TRADITIONAL BAMBOO PRODUCTS AND THEIR MARKET SUSTAINABILITY IN THE WAKE OF GLOBALIZATION – AN OPPORTUNITY COST ANALYSIS

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Introduction

The importance of bamboo as an eco-friendly raw material capable of meeting multifarious needs of the people at large is gaining global acceptance. From a raw material known as the " poor man's timber" bamboo is currently being elevated to the status of "the timber of the 21st century". So varied is bamboo's application that one finds its utilization on a massive scale today in environment protection, as a nutrient food, high-value construction material and also in about 1,500 other listed applications. Experts working in the field of bamboo are of the opinion that the full potential of this raw material still remains to be understood or tapped (Anon., 2007). The employment potential of bamboo is very high and the major work force constitutes the rural poor, especially women and 432 million workdays per annum are provided by the bamboo sector annually in India (Adkoli, 1994). Kerala is one of the major diversity centres of bamboo in the country and 22 species of bamboo under seven genera have been recorded from this area. This comes to about 20 per cent of the total bamboo distributed in India and 95 per cent of the total species reported from peninsular India (Kumar and Remesh, 1999). In Kerala, it is estimated that about 300,000 people, most of whom belonging to socially and economically weaker sections of the society, depend on bamboo for their livelihood (Nair and Muraleedharan, 1983). The Traditional Bamboo Dependents (TBDs) project a backward stagnant economy needing immediate government intervention. The per capita income of the artisans/TBDs is less than the state average and they live below the poverty line. With no tenurial security and no skills other than this traditional activity, they are not left with much choice for a secure livelihood (Muraleedharan *et al.,* 2006). This paper attempts a market analysis of the bamboo products with emphasis on its opportunity cost and the earned benefit of the TBDs and highlights the need for government intervention to sustain this group.

Methods

In the Kerala part of Southern Western Ghats, the Sambava, Paraya and Kavara communities have been traditionally involved in the unorganized bamboo-based activities. Earlier studies show that Traditional Bamboo Depending communities are found predominantly in three districts in the State viz., Palakkad, Thrissur and Malappuram (Muraleedharan *et al.,* 2006;

Seethalakshmi *et al.,* 2005). A stratified two-stage random sampling method was adopted for primary data collection. In the first stage, based on extensive reconnaissance surveys in these districts, four panchayats namely, Parli, Thenkurrissi, Mundur and Varavoor were selected as the study area and in the second stage of sampling, 205 traditional bamboo depending households were selected. Information pertaining to the raw material collection, processing, production and marketing of the product, details of costs involved at different stages of production, revenue collection and seasonality of production, opportunity cost involved and traditional skills and potential among others were collected with the help of a questionnaire. The opportunity cost is the cost of the next best alternative. For understanding the market demand for the products detailed survey was conducted in different markets of the selected panchayats covering 185 retail sellers of the products.

Results and Discussion

Traditional Bamboo Dependents - Community profile : The TBDs belong to the unorganised sector. This sector is endowed with nothing but traditional skills and working knowledge. The production is highly labour intensive and the role of capital in the production function is near zero. With poor marketing linkages and high cost of production they are outside the main stream of the bamboo productive sector.

The sex ratio of the sample was 1069 against the State ratio of 1058 and the estimated literacy rate 67.58 per cent against the Sate average of 90.86 per cent (GoI, 2001). All of the sampled household belong to scheduled caste categories such as Kavara, Sambava and Paraya. The average family size of the sample was 4.16 and 98 per cent of the families depended on either the bamboo sector or the primary sector for their livelihood. Occupation-wise, primary sector dominance was noted with majority taking up wage employment. Employment in the bamboo sector was seasonal in nature and highlights 41 per cent dependency in Varavoor and Mundur, 44 per cent in Thenkurrissi and Parli. Maximum of 10 months employment is available in varying degrees depending on local demand, for instance, during the mango season there is a heavy demand for cheap mango baskets (use and throw away type). The male : female Work Participation Rate is 43 : 57, indicating majority of the weavers to be women. The economic structure indicated a backward economy with a low-income share from bamboo-based activities. The per capita income of the sampled households was Rs. 14,665 only, against the State average of Rs. 24,053 highlighting a backward economy. The consumption expenditure indicated major share being spent on food. The savings pattern depicts low propensity to save among the target group, which is indicative of the fact that earnings from bamboo based activities were not enough to meet both ends.

Raw material source : Bamboo based production activities of TBDs involve four stages such as collection of raw materials, processing, production and marketing**.** The raw material requirement of the bamboo dependents is mainly sourced from the private depots, home gardens and forests. The extent of raw material dependence was estimated based on the quantity of raw material collected from different sources (Table 1). In Varavoor and Mundur

Table 1

*Procurement of bamboo resources and dependency**

Study Area	Natural areas	KSBC	Home gardens
Varavoor and Mundur	Marginal	Low	Moderate
Thenkurrissi and Parli	Low	Low	Low
KSBC (Weavers)	Nil	High	Nil

* Nil : no dependence, Marginal : 0-25%, Low : 25-50%, Moderate : 50-75%, High : 75-100%.

the major source of raw material was the home gardens, while in Thenkurrissi and Parli the natural areas, the Kerala State Bamboo Corporation (KSBC) and the home gardens got equal preference and the extent of dependence over these sources was low. The weavers working in the KSBC collected raw materials from the Corporation and they were neither dependent on the natural areas nor the home gardens for the same.

Production details of the TBDs and products : Collection of raw materials is basically a group activity and 98 per cent undertake weekly collections. The capital intake in the collection process is near zero as it is highly dependent on manual labour. A Kavara bamboo worker requires 2 to 3 poles per month for which they spend 5.5 days labour for collecting the required poles. The daily wage here is Rs. 50 per day, thus, the corresponding foregone benefit is Rs. 275 with respect to the raw material collection. Processing, in their case, involves splitting the bamboo into slivers, drying it for 24 hours in sunlight, and then soaking the same in water before production. In the processing stage, they process 390-396 slivers which require 12 labour days and the corresponding foregone benefit is Rs. 600. Production is a highly time consuming laborious activity needing a lot of physical strength. In the production stage, by using the processed slivers they can produce 24 big baskets or 40 small baskets or 12 baskets (vatti) or 36 small sifts (cherumuram) or 20 ordinary sifts (kundumuram) and average labour time required is 4 days and the corresponding foregone benefit is Rs. 200. Even though there is no secured market for the product, if there is normal demand they can sell their product within one day of marketing, and thus the corresponding foregone benefit is Rs. 50. The aggregate foregone benefit of all the production stages is Rs. 1125 while the corresponding earned benefit is Rs. 736. Analysing the average benefit earned and the foregone benefit during the peak period of sales in the different stages of production for the TBDs highlighted that the opportunity cost is greater than the earned benefit (Table 2). Thus, it is very evident that the community is under-paid even during the peak period of sales.

Product diversity of the TBDs : Various products mostly traditional in nature and local in demand are produced by the TBDs. These are :

- Sifts (Muram) – It is used for household purposes, such as, drying fruits, vegetables, grains etc. Bamboo sift is more effective in drying as it absorbs the water content easily.
- Basket (Kotta) – It is commonly used to carry fruits and vegetables. Major merit of the products is that it retains the freshness unlike the plastic substitute products available in the market.

Table 2

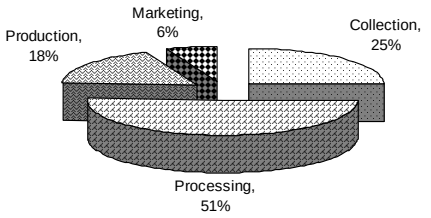
Economic potential of bamboo based productive activity

Production stages	Earned benefit	Required labour days	Foregone benefit (Rs.)
Collection	2-3 poles (30-35 slices)	5.5	275
Processing	390-396 slivers	12.0	600
Production	40 small baskets	4.0	200
Marketing	40 small baskets	1.0	50
Total Rs.	736	22.5	1125

- Fish Basket – It is used by the fisherman to carry fish, and these basket keep fish fresh for a longer period compared to plastic products.
- Mat (Panambu) – It is used by farmers to dry large quantity of grains, vegetables and fruits.

Time Cost and Opportunity Cost of Production : As the production process is more labour intensive and the capital intake of the sector is near zero, cost of labour is the major cost incurred in the different production stages. The opportunity cost of the products was estimated based on the amount of time required for the production and daily wage prevailing in the local economy (Table 3). The estimated opportunity costs of big basket, small basket, ordinary basket, ordinary sift (kundumuram) and small sift (cherumuram) were Rs. 50, 31.25, 100, 62.50 and 37.50, respectively. The TBDs allocate 50.6 per cent of required time to the processing stage followed by collection, production and marketing (Fig. 1). Labour intensive method of production in different stages with poor capital intake, make the processing and collection stages more time consuming. Moreover, skill and efficiency of the TBDs make the production stage relatively less time consuming. As the production is mostly for meeting the seasonal local market demand, marketing also takes less time.

Fig. 1



Allocation of Time in Different Stages of Production (%)

Marketing – the weakest link : There is a high seasonal demand for bamboo baskets. Once the products are ready they are usually stacked up for sale. These finished products cater only to the local demand and often the products are carried by head loads to local markets or to individual households for sale. Marketing is the weakest link in the production chain as far as the traditional workers are concerned as sales are undertaken directly in the study sites. The indirect method refers to the sales through the retail or

Table 3

Time cost of different Bamboo Products of TBDs in hours (per cent)

Production stages	Big Basket	Small Basket	Vatti	Kundumuram	Sifts (Small)
Collection	2.0 (25.00)	1.0 (24)	4.0 (25.00)	2.5 (25)	1.5 (25)
Processing	4.0 (50.00)	2.5 (53)	8.0 (50.00)	5.0 (50)	3.0 (50)
Production	1.5 (18.75)	1.0 (18)	3.0 (18.75)	2.0 (20)	1.0 (17)
Marketing	0.5 (6.25)	0.5 (5)	1.0 (6.25)	0.5 (5)	0.5 (8)
Total	8.0 (100.00)	5.0 (100)	16.0 (100.00)	10.0 (100)	6.0 (100)
Opportunity Cost (Rs)	50.00	31.25	100.00	62.50	37.50

Figures in parenthesis represent respective percentages.

wholesale shops. There exist different unorganised marketing channels, where maximum exploitation takes place, as they are a vulnerable group. In Varavoor, Mundur and Thenkurrissi, 57.14 per cent and Parli 62.67 per cent of the population adopts the direct marketing. They produce as much as possible from one collection and it takes at least 7 days. Due to this, weekly sales are most convenient for them. During the mango and paddy seasons, bamboo products are much in demand. As indicated earlier, during this period the local market is very active hence daily sales are carried out. The bamboo markets of TBDs were characterized by high 'transaction cost'. For instance, this being a household based rural enterprise, it does not attract any trader to purchase these products from remote locations, stating many reasons such as poor road access, distance, among others.

Bamboo Products and substitutes : The utility of bamboo and plastic products are identical but there exist a difference in the market price and durability of the products (Table 4). Even though the single unit cost of bamboo product is lower than the plastic products, the higher durability of the plastic product makes its relative price lower than that of the bamboo products. The higher relative price of the bamboo products leads people to prefer plastic products to bamboo without considering the social and environmental cost.

Price elasticity and consumers surplus : Price elasticity of demand is equal to the ratio of proportionate change in quantity to proportionate change in price, which helps to identify the responsiveness of quantity demanded to changes in the price level. The demand curves of two bamboo products and their corresponding plastic substitute products are derived from the primary data collected from the sellers and the consumers of these products. The price elasticity of bamboo 'kutta' is equal to that of plastic kutta (Table 5). While, in case of 'muram', the price elasticity of bamboo 'muram' is higher than that of plastic 'muram'. People prefer plastic to bamboo

Table 4

The Relative Price (RP) of Bamboo Products and Substitutes

Product	Plastic		Bamboo		Relative Price
	Price*	Duration*	Price	Duration	
Muram	65	2	35	1.0	70
Basket	40	2	35	0.5	140
Fish-Basket	400	3	75	0.5	450
Panambu	200	3	125	1.0	375

* Price in Rupees and Duration in years

Table 5

Price elasticity of bamboo/plastic products

Products	Consumer Surplus	Price Elasticity
Bamboo basket	4.7	2.35
Plastic basket	5.7	2.35
Bamboo sift	3.3	2.95
Plastic sift	10.0	2.53

products because the consumer surplus of plastic product is higher than that of bamboo. Since the price elasticity of the bamboo products is higher than one, the demand for the product is elastic in nature, thus, price is an important determinant factor in the market demand of these products. Thus, for making the sector more competitive adequate attention should be given to reduce the price and increase the quality of the products.

Conclusion

As the new economic policy opens up markets for Indian manufacturers including those working in the traditional bamboo sector, enhancing efficiency and competence is vital for the sustainable market existence of the sector. The livelihood security of the TBDs can be enhanced and improved through increased accessibility to raw material and market, employment opportunity, skill development and adequate sustainable institutional support. However, immediate attention is drawn for governmental intervention to revitalize this sector focusing on value addition, enhancing income generation and alleviating poverty.

SUMMARY

The Traditional Bamboo Dependent (TBDs) community produce traditional bamboo products for their subsistence as well as for meeting the local seasonal demand. Bamboo based production activities of TBDs involve four stages, viz., collection of raw materials, processing, production and marketing. The raw material requirement of the bamboo dependents is mainly sourced from the private depots, home gardens and forest. Production is a highly time consuming laborious activity. A market analysis of the bamboo products highlights that the opportunity cost is greater than the earned benefit and the community is under-paid even during the peak period of sales. Plastic and rubber industry offer various substitutes to the bamboo products of TBDs and pose a threat to the existence of these environment-friendly products in the long run. The paper highlights that for ensuring the sustainable development

of the sector, the apt strategy would be long-term market development, product-education, product diversification, introduction of modern technology and expansion of market.

Key words **: Traditional Bamboo Dependents, Opportunity Cost, Market and Bamboo Products.**

वैश्वीकरण के सन्दर्भ में पारम्परिक बांस उत्पाद और बाजार में उनका टिकपाना – आवसरिक लागत–विश्लेषण

वी० अनिता, पी०के० मुरलीधरन् व के०वी० संदीप

सारांश

पारम्परिक बांसों पर निर्भर समुदाय अपने जीवन निर्वाह तथा स्थानीय मौसमी मांग पूरी करने के लिए पारम्परिक बांस उत्पाद बनाया करते हैं। पारम्परिक बांस निर्भरों के बांसाधारित उत्पादन कार्यो में उसके चार चरण अर्थात कच्चे माल का संग्रह, विधायन, उत्पादन और विपणन सम्मिलित रहा करते हैं। बांस निर्भरों की कच्चे माल की जरूरतें बहुधा निजीस्वामित्व वाले डिपो, घरेलू बगीचों तथा वन माल लेकर पूरी होती हैं। उत्पादन करने में बहुत अधिक समय और मेहनत लगानी पड़ती है। बांस उत्पादों के बाजार विपणन के विश्लेषण से इस बात पर प्रकाश पड़ता है कि इस अवसर को प्राप्त करने की लागत इससे अर्जित लाभ से कहीं ज्यादा आती है और समुदाय को बिक्री होने के शिखरकाल में भी उससे कम कीमत मिल पाती है। प्लास्टिक और रबड़ उद्योग पारम्परिक बांस निर्भरों के बांस उत्पादों के अनेक स्थानापन्न उत्पाद प्रस्तुत करते हैं और वे आगे चलकर इन परिस्थिति–मित्र उत्पादों के अस्तित्व तक के लिए खतरा सिद्ध हो सकते हैं। इस अभिपत्र में यह प्रकाशित किया गया है कि इस सेक्टर का टिका रहने वाला विकास सुनिश्चित बनाने के लिए उपयुक्त समरनीति यही रहेगी कि इसका दीर्घकाल तक चलने वाला बाजार विकसित किया जाए तथा उत्पाद शिक्षण, उत्पाद विविधीकरण, आधुनिक प्रौद्योगिकी का समावेश और इसके बाजार का विस्तार भी किया जाए।

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