

“A REVIEW ON MARKET FEASIBILITY OF BAMBOO PRODUCTS”

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ABSTRACT:

Bamboo in India is mostly found in north eastern and eastern part of India and also in some parts of south India on a conservative estimates, the forests areas with bamboo in India it about 9.57 which nearly 12.8% of the total forests areas of 75. The area selected for our research is “Thathaneri” area, where most of the people rely as “bamboo” for their daily livelihood. Bamboo craft and weavers mats are the traditional products for these peoples. The objectives of this study are to boost up their creativity towards marketing, Products, which help them to sell their products directly to the customers and to identify the potential buyers of bamboo products. This study established the target groups who purchase bamboo raw materials in small quantity from Kerala instead of purchasing in bulk quantity from their own state because of which their cost of production will be increases. Bamboo products have the potential of replacing products made from other materials. The researcher have found out that the community peoples are lacked in creativity and were not aware of any financial scheme provided by government for the women entrepreneurs.

KEY WORDS: Market, bamboo, conservative estimate, market linkage.

1.1 INTRODUCTION:

Bamboo grows in the tropical and subtropical regions of Asia, Africa and Latin America. Bamboo crafts and weaves mats are traditional products in china, India, Malaysia, Thailand and the Philippines. The technique has been known for several thousand years. These diverse products have become an indispensable part of daily life, literature and art. These are nearly 20 categories of weaver’s bamboo products in Asia including fruit basket, trays, bottles, jars, cases, boxes, bowls, fans, springs, curtains, cushion, lampshades and lanterns.

Bamboo is a versatile and useful group of plants, capable of providing ecological, Economical and livelihood security to people. As per estimates 8.96 million forest area of the country contains bamboo amounting to 12.8% of the forest cover. India has the largest bamboo forest in the world. India rank record in the world in bamboo diversity with 136 species, while china with 300 species is leading in genetic diversity of bamboo. There has been a growing awareness in recent years about the importance of bamboo being an important means of economic growth and of improving the socio – economic condition of the rural poor. The demand for bamboo has increased in recent years within the country as raw material for bamboo handicraft, house construction related uses.

In India recently a re-discovery of the potential of bamboo for developing it as one of the sunrise industry resulted in launching of the integrated bamboo development program by the prime minister on 5th June 1999 with a view to focus on the development of bamboo sector. The government of India prepaid an action plan to give maximum emphasis for promotion and development of bamboo during the tenth plan. The minister of science and technology, on technology day, 2002 established a national mission on bamboo

application (NMBA) under technology, information, forecasting and assessment council (TIFAC) department of science and technology to focus on the commercialization of value added application in bamboo sector. Different state government has also taken initiative to develop bamboo sector on commercial basis.

1.2 Market chain and price variation along market chain:

The main operators on bamboo, market chains are farmers, collectors, factory, local traders and foreign traders. The role of farmers is harvesting and mats processing. Collectors, factory, local and foreign traders to different degrees, all are engaged in shorting, storage, processing and transportation.

Bamboo production and products volume:

The main activities of villagers are rice cultivation and agricultural production. They harvest bamboo only when they are free from agricultural production activities. In fact, bamboo products bring considerable income to villagers. Main bamboo products in Sang thong district are poles, handicraft and shoots. Bamboo poles can be harvested all year round, but most harvesting is done in the raining season because it is easy to drift them down the streams and rivers sell in Vientiane and some of bamboos are transported by trucks.

The market:

Bamboo handicraft products are mostly for sale. There are in fact two main channels of distribution bamboo handicraft products in Napo village. First of all, village processors sell about ten percentages of the products in local market. That mean some villagers display the product in front their houses along the road for selling to passengers, who pass by the village. Besides, another 90% of products are sold to the bamboo handicraft trading group in Snood village. There is only one group, which was formed sine the year 2000. That has been trading with each other for many years. The group sometimes gives credit to buyers and some time buyers deposit money first depends on demand and supply trend.

Limited market information and marketing skill:

The research team found that in all the bamboo market chains, farmers are unable to be sensitive to market and price fluctuations. Farmers get most of their market in formations from collectors and traders. The collectors buy bamboos when they get an order. On the other hand, the traders and processor have better access to market information and they know the cost and profits at each link of the market chain and the risks faced. Most of the traders and processor are private small businessmen, who have an experience more than five years. They are farmers and some was government staff and retired .Hence they did not attend any training in the trade business, but they simple learnt by experiences. Consequently, there are many weaknesses in their business practices.

Bamboo production gains increasing importance in generating additional income for villagers. Although the income gains from this activity are second to income from other activities, it provides cash that helps cover daily expenses of a household to reduce poverty. In many villages, where the bamboo handicraft production has good experiences, villagers are very skilful. The demand from local market and Thai market for the products is relatively high. It is recommended that villagers continue this activity, since it generates rather good income for them. From point of view of resources utilization, they are harvested with big amount.

The village producers sell fermented bamboo shoots to traders in local market at the same prices as to individual consumers. Bamboo shoots are seasonal products and the prices vary in the year. The traders who buy the products direct from the village producers sell the products to other in one district or trader from

other provinces. The prices of one product sold by the same seller may be different for different consumers depending on the bargaining between the seller and customers. The main business costs of traders are the cost of buying products, the traders do not have to pay any tax or free concern to the resources or rehabilitation or village fee and other in selling handicraft products, they would pay shop rental and income tax only.

In bamboo, as in other grasses, the intermodal regions of the stem are usually hollow and the vascular bundles in the cross section are scattered throughout the stem instead of a cylindrical arrangement. It is the notable economic and cultural significance in south Asia, south East Asia, being used for building materials, as a food source, and as a versatile raw product. Bamboo has a higher specific compressive strength than wood, brick, or concrete and a specific tensile strength that rivals steel.

Bamboo which is considered as the poor man's timber is one of the most important forestry species with wide distribution throughout India. India has the largest area and second largest reserves of bamboo in the world today, yet its industries are swinging in shortage of raw material availability. The bamboo economy of the country is still in nascent stage that is 4% of the global bamboo economy. Major consumers of bamboo in the country include paper industry, construction sector, handicrafts and small and cottage industries.

Bamboo is used to make all the components of building both structural and non structural. Traditionally bamboo culms were used for constructing foot bridges. It was used in different ways for roof structure, for doors and windows, walling, ceiling, man-hole covers etc.

Lot of development has taken place to improve the technology and techniques that can be used to make bamboo suitable for construction. There has been improvement in preservation and protection technology of bamboo as well as in jointing techniques so that the use of bamboo can be proliferated as construction material. Advances in structural engineering and the development of bamboo composites have opened new vistas for lightweight, durable and aesthetic construction for a variety of applications with proper treatment.

India has the huge potential of raising the market for bamboo based products if proper cultivating, management and marketing schemes with proper regulatory mechanisms are adopted while technology advancement and market driven changes led to an increase in the use of bamboo based materials much still needs to be done.

Bamboo cultivation is fast catching up in Thanjavur district, by the effort taken by the Tamilnadu Horticulture Development Agency (TANHODA). The forest department's have supplied 850 seedlings and planted them at the rate of 160 per acre on 5acre. The average life of a bamboo plant is 90-120 years. The maturity age of a bamboo plant is 60 years, where the yield is maximum. Bamboo can also tolerate extreme conditions that most plant cannot, for example: Bamboo was the only plant to survive the radiation of the atomic bombings in Hiroshima, Japan in 1945. Thomas Edison and his team discovered that carbonized bamboo had the capacity to conduct electrical current and that it could last more than 1022 hours, more than any other material at the time. Bamboo includes some of the fastest growing plant in the world due to its rhizome-dependent system. Certain species of bamboo can grow 91cm within a 24 hour period, at a rate of almost 4cm an hour.

The traditional bamboo sector had lapsed into relative oblivion as a result of the onslaught of synthetic substitute. But a renewed interest in eco-friendly products has revitalized the efforts of the traditional sector in the state. It is estimated that 3,00,000 people depend on bamboo for their livelihood. Mat production out of

reed is one of the basic industrial activities in the sector. As a part government's steps to support to the sector, the Kerala state bamboo corporation (KSBC) was set up in 1971. The corporation has about 25,000 registered weavers. Of this 60 per cent are women. KSBC has also put up a unit for the manufacture of bamboo ply, a product manufactured from woven bamboo mats of finer varieties. The Kerala Forest Department and Kerala Forest Research Institute (KFRI) has also contributed to the efforts for sustaining the bamboo sector. India has already launched a 15-year plan to promote bamboo-based industry. Around 3 lakh tons of bamboo and allied produce are cut annually in Kerala, according to official accounts. Considering the scope for developing bamboo as a raw material for the traditional handicrafts sector as well as for modern industry, special programmers' were developed for the revitalization of the sector in the state. The State Bamboo Mission was constituted in 2003 with the aim of marshalling the scattered resources of the state and adopting a focused approach to revitalize sector.

The focuses intervention include promoting cultivation of bamboo, creation of new design of innovative products in the handicrafts sector along with appropriate skill development, promotion of bamboo based modern industries supported by technology adaption and development. It is expected that these measures will help create greater employment opportunities at various levels, especially among women, and improve the living standards of rural people (The HINDU December 9, 2007 – updated: April 29, 2011).

Bamboo, due to its fast growing property, is emerging as a leading supplier of biomass for power generation units as well as a cash crop. Of late, its positive contribution to the ecology has also been realized. Besides helping the greening of the degraded land, bamboo releases 35 per cent more oxygen than equivalent volume of other trees. Bamboo groves are also used for lowering delight intensity and protecting the residential premises from ultraviolet rays. It is said that a hectares of bamboo plantation can observe 12 tons of carbon di oxide from the air annually. Versatility of the bamboo in application has been known all through the history as it has been a source of livelihood for several communities, mainly in the North-Eastern states of India. In Andhra Pradesh and Karnataka, nearly 12 lakh people belonging to the Madera community are engage in producing bamboo crafts (The HINDU April 11, 2014- updates: May 21, 2016).

IKEA, the world's largest furniture, retailer plans to make India its global sourcing hub for bamboo products as part of its strategy to increase bamboo product portfolio across its stores. Furniture made from bamboo, one of the fastest-growing plants accounts for about 1% of IKEA's global sales of EURO 30 billion (about Rs.2,28,600 core), and is mainly sourced from Indonesia, China and other far east countries. This Swedish retail known for its ready to assemble products now wants to change that. "We believe India can be the game changer in the bamboo furniture industry. India can be the leading bamboo furniture producer in the world if they get it together", said Patrick Antony, Communication manager at IKEA, India (Neha tyagi and Sagar Malvia, ET Bureau, Feb 19, 2016).

India has previously lagged behind in Bamboo Industry because the Indian old law "Indian Forest Act (1927)" classified Bamboo as 'Tree' and fallen bamboo as 'Timber', contrary to the significant classification of bamboo as "Grass". Hence, many regulatory restrictions applied to Bamboo in cutting and transportation. Had it been considered 'Grass' as it is, it would have been exempted from many search restrictions Centre for Civil Society, Feb 2016). The Rajya Sabha passed the Indian Forest (Amendment) Bill, 2017, which excludes from the definition of 'tree' to promote bamboo cultivation and reduce the country's dependence on imported bamboo (Business Standard, December 27, 2017). This helped to reduce restrictions on bamboo cutting and also helps to get bamboo material at comparatively low price. The government also relaxed norms for export of bamboo products to promote shipments.

The rural community people in and around Tamilnadu are dependent on bamboo products for their daily livelihood. This research is focused on community people in Thathaneri which is located in Madurai west, Tamil Nadu, and India. The spoken languages are Tamil and Telugu. Majority of population in the area are primary educated and the rest are uneducated. The income level of these people is low and moderate. These women's are engaged in bamboo business since ages and this business help to support their daily living.

2.2 INTERNATIONAL SCENARIO

Bamboo is by far the most commonly used Non-Wood Forest Products (NWFP) in Asia. There are more than 500 species. Although international trade in bamboo products is still less important than rattan or medicinal plants, it has increased dramatically in the last decade. Unlike rattan, bamboo is moving out of the crafts industry phase and now provides raw material for industrial products (shoots, construction poles, paneling and flooring products, pulp). This has important repercussions for the bamboo resource base. Increasingly, bamboo is becoming a domesticated crop grown by farmers.

Most sources agree that the US and Europe are the main markets for bamboo products, taking around 80% of world trade (Hunter, 2003; van der Lugt & Lobovikov, 2008) Stated that US is the largest Western consumer of bamboo products with annual imports of USD 300 million, almost entirely from China. The study also shows that most of bamboo comes in the form of flooring (4.2 million sqm) and baskets. The market for bamboo poles in the US is estimated at USD 15 million (with 90% coming from China). In the EU, consumption of bamboo flooring has increased from 0.67 million sqm in 2003 to 0.9 million sqm in 2005 and is expected to continue growing.

According to UNIDO (2007) bamboo is a potential economic resource capable of generating employment for rural poor and skilled and semi-skilled farmers and entrepreneurs in plantation 20 and in semi industrial and industrial ventures. In the world bamboo product created a value of US\$ 7 billion, from this US\$ 6 billion is from China. China is the biggest player among the bamboo exporting Countries. The total export value of bamboo products of china is US\$5.50 billion per annum. The potential of bamboo as an economic resource capable for generating employment for rural poor and skilled and semi-skilled in plantation and in semi industrial and industrial ventures should be fully exploited.

Bamboo is non-timber forest product, which support the livelihood of millions of local people in Ethiopia. The goods and services gained from bamboo both at village and national are greatly essential in providing for basic human needs, such as employment, shelter and household material. Bamboo resources in the country are very rich, at present 67% of the Africa bamboo resources is found in Ethiopia that means development of industrial utilization of bamboo would help to solve problems of housing, furniture shortage and provide more job opportunities. Recently, the use of bamboo has expanded into manufacturing various commercial structural composite panels such as laminated bamboo lumber, oriented standard board (OSB) particle board, fiber board and paper. Interest in utilizing bamboo for industrial uses increasing worldwide. It is fast growing nature, high strength and light weight and suitable fibers characteristics. Additionally bamboo plays a crucial role in environmental protection and improves environmental condition. In Ethiopia context bamboo is a major construction material, particularly in rural areas. It can be used for almost all parts of houses, including posts, roofs, walls, floors, beams, trusses and fences. People also use bamboo to produce mats, baskets, tools, handles, hats, traditional toys, musical instruments and furniture.

2.3 NATIONAL SCENARIO:

In the Indian forestry sector, bamboo, which is referred as minor forest produce in classical forestry, is the most important sub-sector. Bamboo is one of the most abundant and renewable resources available. The state of Madhya Pradesh has the highest bamboo bearing forest area of 2.2 m hectares and the highest bamboo area outside forests of 0.2 m hectares. More than two-thirds bamboo-bearing forest area is located in the four states Madhya Pradesh, Orissa, Maharashtra, and Andhra Pradesh. Orissa has 9 per cent of the India's total bamboo forest cover and 7 per cent of total growing stock of bamboo. Government has planned to diversify its uses to reap the benefits in the \$7.5 billion global bamboo product market. India's current demand for bamboo is estimated at 27 million tons. However, only 50% of that demand can be met because of lack of facilities for value addition and transportation.

Being one of India's most valuable resources and given the vast diversity in its applicability and the enormous scope for improvement of rural and tribal livelihoods and for the environment, Bamboo is among the most important resources to be leveraged towards the alleviation of rural poverty, empowerment of women and environmental rejuvenation. Marsh and Smith (2007) claim that the presence of near-source value addition in modern value chains implies that the industrial component of the Bamboo sector has an excellent potential in terms of its pro-poor impact in poverty alleviation. The industrialization of the Bamboo sector is, thus, an essential task for Bamboo to have any true effect on the lives of the millions who depend upon it. The domestic Bamboo industry has been held back owing to a wide variety of issues in its value chains, including regulatory and legislative barriers to cultivation and harvesting of Bamboo, challenges in its procurement, lack of technical know-how among the primary users of Bamboo, lack of market linkages and insufficient market demand. As a result, Bamboo in India remains a material for personal usage in homes; the only products produced industrially are produced by small firms lacking in sufficient capital to pursue value addition or quality enhancement. The study of the Bamboo industry is woefully deficient in India, as is any data on Bamboo trade and commerce in general. The association of Bamboo with livelihood promotion remains confined to handicrafts promotion (A U Khan⁵, personal communication), as a result of which even government programmes fail to appreciate its industrial potential. In addition, archaic and confusing regulatory regimes as well as conflicting legislation prevent Bamboo from reaching its true potential.

This industry is defined as the aggregate of manufacturing or technically productive enterprises working in a specific field. The Bamboo industry, for the purpose of this study, is defined as the set of all firms engaged in the addition of value to Bamboo through production of High value Products. As a result, the scope of the industry in terms of Product diversity can be classified into the following sub-sectors:

1. Handicrafts: Characterized by manual processing and high value addition to limited quantities of Bamboo
2. Bamboo Shoots: High value Agricultural food crops that can be grown in parallel with the production of Culms
3. Bamboo utilized in Construction purposes, including Bamboo utilized for traditional construction, Bahareque construction and in newer prefabricated housing.
4. Industrial Production: This involves the mechanized and semi mechanized processing of larger volumes of culms, which offers among the largest opportunities for major growth and pro-poor impacts on rural farming communities. This sub-sector may be further subdivided into the following classes:

1) Premium Processing, which includes industries involving high value products and requiring facilities for primary and secondary processing as well as higher levels of finishing. Includes Bamboo flooring, laminated furniture etc.

2) Medium value processing, which requires less capital intensive processing than above which Includes chopsticks, mat boards, etc.

3) Low value processing, for products involving greatly limited value addition to Bamboo culms, including Charcoal and Paper and pulp industries.

4) Unprocessed Culms, utilized in traditional applications such as Scaffolding and Traditional construction.

Thus Bamboo presents a bewildering variety of applications (nearly 1,500 documented (Khan et al, 2007)); however, for the purposes of the present discussion the Bamboo industry will be defined as the set of all firms involved in production of products in which value addition occurs to Bamboo poles in India.

2.4 REVIEW OF LITERATURE:

2.4.1 The use of bamboo and bamboo products in other countries experiences

INBAR (2006) indicated that livelihood strategies for the rural poor often include the use of bamboo for housing, utensils, and the collection of bamboo shoots for sale all in the informal sector. INBAR (2006) also stated that much processing of bamboo is done at home, which is optimal for increasing income opportunities for producers. However, the supply chain and market needs to be developed further. Promotion of bamboo products and subsequent income generating activities by the government has boosted the bamboo sector. Bamboo is the most important non-wood forest product and in India and China. It is used as the valuable raw material for the booming of bamboo industry. To add, Bamboo-based panels and boards are hard and durable and may successfully substitute for hardwood products. Bamboo may replace wood in many industrial applications and thereby contribute to the saving and restoration of the world's forests. In the food sector, bamboo shoots are becoming more popular. Bamboo has a tremendous potential for economic and environmental development and international trade. Bamboo is a non-durable resource. Its use in exposed conditions requires prior treatment while its use can be further enhanced through the application of modern engineering techniques. Bamboo can be processed into modern products (engineered bamboo) that may successfully compete with wood products in price and performance. Use of bamboo in composite panels and boards overcomes differences in quality related to the culms and allows the production of homogeneous products. Liese and Kumar (2003) states that engineered bamboo may well replace wood, steel and concrete in many uses.

2.4.2 The concept of bamboo products

Bamboo is the world's tallest grass. Hunter (2003) has called it the wood of the future as it is the fastest growing grass with domestic, agricultural, environmental and industrial uses. Thus, it is an economic resource having immense potential for improving the quality of life rural and urban communities with environment regeneration qualities like carbon sequestering and provides raw material for large industries

like paper and pulp as well as for cottage and handicraft industry. Bamboo has been identified as the second largest sustainable forest resource (Brias, 2006), which has begun to show its significance in people's daily production and life. In relation to this, Xuhe (2003) states that bamboo is a versatile product that can be processed in to finished or semi-finished products in the home in many cases . Thus, bamboo is used not only to create jobs for residents of the country of origin but also has the potential in creating thousands of jobs in secondary fabrication and installation in those regions using the material. Bamboo is a beautiful resistant flexible and versatile material that can be produced in an environmentally -friendly, renewable and sustainable manner. There is no doubt in the benefits that bamboo and its products can be providing (Vantomme et al, 2003). Oberoi (2004) also states that bamboo is a grass, biologically, but a grass of great diversity and utility more closely related to trees in its use and appearance than other grass.

2.4.3 Bamboo based products

Literature regarding the multiple uses of bamboo highlights the utility of bamboo for house construction, bamboo ply, agricultural implements, handicraft, irrigation, brooms, medicine, food, fuel, fodder, paper & pulp etc, especially bamboo as a perfect substitute for some wood based products. Worldwide, various bamboo products provide high income levels. For example, the global market for bamboo products is approximately USD 7 billion which is expected to triple by the year 2017 (Smith and Marsh, 2005). In China, bamboo has been used in many projects in rural areas to alleviate poverty and conserve the environment (Zhu, 2006). From the small organized microenterprises, China gets to package and market its bamboo products for export. China's annual export value from bamboo products is estimated to be more than USD 600 million, with the total value of bamboo industries estimated to be 12 billion (Smith and Marsh, 2005). Several counties have shown strong growth related from bamboo cultivation and processing and bamboo projects are being encouraged for rural poverty alleviation in several provinces (Zhu, 2006). Asia has recorded 1500 uses of Bamboo, (RELMA, 2003; Madhab, 2003), whereas in Africa, possibly due to lack of awareness, bamboo's great potential is rarely exploited. About 14 million hectares of bamboo cover exist in the world, out of which 80% is distributed mainly in Asian Tropical Region (Sharma, 1980). India has about 8 million hectares that provide 60% of its massive population requirements and meet much of its commercial timber needs (ICRAF, 2004).

2.4.4 Environmental impact of Bamboo products

The environmental impact of Bamboo products depends on all the life cycle stages of the product. Intuitively one expects that the environmental impact of a material has the most influence on the production phase of a product caused by raw material provision and factory production. However, the choice for a specific material in a product also has a strong and direct impact on other aspects of the product in other stages of the life cycle, such as the processing stage (e.g. impact on energy impact and efficiency of production technology), use phase (e.g. durability during life span) and the end-of-life phase (e.g. possibility of recycling, biodegradation, or generation of electricity at the end of the life span). This shows that materials are intrinsically linked to every stage of the life cycle of a product. The physical and environmental properties of bamboo make it an exceptional economic resource for a wide range of uses. It grows quickly and can be harvested annually without depletion of the parent plant and without causing harvesting damage or deterioration of the soil. Bamboo can grow on marginal land, not suitable for traditional agriculture or forestry, or as an agro forestry crop. It is relatively light weight, because the culms are hollow, and unlike wood can be easily harvested and transported without specialized equipment or vehicles. Processing normally does not require highly skilled labor or special qualifications and can be started at a minimal cost (FAO, 2005).

2.4.5 Scope of bamboo as material

Bamboo is not only an integral part of the economy, it plays a very important role socially, economically and ecologically in the areas where it occurs naturally and where it is planted. Both the highland and lowland bamboos are such a versatile type of resources that they can be used in many ways. Their paramount importance and multifaceted use in different parts of country are reported. Bamboo culms Agew-Awi Zone of the Amhara Region are used as construction material for housing, fence, and beehives in the villages. More importantly, a market for bamboo culms and the bamboo products has developed in the past years. Many of the landless men by bamboo from farmers and engage in producing mats, furniture e.g. chairs, sofa, and the baskets that they produce and send along the roadside. For these households bamboo is the major source of income (LUSO CONSULT, 1997). Bamboo is the main material for the construction of the houses, animal sheds, fences, fuel and beehives in Asossa Zone in Benshangul-Gumuz Region. For the jablawi in the Zone, the shoots of bamboo are very important for their nutrition.

2.4.6 Use of bamboo materials

Bamboo is one of the world's best natural engineering materials. Due to its high tensile Strength, it is an essential structural material in earthquake architecture and is one of strongest building materials. Its strength-to-weight ratio is better than that of teak wood and mild steel. Bamboo's tensile strength is 28,000 IB per square inch versus 23,000 for mild steel. This make bamboo wood a potential alternative, at least in some applications, steel which requires more energy for manufacturing/production. Its strength and flexibility make it a viable material for building shelters that offers protection against hurricanes and earthquakes. In Bangladesh, 73% of the population lives in bamboo houses. Bamboo based pre-fabricated houses also can constructed quickly with new and emerging techniques and is thus an important post-disaster relief material. It is an extensively being used in Tsunami rehabilitation in India. Bamboo reinforcement in concrete piles is used by the Indian Railways (Hazra 2008).

2.4.7 Bamboo a natural engineering material.

A market linkage is a process by which goods and services are exchanged through actual producers and consumers to communicate each other based on marketing mix of the product, the price structure, the promotional activities and the distribution system (Kotler, 1994). According to Keeble et al. (1982), the areas with a high market potential, given a distance, have access more economic activity than those with a lower value and, thus, can be considered as enjoying comparative advantage. Accordingly, it also allows them to higher economic growth. A high relative accessibility helps MSEs in order to reduce their transport costs, both in demand linkage and in input markets. In addition to this, it is easier for them both to access and transmit information. On the other hand, MSEs located in more inaccessible regions suffer from a comparative disadvantage. As Keeble et al. (1982) also state, if these differences in accessibility sand in transport costs are important and affect the setting-up, development and competitiveness of MSEs.

2.4.8 The concept of market linkage

One of the major challenges in Kenya as a whole is the lack of skilled human resources and technical knowhow on bamboo processes. As technical courses like building and construction in the higher learning institutions don't include bamboo as a raw material in their curriculum students lack exposure to bamboo as a building material. This creates a knowledge gap of alternative materials for production among the various actors. Kigomo (1988) had earlier noted that according to the KFS in Kenya, bamboo is classified as a minor forest product which slowed the recognition and development of this resource. Other factors affecting

the development of the bamboo resource in Kenya include; the ban on harvesting, lack of awareness on its potential, production of unprocessed or semi-processed products, poorly developed marketing structures, lack of information on availability of planting materials, lack of information on the methods of propagation, establishment, crop management and harvesting (Ongugo et al., 2000). It is, therefore, clear from the above studies why as much as bamboo is versatile; its potential is largely hampered by many external factors.

2.4.10 Development of Bamboo Industry in wide range.

Blowfield, M. et al., (1995)² discussed that the utilization of bamboo has a very long history in the world, particularly in Asian countries but also in Africa and Latin America, especially where it was available as the main plant and was used as a substitute for wood in many cases. In India village based bamboo micro enterprises were set up which utilized bamboo from nearby forests or home yards. Jiafu, L. (2001)⁵ identified factors affecting sustainability of the bamboo industry in China. The sustainability of the bamboo based enterprises and ability to meet their goals are constrained by many factors. From a microscopic perspective he observed that the bamboo forests are not well managed and could be perishing. In general he said that the potential productivity, value-added processing and ecological function of the bamboo forests in China had not been brought into full play. Further, the author argued that as much as bamboo associations exist, they had not been fully utilized. The development of the bamboo industry is also constrained. He observed that the socio-economic status of someone prior engaging himself in a bamboo based village enterprise will determine the sustainability of the business. Middle class farmers who owned land and could plant bamboo would benefit more and were likely to sustain their businesses. Poor farmers who had to go seek waged employment to complement what they earned from their farms.

2.4.11 Utilization of bamboo

Jeevanathan Duraisamy (2003)¹⁵ has explained how the bamboo resources and enterprises help to trade development opportunities for livelihood development and poverty reduction in Mozambique. He viewed that bamboo was traditionally used in housing and agriculture. Trade of bamboo is informal in rural, urban markets and along roadsides. Many entrepreneurs have small enterprises selling raw bamboo, utilitarian items and furniture. This informal sector is growing rapidly and has the required potential for formalizing and enhancing capacities of people and industrialization. The country is located at the Indian Ocean and already has trade with countries like Southern and Middle hinterland African countries. The power generation is rather surplus though poorly distributed and the road infrastructure is rapidly developing. The land tenure system is pro-poor, proprietary for long term leasing. International agencies working in Mozambique and INBAR should play vital role in initiating resources assessment and development of a bamboo sector in Mozambique. Participating pilot process projects may be formulated to transfer capacity research knowledge and appropriate technology to achieve the global goals of poverty reduction and environment conservation. Bamboo resources, enterprises and trade development could thereby lead to an economical and environmental win-win situation for the poor and the government.

2.4.12 Trade of bamboo

Mathew, P.M. (2004)²⁰ revealed how the bamboo and rattan helps to reduce poverty and made known the various institutions working for the development of these sectors. The enhanced interest in bamboo and rattan since late 1990s has been increasing to a significant extent, attributed to the initiatives of INBAR, unlike many other institutional commodity bodies, INBAR has attempted to apply a relatively integrated approach to development of this commodity favoring on peoples livelihood. Now it is time to think of a real INBAR –effect in bamboo policies which need to be eventually global in nature. The research on ²³

productions to consumption system initiated by INBAR in the 1990s has improved our understanding of some of the key issues. However it is important that production to consumption system methodology itself is looked upon afresh from the point of view of the impact on poor groups. Krishnan Kutty, C.N (2004)21 has studied production and marketing of bamboo in Kerala and he revealed out that bamboo production in home garden far exceeds the production from forests in Kerala state, India. Forest bamboo is exclusively being consumed by the paper mill in the state. Although, bamboo from home garden being utilized by the growers themselves or purchased directly by the users. Most of the bamboo being marketed through a few private depots of peaked district in the state. The market study reveals that those bamboo depots are well established and have been operating as a unique wholesale market in south India. Market analysis shows that the wholesale price of bamboo during 2002 was US\$ 73 per ton green weight. The farm price US\$ 29 per ton, the net income received by an average bamboo grower indicates relatively fair returns ever from poorly managed culms. Retailers being attracted to palakkad for bulk purchase of bamboo mainly due to existence of the wholesale market. Therefore there is an urgent need to popularize among growers a package of practice for improved management of bamboo culms in home garden and disseminate information.

2.4.16 Use of bamboo materials using handicrafts.

Logu, A and Kottaiveeran, K (2014) 52 analyzed the India's foreign trade with special reference to bamboo based products. In their study, they found that there are sixteen bamboo based products exported from India and identified its composition and ascertained the growth, trend of India's export and world trade flows of bamboo based products. They stated that India and China have 30 percent and 15 percent of Asia's bamboo resources respectively but china gets first position in the world export by exporting 50 percent of total world bamboo trade. India did not get any significant position in the world trade due to lack of efficient and effective exploitation of bamboo resources and lack of information about volume of demand in the foreign market direction of trade and rate of growth of bamboo foreign trade. To improve the situation, the government has to take 39 enough measures to overcome the problems and constraints in the area of bamboo based products trade.

CONCLUSION: The findings from the author's reviews were that there was lack of promotion of bamboo products, the bamboo weavers had no technical, Knowledge, financial resources, shortages of bamboo raw materials, and they had the problems of marketing bamboo. The bamboo weavers had good experience in processing of the product, the bamboo processor never went for product diversification and they followed only one design of products, the bamboo weavers had no brand name for their products and they were unaware of the financial schemes provided by the government. This research is further carried out to find out the direct customer of the bamboo weavers, to boost up their creativity in weaving the bamboo products.

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