattan furniture on environmental, aesthetics and mechanical factors.**

Participants show some level of awareness and knowledge of the product (Table 4.4)

No	Item	Mean Rating	t-value	Sig
1	Exploitation of bamboo / rattan for furniture production is less destructive to tropical forest than timber exploitation for furniture production	3.98	10.287	
2	I want to learn more about bamboo / rattan furniture	3.95	11.586	.001
3	Bamboo / rattan are environmentally friendly	3.92	10.575	.001
4	Bamboo / rattan can replace wooden furniture	3.91	10.900	.001
5	Bamboo / rattan are safe	3.91	10.556	.001
6	Bamboo / rattan are natural	3.90	9.801	.001
7	I have little knowledge on bamboo / rattan furniture.	3.87	10.065	.001
8	Bamboo / rattan are attractive	3.82	9.286	.001
9	Bamboo / rattan are durable	3.78	9.157	.001
10	Bamboo / rattan can be recycled	3.63	7.039	.001
11	Bamboo / rattan are youthful	3.59	6.714	.001

Respondents' awareness and knowledge on the benefits of bamboo and rattan cane furniture was assessed using a 5 –point Likert scale ranging from strongly disagree to strongly agree (Table 4.4). Eleven items including environmentally friendliness, safety, naturalness and durability of bamboo and rattan cane furniture were involved in the assessment. In general respondents reported that they some knowledge about the benefits of bamboo and rattan cane furniture as the ratings for all the items were above the mean rating value of 3.0. Items that received the highest ratings included the less destructive nature of exploitation of bamboo and rattan (3.98), environmentally friendliness (3.92) and safety (3.91) of the product. Durability (3.78), recyclable (3.63) and youthfulness (3.59) had the least ratings. This goes to confirm, Mayank (2008) that bamboo is a genuinely renewable resource, because unlike hardwood, which once cut needs replanting to reproduce, bamboo can grow new shoots from its own root system. Harvesting is eco-

friendlier than other types of woods (Mayank, 2008). The same advantage can be said of rattan although the regenerative property of rattan is not as fast as bamboo (Allen, 2009).



**Table 4.5 Pearson's correlations coefficients on knowledge and awareness on bamboo and rattan furniture.**

	1	2	3	4	5	6	7	8	9	10	11
1 I have little knowledge on bamboo and rattan furniture	1.000	.315**	.225**	.322**	.257**	.200**	.256**	.178*	.308**	.217**	.105
2 I want to learn more about bamboo and rattan furniture		1.000	.421**	.307**	.469**	.304**	.402**	.335**	.359**	.329**	.381**
3 Exploitation of bamboo/rattan for furniture			1.000	.350**	.441**	.379**	.371**	.257**	.332**	.338**	.368**
4 Bamboo /rattan can be recycled				1.000	.406**	.284**	.312**	.380**	.402**	.396**	.342**
5 Bamboo / rattan are environmentally friendly					1.000	.466**	.512**	.366**	.383**	.352**	.413**
6 Bamboo / rattan can replace wooden furniture						1.000	.548**	.475**	.397**	.520**	.467**
7 Bamboo/ rattan are safe							1.000	.557**	.529**	.515**	.383**
8 Bamboo / rattan are youthful								1.000	.480**	.613**	.355**
9 Bamboo / rattan are durable									1.000	.516**	.393**
10 Bamboo / rattan are attractive										1.000	.544**
11 Bamboo / rattan are natural											1.000

Significant and positive relationship existed between and among the constructs (Table 4.5)

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Table 4 .5 reports the correlation matrix of knowledge and awareness of respondents on bamboo and rattan cane furniture. Participants who believed that bamboo and rattan furniture are environmentally friendly are also of the view that it is natural ( $r = 0.413$ ,  $P < 0.01$ ) and in almost all the items, positive and significant relationship existed.

#### 4.4 Consumer perception on bamboo and rattan furniture

**Table 4. 6 Perceptions on Environmental Benefits of Using Bamboo and Rattan Furniture.**

Respondents shows high level of concern on environmental issues (Table 4.6)

	Percent					Mean (SD)
	Strongly Agree(5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly disagree(1)	
Exploitation of rattan is less destructive	51.5	21.6	10.3	6.7	9.8	3.98(1.33)
Rattan is environmentally friendly	41.5	30.1	15.0	6.2	7.3	3.92(1.21)
Rattan can reduce deforestation	44.6	21.0	9.7	9.7	14.9	3.71(1.48)
Rattan can mitigate global warming	39.4	28.2	13.8	9.6	9.0	3.79(1.30)
Rattan can sustain tropical forest	42.9	26.7	13.1	7.3	9.9	3.85(1.31)

Siebert (2012) notes that rattan can be planted as replacement crops in areas of where deforestation is a problem, because harvesting rattan does not require the destruction of the entire crop, but leaves it regenerate after a relatively short period, just as other palm species. Thus table 4. 6 reports on perception on environmental benefits associated with the use of bamboo and rattan furniture. 52% strongly agree that exploiting bamboo and rattan for furniture is less destructive to tropical forest. 22% agree, 10% were undecided, 7 disagree and 10% strongly disagree .42% and 30% of the respondents strongly agree and agree respectively that bamboo and rattan furniture is environmentally friendly, 15% undecided, 6% disagree and 7% strongly disagree .47% of respondents strongly agree that by using bamboo and rattan furniture we can reduce deforestation, 21% agree, 10% undecided, 10% disagree and 15% strongly disagree. Majority of respondents believed that by using rattan furniture global warming can be mitigated, 39% strongly agree, 28% agree, 14% undecided, 10% and 9% disagree and strongly disagree to this assertion.

Respondent were also asked on whether the use of rattan furniture can contribute to sustainability of tropical forest. 43% strongly agree, 27% agree, 13% undecided 7% disagree and 10% strongly disagree to this notion

**Table 4.7 Perceptions on societal value when using rattan furniture.**

Societal enhancements factors are of high concern to consumers of the product (Table 4.7)

	Percent					Mean (SD)
	Strongly Agree(5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly disagree(1)	
Rattan enhances societal status	32.2	26.6	16.6	15.1	9.5	3.57(1.33)
Rattan enhances societal standing	25.0	32.7	18.4	14.3	9.7	3.49(1.27)
Rattan enhances societal acceptance	24.4	26.9	19.3	14.2	15.2	3.31(1.38)
Rattan provides good impression	19.5	31.5	18.5	20.5	10.0	3.30(1.27)

Patterson et al. (1997) maintains that consumer perception often borders on three major components of products or services; which are perceived quality in relation to price, perceived benefits in relation to expectations, and perceived social status that the product places the consumer. Thus table 4.7 shows the results of respondents on the perception of people to those that use rattan and bamboo furniture. 32% strongly agree that the use of rattan furniture enhances one's societal status, 27% agree, 17% were undecided, 15% disagree and 10% strongly disagree. 25% of respondents strongly agree to the perception that by using bamboo and rattan furniture their societal standing is enhanced, 33% agree, 18% were undecided, 14% disagree and 10% strongly disagree. Respondents were also asked whether the use of this product offer their acceptance in the society and 24% and 27% of the respondents strongly agree and agree respectively. 19% were undecided, 14% disagree and 15% strongly disagree to this. 20% of respondents strongly agree that the use



of rattan furniture will make them have good impression on others. 30% agree to this notion, 19% however were undecided, 21% disagree and 19% strongly disagrees.

**Table 4. 8 Perceptions on other quality attributes of bamboo and rattan furniture in use.**

Respondents consider quality attributes of the product greatly (Table 4.8)

	Percent					Mean (SD)
	Strongly Agree(5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly disagree(1)	
Rattan is suitable for indoor use	27.6	38.0	14.6	8.3	11.5	3.62(1.28)
Rattan is expensive	23.6	29.3	24.6	12.0	10.5	3.43(1.26)
Rattan is weather resistant	25.0	37.2	17.8	10.0	10.0	3.57(1.24)

Table 4.8 reports the quality attributes of bamboo and rattan furniture as compared to hardwood when in use. 28% of respondents strongly agree that rattan furniture is suitable for indoor use, 38% agree, 15% undecided, 8% disagree and 12% strongly disagree. On the cost component 24% strongly agree that rattan furniture is expensive 29% agree to this notion, 25% were however undecided, 12% disagree and 11% strongly disagree. A higher percentage of respondents 25 and 37% strongly agree and agree respectively that rattan furniture is weather resistant, 18% were undecided, and 10% each disagree and strongly disagree on this attribute which is supported by Manurung and Burgers (1999) that, rattan does not warp under harsh weather conditions, and like bamboo, is resistant to abrasion. Therefore, combining rattan and bamboo in furniture making only helps to reinforce the durable properties of both types of plants in one product. Sunderland et al. (1999) therefore recommend rattan and bamboo furniture for areas that require rough use due to their abrasion resistant properties. Bamboo is, however, resistant to swelling and shrinking, as it is the case for most hardwoods. In economic terms, Mayank (2008) maintains that rattan and bamboo furniture are cheaper than furniture made with hardwoods and also has

relatively lower maintenance costs. Since bamboo is not wood, it neither rots nor becomes a target for termites.

**Table 4.9 Perceptions about bamboo and rattan furniture.**

Respondents view on the product in relation to several other factors is high as evident on Table 4.9

No	Item	Mean Rating	t-value	Sig
1	By using bamboo / rattan furniture I can contribute to the sustainability of the tropical forest	3.85	8.951	.001
2	Increase use of bamboo / rattan furniture can mitigate against global warming	3.79	8.348	.001
3	I intent purchasing bamboo / rattan furniture	3.72	7.856	.001
4	Increase use of bamboo / rattan furniture can decrease deforestation	3.71	6.666	.001
5	Bamboo / rattan is as comfortable as hardwood furniture	3.66	6.679	.001
6	I will recommend bamboo / rattan furniture to my spouse	3.65	6.997	.001
7	Bamboo / rattan furniture is as durable as hardwood furniture	3.64	7.297	.001
8	Bamboo / rattan furniture is suitable for indoor use	3.62	6.685	.001
9	My future furniture is bamboo / rattan furniture	3.59	6.006	.001
10	Bamboo / rattan furniture is weather resistant	3.57	6.160	.001
11	By using bamboo / rattan furniture I enhance my social status	3.57	6.018	.001
12	When it comes to selecting furniture ,bamboo / rattan furniture is my first choice	3.53	5.421	.001
13	I prefer bamboo / rattan furniture to wooden furniture because of its beauty	3.49	5.529	.001
14	The use of bamboo / rattan furniture will enhance my social standing	3.49	5.378	.001
15	I prefer bamboo / rattan furniture to all types of furniture	3.46	4.679	.001
16	Bamboo / rattan furniture is expensive	3.43	4.756	.001
17	The use of bamboo / rattan furniture will make me accepted in the society	3.31	3.146	.002
18	The use of bamboo / rattan furniture will me have good impression on other people	3.30	3.335	.001
19	By using bamboo / rattan furniture people see me as poor	2.73	-2.669	.008

Respondents were asked to indicate the level to which they strongly disagree to strongly agree (Table 4.9) on their perception about bamboo and rattan cane furniture. Nineteen items including sustainability of tropical forest when we shift to bamboo and rattan cane

(3.85), decreasing global warming (3.79) and weather resistant (3.57) had the highest ratings. Items such as societal acceptance (3.31), good impression (3.30) and poverty (2.73) received the lowest ratings. Conclusively, respondents were of the view that increase use of bamboo and rattan cane for furniture will sustain tropical forest. They also asserted that using bamboo and rattan cane furniture does not associate one to poverty but considered that high class places such as spas, hotels and restaurants make use of the product.



**Table 4.10 Intercorrelations matrix on perceptions towards bamboo and rattan cane furniture.**

Positive and negative significant relationship among the factors existed on Table 4.10

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 enhance my social status	1.000																	
2 enhance my social standing	.715**	1.000																
3 furniture will make me feel accepted in society	.553**	.682**	1.000															
4 furniture will make me have good impression on others	.522**	.684**	.756**	1.000														
5 furniture people see me as poor	-.068	-.044	.089	.105	1.000													
6 furniture can decrease deforestation	.246**	.314**	.165*	.233**	-.076	1.000												
7 furniture can mitigate global warming	.410**	.342**	.279**	.307**	-.105	.450**	1.000											
8 furniture I contribute to sustainability of tropical forest	.450**	.405**	.339**	.318**	.017	.491**	.585**	1.000										
9 furniture to wooden because of its beauty	.456**	.449**	.446**	.386**	-.102	.238**	.314**	.466**	1.000									
10 As durable as hardwood furniture	.400**	.247**	.103	.132	-.166*	.225**	.281**	.369**	.440**	1.000								
11 As comfortable as hardwood furniture	.313**	.298**	.186*	.179*	-.010	.240**	.314**	.417**	.561**	.575**	1.000							
12 Bamboo / rattan is suitable for indoor use	.257**	.248**	.150*	.114	.013	.285**	.250**	.286**	.473**	.495**	.694**	1.000						
13 Bamboo / rattan furniture is expensive	.298**	.355**	.402**	.393**	-.062	.177*	.374**	.313**	.436**	.305**	.399**	.325**	1.000					
14 Bamboo / rattan is weather resistant	.228**	.179*	.231**	.143	.020	.183*	.282**	.524**	.353**	.249**	.323**	.190*	.407**	1.000				
15 Selecting furniture, bamboo / rattan is my first choice	.545**	.553**	.558**	.505**	.041	.260**	.367**	.421**	.641**	.376**	.498**	.442**	.513**	.340**	1.000			
16 furniture to all types of furniture	.540**	.534**	.556**	.488**	-.016	.216**	.357**	.393**	.649**	.392**	.498**	.373**	.543**	.312**	.840**	1.000		
17 furniture to my spouse	.538**	.536**	.488**	.479**	.009	.303**	.361**	.524**	.645**	.395**	.559**	.434**	.475**	.399**	.779**	.747**	1.000	
18 I intent purchasing bamboo / rattan furniture	.475**	.449**	.435**	.408**	-.043	.374**	.435**	.570**	.603**	.390**	.453**	.424**	.523**	.413**	.627**	.646**	.783**	1.000
19 My future furniture is bamboo / rattan furniture	.512**	.478**	.526**	.471**	-.024	.285**	.431**	.431**	.556**	.422**	.463**	.411**	.443**	.295**	.729**	.794**	.762**	.697**

\*\*. Correlation is significant at the 0.01 level (2-tailed).

\*. Correlation is significant at the 0.05 level (2-tailed).

From the correlation table 4.10 above, Item 5 associated negatively with most of the other characteristics, an indication that respondents do not perceive the use of the product to mean one is poor. However most of the respondents believed that using the product will enhance their societal standing and acceptance. Though most of the respondents view bamboo and rattan cane furniture as expensive, they are also ready to recommend the product to their spouses ( $r=0.47$ ,  $P<0.01$ ), suggesting that their perception that the product is expensive do not hinder them from recommending it to others. By using bamboo and rattan furniture I enhance my social status correlated positively with the intension to purchase the product ( $r=0.475$ ,  $P<0.01$ ) and this suggest that once respondents' social image is perceived to be enhanced then they are ready to buy the product.

#### 4.5 Consumers' purchasing decisions on bamboo and rattan furniture

**Table 4.11 Factors that influence purchasing decisions/intensions of bamboo and rattan cane furniture.**

Almost all items are above the mid-point of 3.0 (Table 4.11)

No	Item	Mean Rating	t-value	Sig
1	I have purchased / will purchase bamboo / rattan furniture because it is of good quality	3.79	9.822	.001
2	I have purchased / will purchase bamboo / rattan furniture because it is healthy	3.74	9.204	.001
3	I plan purchasing bamboo / rattan	3.72	7.572	.001
4	I have purchased / will purchase bamboo / rattan furniture because it is eco-friendly	3.70	7.799	.001
5	I have purchased / will purchase bamboo / rattan furniture because it is attractive	3.70	9.282	.001
6	I have purchased / will purchase bamboo / rattan furniture because it is modern	3.70	8.334	.001
7	I have purchased / will purchase bamboo / rattan furniture because it is durable	3.69	8.457	.001

8	I have purchased / will purchase bamboo / rattan furniture because it is good looking	3.69	8.785	.001
9	I have purchased / will purchase bamboo / rattan furniture because it is cost effective	3.66	8.018	.001
10	I have purchased / will purchase bamboo / rattan furniture because it is safe	3.65	8.136	.001
11	I have purchased / will purchase bamboo / rattan furniture because it is natural	3.59	6.502	.001
12	I have purchased / will purchase bamboo / rattan furniture because it is timeless	3.58	6.714	.001
13	I have purchased / will purchase bamboo / rattan furniture because it is recyclable	3.55	6.349	.001
14	I have purchased / will purchase bamboo / rattan furniture because it is colorful	3.48	5.574	.001
15	I have purchased / will purchase bamboo / rattan furniture because it is easier to repair	3.44	5.367	.001

Respondents were asked to indicate factors they will look out for when making purchasing decisions for bamboo and rattan cane furniture. A total of fifteen items were used to ascertain their responses from series of independent samples t-tests conducted. Table 4.11 shows that the ratings for all the items were above the mean rating value of 3.0 with most of the respondents agreeing that their purchasing decisions are greatly influenced by good quality, healthy and eco-friendliness of the product, scoring significantly the highest ratings of 3.79, 3.74 and 3.70 respectively. On the other hand, recyclable, colorfulness and reparability had the lowest ratings of 3.55, 3.48 and 3.44 respectively.

**Table 4.12 Effects of consumer preference on bamboo and rattan cane furniture.**

Respondents' preference on the product is varying on different items as shown on Table 4.12

	Model 1	Model 2	Model 3	Model 4
Gender	.090	.054	.055	.029
Age	.064	.005	-.028	-.056
Education	-.179**	-.103	-.080	-.060
Income	.152*	.073	.084	.054
Users/Non-users	.369***	.181***	.174***	.118*
<b><i>Social status enhancement</i></b>				
Social status		.250***	.219**	.246**
Societal standing		.066	.113	-.007
Societal acceptance		.259**	.211*	.134

Good impression on others		.098	.090	.129
<b><i>Environmental factors</i></b>				
Decrease deforestation			-.013	.064
Decrease global warming			.140*	.143**
Sustaining tropical forest			.049	-.020
Exploitation is less destructive			-.075	-.042
Environmentally friendly				-.092
<b><i>Quality attributes</i></b>				
Recyclable				.107
Safety				.194**
Youthful				.223**
Durable				-.030
Attractive				.078
Natural				-.281***
R <sup>2</sup>	.19	.490	.521	.631
F	8.670	16.182	13.362	12.882
Change in R <sup>2</sup>		.30	.031	.11

\*p<0.10 \*\*p<0.05 \*\*\*p<0.01

The impact of demography, social status enhancement, quality attributes and environmental variables of bamboo and rattan cane furniture were examined. Series of regression models tests were conducted to explain the effect of the independent variables on the consumer preference level (Table 4.12). Model 1 represents a baseline model including only the control variables of gender, age group, highest educational level, net income and whether respondents were users or non-users. The control variables explained 19% of the variation in the consumer preference for rattan cane furniture. The influence of education on the preference for the rattan cane furniture was negative and significant ( $\beta = -.179$ ,  $p < .05$ ) while net income and users and non-users were positive and significant ( $\beta = .152$ ,  $p < .10$ ,  $\beta = .369$ ,  $p < .01$ ) respectively. This implies that respondents with higher education are most likely not to prefer rattan cane furniture while those with high net income and users are more likely to prefer rattan cane furniture. Model 2 was created by adding social status enhancement variables to Model 1. In Model 2 the impact of users and non-users on the preference for the product was positive and significant ( $\beta = .181$ ,  $p < .01$ ). Social status and societal acceptance

variables were also positive and together contributed to significant increase in  $R^2$  of 30%. This indicates that users' preference for rattan cane furniture is based on some societal factors. Model 3 introduces environmental attributes of the product and this explained an additional 3.1% of the variance on consumer preference of the product. In this model, users and non-users, social status, societal acceptance and decrease global warming variables were positive and had significant impact on consumer preference demonstrating that users' preference are greatly influenced by social and environmental factors ( $\beta=.174$ ,  $p<.01$ ,  $\beta=.219$ ,  $p<.05$ ,  $\beta=.211$ ,  $p<.01$  and  $\beta=.140$ ,  $p<.10$ ) respectively. Finally, in Model 4, quality attributes of the product were added and there was significant increase of  $R^2$  11%. Natural attribute of the product was negative but significant implying that the preference level of users is not influenced by naturalness of the product, other variables such as user and non-users; social status, decrease global warming, safety and youthfulness were positive and significant. This supports the notion that users' preference of using the product is great influenced by their perceived social status enhancement, their knowledge on decreasing global warming, safe use of the product and the product's youthfulness.

**Table 4.13 Effects of purchasing intentions of consumers on rattan cane furniture.**

Respondents' purchasing decisions varies on different items (Table 4.13)

	Model1	Model 2	Model 3	Model 4
Gender	-.013	-.039	-.006	-.023
Age	.044	-.006	-.044	-.083
Education	-.057	-.011	-.038	.012
Income	.064	.023	.088	.105
Users/Non-users	.387***	.001***	.169**	.161**
<b><i>Social status enhancement</i></b>				
Social status		.308***	.328***	.205*
Societal standing		-.053	-.201	-.153
Societal acceptance		.280**	.325*	.197
Good impression on others		-.055	-.129	.018
<b><i>Environmental factors</i></b>				
Decrease deforestation			.175**	.142*



Decrease global warming			-.083	-.036
Sustaining tropical forest			.226**	.105
Exploitation is less destructive			.107	.002
Environmentally friendly				.077
<i>Quality attributes</i>				
Recyclable				.087
Safety				-.087
Youthful				.357***
Durable				-.173
Attractive				.100
Natural				.031
R <sup>2</sup>	.143	.299	.435	.529
F	6.557	8.883	10.047	8.978
Change in R <sup>2</sup>		.156	.136	.094

\*p<0.10 \*\*p<0.05 \*\*\*p<0.01

Table 4.13 shows the effect of purchasing intentions of consumers on rattan cane furniture. Series of regression models of different dependent and independent variables were used to ascertain the information. Model 1 had the control variables of gender, age, highest educational level, net income and whether participants were users or non-users of the product. The control variables accounted for 14.3% of the variation on purchasing intentions of consumers of the products. It was evident that users and non-users' variable was positive and statistically significant indicating that users are more likely to purchase the product ( $\beta=.387$ ,  $p<.01$ ). Model 2 was made by the introduction of social status enhancement variables and these variables accounted for a significant rise R<sup>2</sup> of 15.6%. Users and non-users, social status and societal acceptance were positive and significant this implies that users purchasing intentions increased when they perceived that by using the product their social status is enhanced and readily accepted in the society ( $\beta=.001$ ,  $p<.01$ ,  $\beta=.308$ ,  $p<.01$  and  $\beta=.280$ ,  $p<.05$ ) respectively. Model 3 had the addition of environmental attributes of the product to model 2. These variables explained 29.9% of the variance in purchasing intentions of consumers. Variables such as users and non-users, social status, societal acceptance, decrease deforestation and sustaining tropical rainforest were positive and significant this supports the idea

that if users' social status is enhanced and they are accepted in the society then their purchasing intentions are enhanced as well and their intentions are further increased if they perceived that by using the product they contribute to decreasing deforestation and sustain tropical rainforest. ( $\beta=.169$ ,  $p<.05$ ,  $\beta=.328$ ,  $p<.01$ ,  $\beta=.325$ ,  $p<.10$ ,  $\beta=.175$ ,  $p<.05$  and  $\beta=.226$ ,  $p<.05$ ).

Quality attributes of the product were introduced into the equation to arrive at Model 4. These variables users and non-users, social status, decrease deforestation and youthfulness were positive and statistically significant showing that users purchasing intentions rise when they are

sure of their status in society will be enhanced and help reduce deforestation ( $\beta=.161$ ,  $p<.05$ ,  $\beta=.205$ ,  $p<.10$ ,  $\beta=.142$ ,  $p<.10$  and  $\beta=.375$ ,  $p<.01$ ) respectively.

**Table 4.14 Correlations matrix on purchasing intentions of consumers on bamboo and rattan furniture.**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 purchasing bamboo / rattan furniture	1.000	.616**	.540**	.399**	.414**	.429**	.483**	.450**	.475**	.528**	.503**	.422**	.483**	.514**	.383**
2 it is natural		1.000	.548**	.463**	.509**	.437**	.440**	.518**	.506**	.374**	.443**	.451**	.385**	.512**	.432**
3 it is easier to repair			1.000	.550**	.589**	.489**	.402**	.495**	.555**	.444**	.415**	.405**	.523**	.438**	.333**
4 it is recyclable				1.000	.524**	.473**	.449**	.512**	.390**	.439**	.497**	.465**	.444**	.416**	.469**
5 it is eco-friendly					1.000	.612**	.495**	.562**	.577**	.465**	.413**	.444**	.504**	.429**	.447**
6 it is good looking						1.000	.624**	.513**	.598**	.654**	.444**	.385**	.501**	.522**	.378**
7 it is attractive							1.000	.587**	.477**	.589**	.546**	.508**	.411**	.483**	.472**
8 it is safe								1.000	.634**	.435**	.524**	.717**	.428**	.614**	.553**
9 it is durable									1.000	.567**	.490**	.484**	.637**	.613**	.456**
10 it is modern										1.000	.580**	.458**	.648**	.590**	.423**
11 it is colorful											1.000	.534**	.569**	.532**	.477**
12 it is cost effective												1.000	.560**	.579**	.602**
13 it is timeless													1.000	.588**	.483**
14 it is of good quality														1.000	.574**
15 it is healthy															1.000

Positive and significant relationship exists among the various items (Table 4.14)

\*\* . Correlation is significant at the 0.01 level (2-tailed).\* . Correlation is significant at the 0.05 level (2-tailed).

Table 4.14 reports the correlation matrix on factors that underline respondents purchasing decisions or intentions. It is evident that all the variables were significant and positively related, this means that respondents will purchase the product based on several factors. Respondents plan to purchase the product because it is natural ( $r = 0.616, P < 0.01$ ), and they plan purchasing because its eco-friendly and safe ( $r = 0.512, P < 0.01$ ) related positively. They expressed their willingness to patronize the product because it is durable and reparable ( $r = 0.555, P < 0.01$ ) and that the reason for purchasing bamboo and rattan cane furniture lies in their decision as colorful and timeless ( $r = 0.648, P < 0.01$ ).



## CHAPTER FIVE

### DISCUSSION

One of the major challenges facing the world today is how to use natural resources without compromising quality and sustenance of the environment. The need to promote low carbon, resource efficient and green products has generated plethora of discussions in the literature (UNEO2011).

One area which has gained prominence lately is the use of non – timber forest products such as bamboo and rattan cane for furniture production. Indeed, several studies have been conducted on the characteristics, uses and other attributes of bamboo and rattan cane as a suitable material for furniture making, this study is focusing on the knowledge, perceptions and attitudes of consumers on bamboo and rattan cane furniture which influences their preference or otherwise of the product, its implications for the sustenance of the tropical forest and subsequence increase in employment on the whole.

#### **5.1 Knowledge and awareness of benefits of bamboo and rattan furniture.**

The knowledge function indicates that an individual may form an attitude in order to acquire more knowledge about an object or the attitude may be informed about the knowledge gained about the object (Katz, 1953, Katz, 1960). This study found that majority of respondents had little knowledge on bamboo and rattan cane furniture but showed readiness to learn about bamboo and rattan cane furniture. This therefore suggests that patronage of the product does not depend on the knowledge and awareness of its benefits. It also suggests that respondents are ready to learn about the product

thus their readiness to purchase if their curiosity is satisfied by way of information availability. From the findings, it was established that respondents have adequate practical knowledge on the quality attributes examined. The finding that purchasing decisions can be greatly influenced by the quality attributes of the product agrees with the findings of Patterson et al. (1997) who maintains that consumer perception often borders on three major components of products or services; which are perceived quality in relation to price, perceived benefits in relation to expectations, and perceived social status that the product places the consumer. As practical implication of this revelation, manufacturers of the products must always have the qualities in mind because quality seems to appeal to respondents in their bid to patronize the product. Producers can incorporate aesthetics but other attributes should not be compromised. Findings in this study also suggested that respondents have immense information on the products.

## **5.2 Perceptions on Bamboo and rattan furniture**

The impression formation paradigm establishes that impressions about an object are formed based on how the object is aligned to an individual's likes and dislikes (Asch, 1946). The theory therefore indicates that every individual has certain latent inclinations and thus, the initial impression that the person forms from an object is often influenced about the cognitive process of the embedded inclination which may or may not be known to the individual (Himmelfarb, 1972). The theory likens perceptions to impressions, but maintains that the relationship between the two concepts is that, perceptions are formed from the impressions that people have about a specific object, event or another person (Naumann et al., 2009). It therefore holds that if an individual has the impression that bamboo or rattan furniture is durable, that impression translates into the perception that furniture made of bamboo or rattan are indeed durable. According to Pickens (2005), perception

patterns influence attitudes. Thus, purchasing attitudes of respondents towards bamboo and rattan cane furniture can be understood from their perceptions on the product. Respondents hold various perceptions on the product which in turn affects their purchasing decisions. Environmental benefits as perceived by respondents were used to examine their perception in relation to their purchasing of the product. Information gathered established that respondents value environmental factors when purchasing bamboo and rattan cane furniture. Respondents' perception that if their social status will be enhanced by using the product, patronage of the product will increase. The results suggest that, respondents will patronize bamboo and rattan cane knowing that it's weather resistant and suitable for indoor use. Respondents' also perceived bamboo and rattan cane furniture to be expensive. It was evident that most of the respondents hold positive view to the items examined. The perception that using the product can contribute to the sustainability of tropical forest was and reduce global warming were prominent to respondents. Marketers and producers can take advantages of this. Producers can also increase sales by highlighting the social enhancement potential of the product.

### **5.3 Factors underlying purchasing decisions/intensions of consumers on bamboo and rattan furniture.**

The theory of functional attitude explains how attitudes turn into actions (Katz, 1969), which suggests that attitudes and actions which follow thereof are caused by certain perceptual forces and experiences. According to Green (1953), the concept of attitudes does not refer to one specific act or response of an individual, but it is an abstraction from a large number of related acts. Based on this, Katz (1960) theorized that any attitude is a latent variable rather than an immediately observed variable. The theory indicates that attitudes are predispositions or inclinations to respond

or act negatively or positively towards a certain idea, object or situation. Therefore, attitudes can be categorized as negative or positive, depending on the set of social objectives that define the context of positive or negative attitudes (Jones, 1998). For example, if society perceives bamboo and rattan furniture as befitting poor people, then generally people will avoid those products, because they may not want to be associated with poverty. Again the inclination to avoid rattan and bamboo products can lead to the actual avoidance of those products. In this sense, Green (2000) indicates that attitudes can be operationalized through behaviour and opinions, where behaviours reflect the actions that follow the attitudes and opinions reflect the verbal representation of the attitudes. For these reasons we finally developed t-tests, regression models and correlation matrix to examine the factors influencing respondents purchasing decisions or intentions of the product. It was established that various factors influence respondents' decisions on purchasing bamboo and rattan cane furniture using independent sample t-test to examine these items. The results revealed that respondents purchasing decisions are influenced by most of the dependable variables. From the findings, respondents' decision to purchase bamboo and rattan cane furniture is influenced by its good quality and the healthy nature of the product. Reparability was the last item out of the 15 items that respondents will consider when purchasing the product. Next regression models involving the variables of societal issues, environmental factors and quality attributes were developed to investigate the effect of consumer preference on rattan cane furniture. All the 4 models showed greater explanatory powers of the effects of consumer preference on rattan cane furniture. Additionally, 16 of the 21 interaction coefficients were statistically significant. It was therefore concluded that the interaction effects of perceived demographic, social status enhancement, environmental factors, and quality attributes had a positive effect on consumers' preference for rattan cane furniture except education which had negative effect. It was therefore

concluded that both independent and dependent variables had significant effect which can be used to explain consumer preference for the product. It can be explained therefore that demography characteristics, social status enhancement, environmental factors and quality attributes of the product influence the consumers' preference for the product. Practical implication is that marketing strategies and advertisements target more on these variables with less emphasis on education attainments. Finally, regression models involving the variables of demography, social status enhancement, environmental factors and quality attributes were developed purposely to investigate the effects of purchasing intentions of consumers on rattan cane furniture. All the four models showed explanatory tendencies on purchasing intentions of consumers of the product. The results suggested that purchasing intentions were reinforced when social status enhancement variables and environmental factors were introduced. This implies when respondents' social status and societal acceptance is increased their purchasing intentions for the product is increased. On the whole, it can be concluded that both dependent and independent variables can affect the purchasing intentions of consumers of the product.



## **CHAPTER SIX**

### **CONCLUSIONS AND RECOMMENDATIONS**

Most of the behavior patterns of consumers of bamboo and rattan cane furniture can be explained looking at knowledge, perceptions and attitudes they hold towards the product. Most of the previous research works on bamboo and rattan cane has neglected the importance of social status enhancement and dissemination of information on the benefits of bamboo and rattan cane to consumers.

#### **CONCLUSIONS**

The result of this study has shown that building positive social; environment and quality attributes image of the product will enhance the products marketability thus increasing consumers' purchasing intentions of the product and therefore making room for the engagement of more hands.

1. In this study one of the cardinal points indentified was that there is adequate information among respondents on benefits or importance of using the product thus are ready to patronize the product and there is a marginal upsurge in the purchasing.
2. However, due to the multidimensional nature of consumers' preference and purchasing intensions, producers and marketers must use an integral method in marketing the product.
3. Additionally, this study has also provided valuable information to producers or craftsmen, marketers, policy makers as well as environmentalist on how to contribute to the substance of the tropical forest and global warming. The environmentalists and policy makers should realize that if much information is made available to consumers on awareness as to how to contribute to sustenance of tropical forest, mitigating global warming and reducing

deforestation among other will go a long way to assist in consumer preference for the product.

4. The work also showed that consumers perceptions can be engaged which can easily translate into the purchasing of the product. The information in this research can help manufacturers to identify the various importance factors that influence consumers' preferences and purchasing intentions of the products and incorporate that into the design of bamboo and rattan cane furniture.

### **RECOMMENDATIONS**

These recommendations are worth mentioning that;

1. There should be enough education, especially by the bodies concerned for developing bamboo/rattan sector for people to appreciate the products. People must be conscious of the dangers of raw materials depletion. There should also be adequate information on the viable and prospect of this business to attract more youth into it thereby reducing unemployment.
2. Craftsmen should vary the designs and improve the quality attributes of the product to meet the varying perceptions of consumers of the product. Thus incorporating environmental and social status enhancement factors to harness and enhance patronage of the product
3. Finally, the sample size used for the study many not be representative enough to generalize assumptions. Therefore, further studies can be conducted by enlarging the sample space size.

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## APPENDIX I

TOPIC: KNOWLEDGE, PERCEPTIONS AND ATTITUDES OF GHANAISANS TOWARDS BAMBOO AND RATTAN (CANE) FURNITURE.

QUESTIONNAIRE.

This questionnaire is designed to assess the knowledge, perceptions and attitudes of Ghanaians towards bamboo and rattan (cane) furniture. Be assured that any information given would be used solely for academic purpose and will be treated with the highest confidentiality it deserves .Please your sincere responses are highly needed. Thank you

SECTION A:DEMOGRAPHICS		
INSTRUCTIONS: For questions 1-6, please kindly select by ticking (v) all that apply, which in your opinion, is the most appropriate answer to the questions.		
1	Your gender	Male <input type="checkbox"/> Female <input type="checkbox"/>
2	Your age group	(a)20 and below <input type="checkbox"/> (b)21-30 <input type="checkbox"/> (c) 31-40 <input type="checkbox"/> (d) 41-50 <input type="checkbox"/> (e) 51-60 <input type="checkbox"/> (f)60 and above <input type="checkbox"/>
3	Your highest educational level	(a)No formal education <input type="checkbox"/> (b)Secondary <input type="checkbox"/> (c)Post secondary (Diploma) <input type="checkbox"/> (d)Bachelor <input type="checkbox"/> (e)Master <input type="checkbox"/> (f) PhD <input type="checkbox"/>
4	Your net salary(Gh¢)	(a)150 and below <input type="checkbox"/> (b)151-450 <input type="checkbox"/> (c)451-700 <input type="checkbox"/> (d)701-1000 <input type="checkbox"/> (e)1001-1300 <input type="checkbox"/> (f) 1301-1600 <input type="checkbox"/> (g) 1601 and above <input type="checkbox"/>
5	Your occupation	.....
6	Do you use bamboo/rattan furniture in the home	(a)Yes <input type="checkbox"/> (b)No <input type="checkbox"/>



SECTION B: Knowledge and awareness on the benefits of bamboo and rattan furniture. Please select the appropriate option by ticking (v) at the right column box; using the following scale;5=Strongly agree;4=Agree;3=Undecided;2=Disagree;1=Strongly disagree						
		1	2	3	4	5
7	I have little knowledge on bamboo and rattan furniture					
8	I want to learn more about bamboo and rattan furniture					
9	Exploitation of bamboo/rattan for furniture production is less destructive to tropical forest than timber exploitation for furniture production					
10	Bamboo/rattan furniture can be recycled					
11	Bamboo/rattan are environmentally friendly					
12	Bamboo/rattan can replace wooden furniture					
13	Bamboo/rattan furniture are safe					
14	Bamboo/rattan are youthful					
15	Bamboo/rattan are durable					
16	Bamboo / rattan are attractive					
17	Bamboo /rattan are natural					

SECTION C: Perceptions about bamboo and rattan furniture. Please select the appropriate option by ticking (v) at the right column box; using the following scale;5-Strongly agree;4=Agree;3=Undecided;2=Disagree;1=Strongly disagree						
		1	2	3	4	5
18	By using bamboo/rattan furniture I enhance my social status					
19	By using bamboo/rattan furniture people see me as poor					

20	Increasing the use of bamboo/rattan furniture can decrease deforestation					
21	Increase use of bamboo/rattan furniture can mitigate global warming					
22	By using bamboo/rattan furniture I can contribute to the sustainability of the tropical forest					
23	I prefer bamboo/rattan furniture to wooden furniture because of its beauty					
24	Bamboo/rattan furniture is as durable as hardwood furniture					
25	Bamboo/rattan furniture is as comfortable as hardwood furniture					
26	Bamboo/rattan furniture is suitable for indoor use					
27	Bamboo/rattan furniture is expensive					
28	Bamboo/rattan furniture is weather resistant					

SECTION D: Factors that influence your decisions when purchasing bamboo/rattan furniture. Please select the appropriate option by ticking(v)at the right column box; using the following scale;5=Strongly agree;4=Agree;3=Undecided;2=Disagree;1=Strongly disagree

		1	2	3	4	5
29	I plan purchasing bamboo/rattan furniture					
30	I have purchased/will purchase bamboo/rattan furniture because it is natural					
31	I have purchased/will purchase bamboo/rattan furniture because it is easier to repair					
32	I have purchased/will purchase bamboo/rattan furniture because it is recyclable					
33	I have purchase/will purchase bamboo/rattan furniture because it is eco-friendly					

34	I have purchased/will purchase bamboo/rattan furniture because it is good looking					
35	I have purchased/will purchase bamboo/rattan furniture because it is attractive					
36	I have purchased/will purchase bamboo/rattan furniture because it is safe					
37	I have purchased/will purchase bamboo/rattan furniture because it is durable					
38	I have purchased/will purchase bamboo/rattan furniture because it is modern					
39	I have purchased/will purchase bamboo/rattan furniture because it is colourful					
40	I have purchased/will purchase bamboo/rattan furniture because it is cost effective					
41	I have purchased/will purchase bamboo/rattan furniture because it is timeless					
42	I have purchased/will purchase bamboo/rattan furniture because it is of good quality					
43	I have purchased/will purchase bamboo/rattan furniture because it is healthy					