

Bamboo handicraft industry in Kerala, India: Value addition and production technology

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Abstract: Production of bamboo handicraft in Kerala, traditionally a hereditary occupation restricted to a particular caste, is now practised by anyone with the necessary aptitude and skill. This is where the non-traditional sector comes into prominence. Although both the sectors use the same raw material, the inefficiencies pertaining to production, marketing and technology are different. A majority of the non-traditional handicraft units are very small with low investment. Besides, cost escalation and low surplus generation in the past few years make investment in this sector less attractive. The value addition or surplus generation in manufacturing of bamboo handicrafts by the non-traditional sector is very low in Kerala. Development of technology in this sector is also low considering the fact that this is an activity carried out by the socially and economically weaker sections in the society. This paper attempts to analyze problems and prospects relating to value addition and technological development of bamboo handicraft industry in non-traditional sector.

Key words: Bamboo handicraft, marketing, non-traditional sector, production technology, value-addition ratio, profitability.

INTRODUCTION

Production of handicrafts is one of the pioneering industrial activities in India accounting for about 1.2 per cent of the total global handicraft production of USD 100 billion (Anonymous, 2006). The handicraft industry in India with approximately 67,000 exporters provides employment to over 5 million artisans. Kerala State in India has also a rich heritage of crafts, comprising carving, weaving, metal work, carpentry and pottery among others. Earlier, most of these were concentrated in temples and palaces and among people belonging to certain castes practicing specific crafts as a hereditary occupation. But, with the recent expansion of market for handicraft items, members of all communities, having aptitude and talent, have taken up the production and marketing of these products. Production of bamboo handicrafts is a classic example of this change.

According to International Trade Centre (1999) handcrafted items are artisans' products

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which are produced either completely by hand or with the help of tools or even by mechanical means. However, the most substantial component of the finished products is the direct manual contribution of the artisans. The special nature of artisans' products is attributable to their distinctive features which make them '*utilitarian, aesthetic, artistic, creative, culturally attached, decorative, functional, traditional, religiously and socially symbolic and significant*'. Most of the features mentioned above can be applied to bamboo-based industrial production in Kerala (excluding pulp and paper). Bamboo-based handicraft production in Kerala is carried out both in the traditional and non-traditional sectors. In the traditional sector, production of mats and baskets is the major activity undertaken by traditional workers (*Kavaras*) including those working under Kerala State Bamboo Corporation. Non-traditional sector involves mainly in production of other handicraft products which are produced by traditional and non-traditional workers (members of all castes). Although both the sectors use bamboo as raw material, the problems relating to the production, marketing and technology are different. This paper attempts to analyze problems and prospects relating to value addition and technological development of bamboo handicraft industry in non-traditional sector.

METHODOLOGY

The non-traditional bamboo handicraft sector in Kerala produces products such as table mats, bamboo curtain, flower baskets, bottle cover, furniture, and notepads, among others. Besides 20 curtain making units located between Vyttila in Ernakulam District and Ambalapuzha in Allappuzha District, there are 15 handicraft units situated in the Districts of Thrissur, Ernakulam, Kollam, Thiruvananthapuram, Wayanad and Kannur. In addition, a number of unregistered handicraft units run by artisans from other states are also functioning along the National Highway. According to the available official list of 'capable manufacturers' prepared by Office of the Development Commissioner (Handicrafts), there were about 28 bamboo and rattan units in Kerala in 2002. Our survey (2005-06) covered 39 bamboo units in the State although this does not cover all the units for some of the units were found to be temporarily shut down during the survey period. A questionnaire survey was carried out to gather data on different aspects of the industry. A survey was also conducted among 50 workers in the industry to collect information on number of days worked, total wages received, among others.

A majority of the handicraft units were very small with low investment. Productive capital consisted of fixed assets and working capital. Fixed capital included the land, factory buildings (including furniture) and machinery, while working capital consisted of the stock of raw materials, fuel and stock of finished and semi-finished products, cash in hand and bank, among others. The valuation of working capital was done from the books of account. On the contrary, the valuation of fixed capital was a stupendous task partly because of the non-availability of accurate data on values of various items of fixed capital and partly due to lack of uniform method of depreciation.

In this exercise, the valuation of fixed assets of the units was carried out on the basis of historical cost. The survey highlighted that a number of units had maintained accounts on the values of the fixed assets they possessed and therefore, this was taken as the historical cost of fixed capital in their case. In the case of others who had not maintained accounts, the historical cost was worked out on the basis of values of the similar items given by other units in the locality. There was no uniform method of estimation of depreciation among the units, therefore a uniform rate of 5 per cent was provided for machinery and factory building. Capital structure, value of production, cost of production, value added by manufacture and profitability were worked out.

RESULTS AND DISCUSSION

Size and ownership pattern

According to National Council of Applied Economic Research Surveys (1999; 2002), average number of artisans per production unit (average size of unit) was 2.37 in rattan and bamboo sector. Although, our survey indicated the average number to be 5 in bamboo handicraft unit, excluding trainees and other part-time workers (the low size of the unit in NCAER surveys is due to the inclusion of rattan units as they generally use less number of workers compared to bamboo units). If we include the latter categories of workers also, the average size of unit in handicraft sector increases to 15.65 (since many units employed trainees who constituted cheap labour and a means of increasing profit). About 80 per cent of the units were owned by individual proprietors and rest were partnership units.

About 80 per cent units had their own land and building. A few units had machinery also. Fixed and working capital, two constituents of productive capital, employed per unit amounted to Rs. 200,000 and 75,000 (1 USD = Rs. 45) respectively. The stock of raw material was found to be very low, amounting to Rs. 20,000. Cost of land accounted for 60 per cent of the fixed capital and building and machinery shared the rest. It was reported that borrowing both from the organized and unorganized sectors, was the major source of investment, accounting for 65 per cent of the productive capital. The investment-employment ratio was estimated as Rs. 17,187 indicating that with low investment, this sector could generate more employment.

Raw material requirements were met from sources like Kerala State Bamboo Corporation and forests. Non-availability of adequate raw material was a problem to many units. Some units reported that during the last five years, the price of raw materials had doubled.

Profitability of selected bamboo handicraft items

The industry produced a number of products at varying quantity based on demand and marketability. The profitability of four handicraft items, viz., bamboo curtain, table mat, lamp shade and oval basket worked out is given in Table 1.

Table 1. Estimation of cost of production of selected handicraft products

	Bamboo curtain		Table mat		Lamp shade		Oval basket	
	Amount (Rs.) per sq. ft.	Total Amount (Rs.)	Amount (Rs.) per sq. ft.	Total Amount (Rs.)	Amount (Rs.) per unit	Total Amount (Rs.)	Amount (Rs.) per unit	Total Amount (Rs.)
Direct cost								
Raw material (bamboo)	11.00 (36.70)	82500.00	3.00 (56.60)	52500.00	15.00 (18.75)	1500.00	5.00 (18.52)	2000.00
Chemicals	1.00 (3.34)	7500.00	0.25 (4.72)	4375.00	2.00 (2.50)	200.00	2.00 (7.40)	800.00
Dyes	2.16 (7.20)	16200.00	0.50 (9.43)	8750.00	3.00 (3.75)	300.00	0.00 (0.00)	0.00
Wages	13.00 (43.38)	97500.00	1.30 (24.53)	22750.00	50.00 (62.50)	5000.00	18.00 (66.68)	7200.00
Direct consumables used in the production process	2.50 (8.34)	18750.00	0.25 (4.72)	4375.00	10.00 (12.50)	1000.00	2.00 (7.40)	800.00
Rentals	0.23 (0.77)	1725	0	0	0	0	0	0
Indirect costs (allocated costs)								
Utilities (electricity, water, etc.)	0.08 (0.27)	600	0	0	0	0	0	0
Cost of production	29.97 (100)	224775.00	5.3 (100)	92750.00	80.00 (100)	8000.00	27.00 (100)	10800.00
Gross profit margin	5.03	37725.00	1.70	29750.00	10.00	1000.00	3.00	1200.00
Selling cost	35.00	262500.00	7.00	122500.00	90.00	9000.00	30.00	12000.00

USD1=Rs. 45

The cost of production of 0.09 m² of bamboo curtain worked out to Rs. 30 and selling price was Rs. 35. In the case of table mat, lamp shade and oval basket, the cost of production per unit worked out to Rs. 5.3, Rs. 80 and Rs. 27 and the selling prices to Rs. 7, Rs. 90 and Rs. 30 respectively. This indicates that production of handicraft items is profitable and the profit varies from product to product; for instance, the profit margin of bamboo curtain is 14 per cent, table mat 24 per cent, lamp shade 11 per cent and oval basket 10 per cent. Among the four items, table mat earned more profit mainly because the production units got orders both from within and outside the State. On the contrary, the bamboo curtain was less profitable as most of the production units were located along the national highway and thus faced severe competition. Further, wages paid in the production of curtain were also very high; on an average, a worker got Rs. 325 per day and 15-20 days work per month (Table 2). There was only limited demand for lamp shade and oval basket that restricted earning higher profit.

The raw material cost and wages are the two major items of cost, accounting for 80 per cent. It was reported that there had been cost escalation during the last five years in the sector, accounting for 60 per cent. But the selling price increased by only 35 per cent during this period, resulting in low surplus generation. Further, payment of interest on borrowed capital also made the investment in this sector less attractive.

Cost and value addition ratios

There is no published information on estimates of value of production, cost of production and value addition pertaining to bamboo handicraft industry. The NCAER (1999; 2002) gives the estimates for rattan and bamboo sector in Kerala. Generally, the rattan units in the State are more efficient and some are export-oriented and thus a combined figure will not give a true picture for the bamboo sector. Thus, value addition (value of production-cost of materials), cost ratio (cost of production as per cent of value of production) and value addition ratio (value added as per cent of value of production) for the handicraft sector are worked out (Table 2). The cost and value

Table 2. Production, cost and returns of selected handicraft products

	Bamboo curtain	Table mat	Lamp shade	Oval basket
Sq.ft (0.09 m ²) produced per day	375	875	5	20
Monthly production quantity	7500	17500	100	400
Cost of production/unit	29.97	5.30	80	27
Cost of production/month	224775	92750	8000	10800
Profit margin/product	5.03	1.70	10	3
Selling rate (at the first point of sale at the production unit)	35	7	90	30
Total sales value	262500	122500	9000	12000
Gross profit	37725	29750	1000	1200
Wages earned/person/day	325	45.50	25	36
Wages earned/month/person	6500	910	500	720

addition ratios of bamboo handicraft accounted for 84 and 16 per cent respectively. The cost ratio worked out for the handicraft sector was found to be very high probably due to higher paid-out cost for raw materials, interest, among others. Further, the value addition ratio estimated for the sector constituted only 16 per cent which is unfavourable for the growth of the industry. In other words, the value addition or surplus generation by manufacturing of bamboo handicrafts was very low in Kerala. This conclusion coincides with that of NCAER surveys carried out during 1999 and 2002 (Subhramanian, 2004).

Production technology

Primitive technology developed locally was used for the production of mats. Processing involved cutting of bamboo culms into short lengths, splitting, slivering, and weaving. The traditional tools used for these processes were bill hook and knives. In the handicraft sector also, the production was mostly labour intensive and used only primitive technology. There are several reasons for poor development of technology in this sector; the most important being scarcity of capital as this is carried out by socially and economically weaker sections in the society.

Since the mid-1990's, some bamboo handicraft units in the State have started using modern technology. The pioneering attempt was done by Uravu a non-governmental organization, working in Wayanad District in Kerala. The unit was established in 1996 and production of handicraft items with bamboo was started in 1998. The modern tools/machines in the unit are circular saw, planer, sanding machine, drilling machine, hacksaw, knife, hand drill and file. In addition to Uravu, a few other handicraft units in the State are also using modern tools for production. Tools machines used by the handicraft units in the State are knives and hacksaws, files of different kinds, hand drill, blow lamp, measuring tapes and scales, chisels, hammers, pliers, jigs and fixtures.

Handicrafts, over the last few years, have transformed their utility from mere decorative items to articles of daily use. It is thus the primary need of any seller to constantly update, develop and add his product profile (Anonymous, 2006). One of the problems in the production of bamboo products in Kerala is the lack of quality and homogeneity due to low mechanization. Keeping this in view, Industrial Design Centre of Indian Institute of Technology Bombay designed about 30 tools, aiming to produce 'new generation craft products' which could compete with plastic products (IDC, 2001). Some of these tools are adopted from traditional craftsmen in India and China and also from other areas like woodwork and some are newly innovated. The major advantages of this tool kit are that they are handy and affordable to middle class entrepreneurs as well as small units.

There is potential to use more machines in bamboo handicraft units to produce new generation products to meet the growing demand of modern societies. Machines that

can be used in a unit without affecting employment are listed in Table 3. The estimated total cost of above machines is approximately Rs. 0.5 million.

One of the arguments against mechanization is that it is not acceptable from employment point of view as this industry is considered as an avenue for providing employment in labour surplus economy (Jayasankar, 2004). This may be true in the case of mat and basket production in the traditional sector, but not in the case of handicraft production in the non-traditional sector. In the context of globalization, demand for products, to a great extent, depends on their quality which can be achieved only through use of appropriate technology. This will not only reduce the cost of production but also boost up the demand and consequently, the profit.

The details on average product-wise cost of production, sale value, production time per unit, number of labour involved and tools used are presented in Table 4.

It is to be noted that most of the items shown in Table 4 can be made with the help of tools/machines. In other words, there should be proper mixing of labour and appropriate technology to produce quality handicraft products. An attempt was made to compare the number of workers and profit margins in units which use modern tools as against units, which use traditional technology. For instance, it is reported that units which used looms in curtain making received about 30 per cent more profit than that of non-users, mainly due to improved quality of the products. At the same time, average number of workers employed by both the units was found to be more or less same, indicating that use of appropriate tools does not replace labour in handicraft sector.

Table 3. Machines and facilities in a bamboo handicraft unit

Hydraulic machine for splitting bamboo
Four side planer
Belt sander
Drilling machine
Electric drill
Spanner set
Screw driver set
IDC tool kit
Hand operated width-sizer
Hand operated slivering machine
Room for mat/curtain weaving
Power generator
Standard factory tools and accessories
Fire/safety systems
Workshop furniture
Treatment facility

Source: URAVU, Wayanad

Table 4. Product range, cost of production, time, labour and tools used in a bamboo handicrafts unit

Type of product	Cost of production and sale value (in Rs.)		Production time/ per unit	Labour involved		Tools used
	Cost	Sales		Male	Female	
Pen	27	35	1.30 h		1	Knife, drill, file
Lamp shade	180	250	8-10 h		1	Knife, drill
Pen cup	6	15	25 min		1	Knife, drill, file
Puttu maker	25	40-50	30 min	1	1	Knife, drill, file
Flower vase	20	28-30	1 h		1	File, knife
Hair clip	6	10	30 min		1	File, knife
Whistle	3.50	5-10	20 min	1	1	File, knife, Hacksaw
Wall hangings	70	100	90 min	1		File, knife, Hacksaw
Note pad	80	100-120	4 h	1	1	Knife, drill, cutter
Bottles	120	180-200	8 h		1	Knife, drill, cutter
Measures	10	15-20	90 min	1	1	Knife, drill, cutter
Curtains	20	25-30	30 min (per 0.09 m ²)	1	1	Knife, file, Hand drill, cutter

During the survey it was noted that many units were willing to adopt new technology. The major constraints for the adoption of new tools are found to be lack of capital for investment, skilled labour and quality raw materials. The absence of opportunity for training to use modern technology is another reason for its non-adoption. Thus, availability of adequate financial support and training in the use of modern tools plays an important role in the adoption of tools/technology.

Kerala Bureau for Industrial Promotion (K-bip) is a body under the Ministry of Industries to promote industries in various sectors including the traditional sector. K-bip has entered into a Memorandum of Understanding (MOU) with Asia Pacific Centre for Transfer of Technology (APCTT), a UN body. The MOU envisages establishment of a small business centre and demonstration programmes for the promotion of traditional/rural sectors in the State. APCTT would provide technologies available in the Asia Pacific region. Bamboo has been identified as one of the sectors for development and K-bip has started to develop clusters of traditional bamboo workers and impart training to them. The initiative taken up by UNDP to promote rattan and bamboo in the country also deserves special mention. It has sponsored projects through the Development Commissioner (Handicrafts), Ministry of Textiles, Government of India. Under one of its projects, a common facility centre was set up in Kerala, which helps to extend technological facilities to nearby bamboo clusters.

CONCLUSION

The bamboo handicraft industry of the State has immense economic potential. The

investment in this sector is less attractive due to its small size, low surplus generation, cost escalation, low technological development, and payment of interest on borrowed capital. With these inherent weaknesses, this sector still supports a good fraction of the rural economy. Mechanisation will reduce the cost of production and improve the quality of the products, leading to boosting up the demand and consequently the profit. The major constraints for the adoption of new tools are found to be lack of capital for investment, skilled labour and quality raw materials. The availability of adequate financial support and training in modern technology play an important role. The estimated investment-employment ratio highlights that with low investment, this sector can generate employment. A blend of labour and appropriate technology will result in the production of quality handicraft products. This calls for strategic planning on the part of the Government whereby the industry sustains itself economically in the face of stiff competition, and provides social security to the dependent community.

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