

Research Article

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Development and Utilization of Bamboo Based Handicrafts Through Cost Benefit Analysis



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ABSTRACT

Aim: This study aims to analyze the bamboo-based handicrafts developed by rural bamboo handicraft workers and the utilization of these handicrafts through a cost-benefit analysis.

Research design: The descriptive research design was chosen in order to achieve the objectives of the study.

Methodology: The present study was conducted in three villages, namely Harpur, Waini, and Gangapur of Pusa Block in Samastipur district of Bihar. From these three villages, 120 bamboo handicraft workers were selected randomly. Bamboo-based handicrafts were categorized under 4 broad categories, namely Basket, Furniture, Utility, and Miscellaneous Products, and a cost-benefit analysis was used to analyze the net profit gained by these workers in each category.

Results: The findings of the study revealed that the majority of bamboo handicraft workers were found to develop various types of bamboo-based handicrafts in each category. Under the basket category dala and duli were produced by most of the workers, ladder and charpai were mostly developed in the furniture category, fork and tray in the utility product category and basuri in miscellaneous product category. Cost-benefit analysis of these handicrafts revealed that net profits per month gained by the bamboo handicraft workers are Rs.7680, Rs.3600, Rs.1910, and Rs. 3100 in basket, furniture, utility and miscellaneous product categories, respectively, based on their production of handicrafts per month.

Conclusion: Bamboo handicraft making was the main source of income and livelihood for these workers in the study locale. On the basis of the results, it can be concluded that an average bamboo handicraft worker earned between Rs.2800 to Rs.17000 per month from the cash sales of handicrafts developed by them. This shows that bamboo handicraft products greatly contribute to the regional economy and enhance the capacity of rural workers to overcome poverty.

Keywords: Bamboo, Handicrafts, Development, Utilization, Cost-benefit analysis, Basket, Furniture, miscellaneous product, utility product, Quality of Life

1. INTRODUCTION

Bamboo, a multifaceted plant, plays a vital role in enhancing the quality of life for individuals through its ecological, economic, and livelihood benefits. India boasts extensive bamboo coverage of 13.96 million hectares, making it among the largest bamboo regions globally [4]. Following China, India stands as the second-largest producer of bamboo. Bamboo handicraft, utilizing bamboo as its primary material, represents a longstanding traditional craft. Often referred to as the "poor man's timber," bamboo sustains the livelihoods of countless traditional artisans. Its applications vary according to its inherent characteristics [7]. Typically, rural communities serve as both producers and consumers of this commodity. Its substantial potential for economic and environmental advancement stems from its rapid growth rate and minimal need for intensive management and expertise.

Bamboo serves a multitude of purposes due to its affordability, making it the preferred material for everyday items like stools, mats, baskets, traps, and decorative pieces. Bamboo offers a

diverse array of products, spanning from baskets and musical instruments to practical items like pen holders, mugs, hair clips, and more. Domestic and international markets exhibit significant demand for bamboo-based handicrafts, including household furniture such as chairs, sofa sets, and moorahs (small cane stools), crafted from bamboo resources. Khanal (2015) recognizes bamboo's significance in improving the livelihoods of impoverished communities and suggests that bamboo production has the potential to uplift their economic status. The growing demand for bamboo products aids in improving the livelihoods of impoverished workers. Moreover, engaging in bamboo craft production assists the impoverished in addressing food insecurity and provides an alternative income source for them [2]. Considering these factors, the current study aims to analyze the development of bamboo-based handicrafts by rural artisans and assess the utilization of these crafts through a cost-benefit analysis.

2. MATERIAL AND METHODS

The research study was conducted from March to May 2022 in three villages, namely Harpur, Waini, and Gangapur of Pusa Block in Samastipur District of Bihar. The present study area was selected because bamboo grows naturally in this region. The study area was chosen using purposive sampling, and a total of 120 samples were selected using simple random sampling. The data was collected with the help of an interview schedule

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through a personal interview technique. A SPSS version 20 program was used to tabulate and analyze the data collected in terms of frequency, percentage and mean. Bamboo-based handicrafts were categorized under 4 broad categories, namely Basket, Furniture, Utility, and Miscellaneous Products, and a cost-benefit analysis was used to analyze the net profit gained by these workers in each category. Cost-benefit analysis is widely applied in rural economic studies, and it is one of the most pertinent ways to calculate return on investment.

3. RESULTS AND DISCUSSION

Development of bamboo-based handicrafts by rural bamboo handicraft workers

Bamboo has a very diverse role in human social life. Different kinds of bamboo-based products are used for different purposes, like baskets, furniture, utility items, and miscellaneous products. Table 1 depicts different types of bamboo-based handicrafts developed by rural bamboo handicraft workers categorized under four major categories, i.e., Baskets, Furniture, Utility, and Miscellaneous Products.

The data regarding different types of baskets developed by rural bamboo handicrafts revealed that there are 7 types of baskets namely *chalani*, *kula*, *khorahi*, *tukuri*, *dala*, *duli* and steam baskets. Further, it was revealed that baskets like *duli* and *dala* were prepared by more than two third (>70%) of the workers followed by *kula* (55.83%) *chalani* (47.50%), *tukuri* (40.83%) and *khorahi* (39.17%). Only 25.83 per cent of the workers made steam baskets on demand-based order.

Table 1: Bamboo based handicrafts developed by rural bamboo handicraft workers

N=120

Product Category	Name of product	Frequency	Percentage
Baskets	<i>Chalani</i>	57	47.50
	<i>Kula</i>	67	55.83
	<i>Khorahi</i>	47	39.17
	<i>Tukuri</i>	49	40.83
	<i>Dala</i>	88	73.33
	<i>Duli</i>	91	75.83
	Steam Basket	31	25.83
Furniture	Charpai	72	60.00
	Chair	52	43.33
	<i>Machiya</i>	24	20.00
	Table	54	45.00
	Shoe rack	27	22.50
	Ladder	90	75.00
	Dining set	25	20.83
	Storage rack	37	30.83
Utility Products	Spoons	52	43.33
	Tray	62	51.67
	Bowls	41	34.17
	Fork	91	75.83
	Coaster	29	24.17
	Ashtray	24	20.00
Miscellaneous Products	<i>Basuri</i>	46	38.33
	Harmonium	30	25.00
	Bangles	30	25.00
	Hair Pin	12	10.00
	Bat	13	10.83
	<i>Jhunjhuna</i>	16	13.33

The *duli* and *dala* are a kind of baskets mostly used during the very auspicious and holy festival i.e., *Chhath Puja* of Bihar and marriages ceremony. The tremendous demand for these handicraft products encourages handicraft workers to produce more of these products during the festive seasons. Further it has been highlighted in a research that while craftsmen initially focused on rice baskets, they have now diversified into creating bamboo crafts such as tissue boxes, decorative lamps, meat containers, plates, fruit baskets, conveyance baskets, bags, and other contemporary handicraft items [6].

For home and office furniture, bamboo products are increasingly being used. A variety of furniture viz., *charpai*, chair, *machiya*, table, ladder, dining set, shoe rack and ladder were being made by workers frequently in the study area. Out of these, *charpai* was found to be produced by most of the workers (60.00%) followed by chair (43.33%) and table (45.00%). Having very diversified use, *charpai*, table and chair made up of bamboo, had very great demand among rural as well as urban communities. *Charpai* is also in high demand at dhaba cum restaurant as well as at agro-tourism centres. The findings align with study, which also observed a significant proportion of rural artisans engaged in crafting various types of baskets, including *gaanja*, *mouni*, *tokri*, *khanchia*, *douri*, *dala*, *dalia*, and other handicrafts [5].

Bamboo is also widely used for making various utility items. Findings of the present study reveals that more than three fourth of the bamboo handicraft workers (75.83%) were involved in making forks followed by tray (51.67%), spoons (43.33%) and bowls (34.17%). Some other utility handicraft products produced by these workers were coaster (24.17%) and ashtray (20.00%).

Under Miscellaneous products category *basuri*, harmonium, bangles, hair pin, bat and *jhunjhuna* were the bamboo based handicrafts developed by rural bamboo-based handicraft workers. It was revealed from the study findings that most of the workers were found to develop *basuri* (38.33%), harmonium (25.00%) and bangles (25.00%) out of all these miscellaneous products.

Utilization of developed bamboo-based handicrafts through cost-benefit analysis

Table 2 explores the cost-benefit analysis of bamboo-based handicrafts developed by bamboo workers. The cost-benefit analysis showed the average production, cost, sale, and profit gained by the rural bamboo handicraft workers every month. Here, the term cost is operationalized as all forms of expenditures availed by the workers to produce a unit of product, while benefit or profit refers to the net return received against the selling of that unit of produce. The main purpose of cost-benefit analysis is to bring clarity to decision-making regarding the most profitable bamboo products.

Table 2: Results of Cost-benefit analysis of bamboo-based handicrafts

Product Category	Name of products	Production/ month	Cost/ month (in Rs.)	Sale/ month (in Rs.)	Profit/ month (in Rs.)	Profit/ Unit (in Rs.)
Basket	<i>Chalani</i>	10	700	1700	1000	100
	<i>Kula</i>	12	720	1800	1080	90
	<i>Khorahi</i>	7	700	2100	1400	200
	<i>Tukuri</i>	14	1400	2800	1400	100
	<i>Dala</i>	6	600	1800	1200	200
	<i>Duli</i>	5	500	1500	1000	200
	Steam basket	4	500	1100	600	150
	Total	58	5,120	12,800	7,680	1040
	Furniture	<i>Charpai</i>	04	600	1400	800
Chair		04	400	1000	600	150
<i>Machiya</i>		07	350	800	450	64.28
Table		04	400	800	400	100
Shoe rack		02	200	400	200	66.66
Ladder		03	150	600	450	150
Dining set		01	200	400	200	200
Storage rack		01	50	250	200	200
Almirah		02	200	500	300	150
Total		28	2,550	6,150	3,600	1080
Utility products	Spoons	15	150	450	300	20
	Tray	10	300	600	300	30
	Bowls	12	360	720	360	30
	Fork	15	150	550	400	26.66
	Coaster	10	200	500	300	30
	Ashtray	10	150	400	250	25
	Total	72	1,310	3,220	1,910	160
Miscellaneous products	Basuri	32	672	1022	350	10.93
	Harmonium	2	2500	3500	1000	500
	Bangles	50	500	1000	500	10
	Hair pin	30	600	850	250	8.33
	Bat	10	250	750	500	50
	Jhunjhuna	50	500	1000	500	10
	Total	174	5,022	8,122	3,100	589
OVERALL TOTAL		332	14002	30392	16290	2869

From **Table 2**, it can be said that the most profitable bamboo handicraft baskets were *khorahi* and *tukuri* due to the high demand of these products in research locale in which the net profit in monetary term as being enjoyed by the handicraft workers was Rs. 1400 per month. The net profit from the total monthly production and sales of other bamboo baskets namely *dala*, *duli*, *kula*, *chalani* and Steam baskets earned by the workers were Rs.1200, Rs.1000, Rs.1080 and Rs.600 respectively. These baskets are useful in domestic purposes and are high in demand all around the year. These baskets are typically utilized during several sacred occasions and festive seasons. Research by **Kalanzi et al. (2017)** similarly found that the primary products crafted by workers included baskets, beehives, winnowing trays, stakes, poles, and firewood. Among these, baskets, winnowing trays, and beehives were particularly in high demand in the market [3].

Data about the **Furniture Category** shows that out of all the bamboo handicraft furniture, the most profitable furniture item made by the workers was *Charpai*, with a net profit of Rs.800/- followed by the chairs, which provided a net profit of Rs.600 from the monthly total production and sales of these handicrafts. Many other products like tables, ladders, dining sets, storage racks, and almirahs are also prepared by workers, which gives them more profit, but they make these products only on an order basis due to higher production costs and less demand for these products.

A variety of utility products are prepared by bamboo handicraft workers, with a total production of 72 products per month. The total net profit earned by the workers from the monthly total sales of utility products is Rs. 1910. Out of all utility products, spoons, forks and bowls have high production due to the high demand of these products. Among these products most of them were made only during the festive seasons so that they can sell them in the fair.

Miscellaneous products involve some other items that are produced by the workers, like *basuri*, harmonium, bangles, hair pin, etc. Data reveals that the most profitable product is Harmonium with a net profit of Rs.1000, but its production is less because among the total sample very few of them have the skill to make this product. Bat and *jhunjhuna* are the small toys that help them earn a good profit from the total monthly sales of these products. These products were also sold mostly in fairs and loved by most of the kids.

On the whole it was revealed that the workers have highest production per month of bangles (50) *jhunjhuna* (50), *basuri* (32) and hair pin (30). Further it was observed that they spend highest cost on harmonium (Rs.2500) and *tukuri* (Rs.1400) per month and they have gained highest net profit in *khorahi* (Rs.1400), *tukuri* (Rs.1400) and *dala* (Rs.1200) from the monthly total production and sales of these handicrafts.

Most bamboo handicraft workers were making traditional handicrafts, which helped them earn more profit due to the highest sales during festive and marriage seasons. An average bamboo handicraft worker earned between Rs.2800 to Rs.17000 per month from the cash sales of developed handicrafts. Bamboo handicraft making was the main source of income and livelihood for these workers in the study locale. **Bajracharya et al. (2012)** also noted comparable findings in their research, indicating that the majority of bamboo workers, on average, earned between Rs.1000 to Rs.5000 per month from the direct sales of various handicrafts.

Most of the respondents were making traditional crafts like Naglo, Chalano, Doko, and Dalo, but some modern products like racks and dustbins helped them earn more profit. The bamboo handicraft making was the main source of livelihood for these workers. It was also found that the highest sales were during festive and marriage seasons [1].

4. CONCLUSION

The bamboo-based handicrafts crafted by rural artisans were divided into four main categories. The handicrafts produced by workers in the study area encompassed baskets, furniture, utility items, and miscellaneous products, each category containing a variety of specific crafts. The majority of the bamboo handicraft workers were making traditional handicrafts such as *Chalani*, *Kula*, *Khorahi*, *Tukuri*, *Dala*, *Duli*, and *Charpai*, which helped them to earn more profit due to the highest sales during festive and marriage seasons. On average, a bamboo handicraft worker earned between Rs.2800 to Rs.17000 monthly through their crafted products' direct sales. Bamboo handicraft production served as the primary source of income and livelihood for workers in the study area. This indicates that bamboo handicrafts significantly bolstered the local economy and empowered rural workers to alleviate poverty. In terms of environmental performance, raw bamboo materials were still ending up as waste. However, these industries support a vision of sustaining a green economy. The current study concludes that enhancing the skills of bamboo handicraft workers in technology, product quality, access to capital, and market connections could significantly increase their profit margins. The bamboo-based industry is a green industry that has existing in India since ancient time. Products from bamboo are cultural products that are currently being replaced by plastic products, even though bamboo products are more environmentally friendly. Product innovation efforts and facilitation of marketing promotion of innovative products accompanied by strong branding efforts are needed, without ruling out existing products [8].

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REFERENCES

1. Bajracharya, M. S., Rajbhandary, S., & Das, A. N. (2012). Socio-economic impacts of bamboo enterprises in the Mid-hills of Nepal: A case study on Pahari community at Badikhel Village, Lalitpur. *Banko Janakari*, 22(2), 19-25.
2. Khanal, M., & Expert-GESI, G. (2015, September). Importance of Bamboo in Poors' Livelihood in Nepal. In 10th World Bamboo Congress (Vol. 12).
3. Kalanzi F, Mwanja C, Agaba H, Guuroh RT. Potential of bamboo as a source of household income in SouthWestern Uganda. *J Bamboo Rattan*. 2018;16(1):393-397

4. National Bamboo Mission. (2019). Operational Guidelines of National Bamboo Mission. Revised June, 2019. Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India. URL : https://nbm.nic.in/Documents/pdf/NBM_Revised_Guidelines.pdf
5. Nirala, D. P., Ambasta, N., Kumari, P., & Kumari, P. (2017). A review on uses of bamboo including ethno-botanical importance. *Int J Pure App Biosci*, 5(5), 515-523.
6. Putri, S. W., & Prihadi, B. (2020, July). Bamboo Handicrafts in the Village of Brajan, Sendangagung, Minggir, Sleman, Yogyakarta: An Analysis of Their Forms and Meanings. In 3rd International Conference on Arts and Arts Education (ICAAE 2019) (pp. 104-109). Atlantis Press.
7. Renu, A. and Rani, S. (2022). Analysis of Demographic and Work Profile of Rural Bamboo Handicraft Workers. 40(11): 146-150. DOI: [10.9734/AJAEES/2022/v40i111695](https://doi.org/10.9734/AJAEES/2022/v40i111695).
8. Augusta, L., Pieter, G. Utomo, MMB2023, Performance and development challenges of micro-small bamboo enterprises in Gunungkidul, Indonesia, *Advances in Bamboo Science, Volume 4, 100037*, <https://doi.org/10.1016/j.bamboo.2023.100037>.