

---

## **Bamboo Fiber: A Contribution of Bihar towards Sustainable And Eco Friendly Fiber in Home and Fashion Industry**

**Sanjay Shrivastava\* & Rishikesh Kumar\*\*,**

*\*Professor and Director-NIFT, Patna,*

*\*\*Assistant Professor, FMS-NIFT, Patna,*

### **INTRODUCTION:**

*A woody grass Bamboo belongs to the sub family Bambusoideae of the family Poaceae. Being one of the fastest growing species Bamboo is also known as “Green Gold”. This green gold is available in abundance and adequately cheap to cater the huge requirements of human population from the “child cradle to the dead man’s bier” that is why occasionally; it is also known as “poor man’s timber.” There are more than 1,250 species under 75 genera of bamboo available worldwide, which are unevenly distributed in the various part of the humid tropical, sub tropical and temperate region of the earth (Subramaniam, 1998). India is extremely prosperous in terms of bamboo diversity. There are 124 indigenous and exotic species under 23 genera, found naturally and or under cultivation (Naithani, 1993). An estimated 8.6 million ha forest area of the country contains bamboo (Rai and Chauhan, 1998) Bamboo normally grows as the small forest within the natural forests. It is found to be grown practically in the tropical sub-tropical and temperate region where the annual rainfall ranges between 1,200 mm to 4,000 mm and the temperature varies between 16oC and 38oC. The most suitable conditions for the occurrence of bamboo are found between 770-1,080 meter above sea level. However, two thirds of the growing stock of bamboo in the country is available in the north-eastern states with supports about 50% of the total bamboo being tropical moist region.*

### **LITERATURE REVIEW**

The people of Asia, Africa and South America are dependent on it for their house construction and agricultural implement. It is mostly used in paper industries, domestic commodities in cottage industries. Bamboo shoots are also eaten as vegetable mostly in Southeast and East Asian countries. Bamboo plantations conserve soil and water, improve soil fertility and local climate, Liese (1992) pointed out that 2.5 billion people depend on or use bamboo materials valued of US\$ 7 billion per annum. India is one of the leading countries of the world, second to China in bamboo production with 32, 30,000 tons per year (Pathak, 1989). A climatic region of high rainfall ranging from about 1270 mm to about 6350 mm or even more is preferable for the bamboo. For the appropriate distribution and expansion of different species, a very significant and dominating role is being played by the Rainfall. North Bihar receives high rainfall with recurring flood by Koshi River and falls under tropical moist deciduous region (Champion and Seth, 1968) and therefore fit for bamboo farming. The bamboo farming by the farmers of North Bihar district is being done in their farmhouse and agriculture lands for their regular household necessities with reference to as cash crop.

---

**FEW FACTS:**

- About 40000 Ha of Land under cultivation of Bamboo Trees in Bihar
- Species available in Bihar are Bambusa Bambos & Bambusa Balcoa
- Grows rapidly than tress and start to yield within 4- 5 years of planting
- Growth varies on types of species and size ranges from Miniature to towering column 60 mtrs
- Environment friendly, Generates more oxygen and critical element in the balancing of O<sub>2</sub>/ CO<sub>2</sub> in atmosphere
- It prevents land and soil erosions, lowers light intensity and protects against UV rays

**MARKETING STRATEGY OF BAMBOO CRAFTS FOR BIHAR:**

To market bamboo craft products, we can take advantage of Internet technology in order to reach a wider market opportunity. Through blogs, websites, or social networking sites, we can inform our artificial products to the wider community, both domestically and abroad. Through the internet, now we no longer need to worry about the limits of marketing our product. Problems of distance and time can be helped by the presence of online marketing is even easier for us to reach consumers for 24 hours non-stop in different parts of the continent.

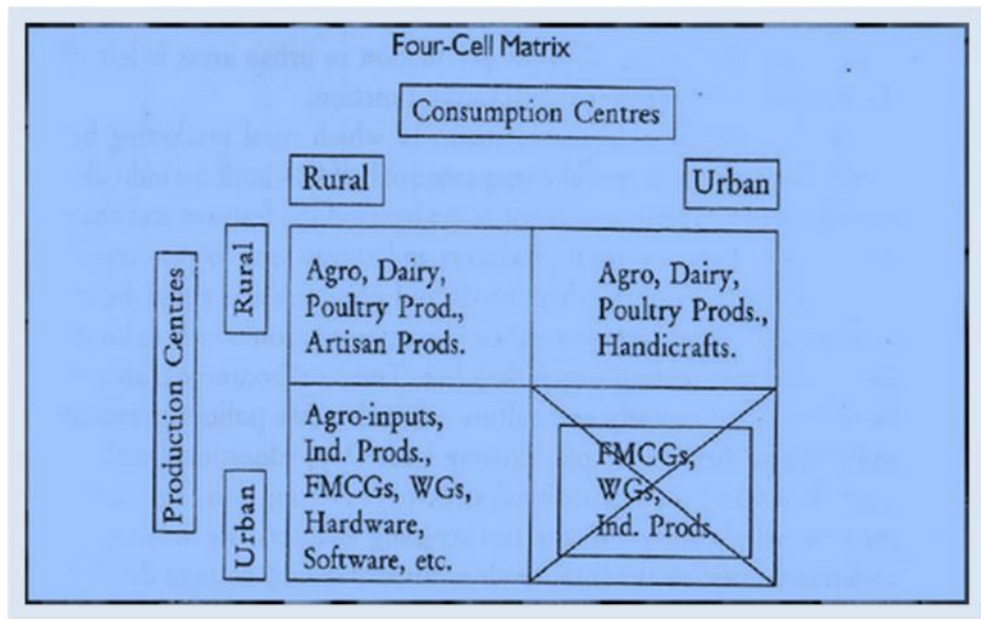
Other marketing strategies that we may run the create product differentiation to win the market competition. This strategy can we do with a way to improve the quality of our products or create innovative product design that has never existed before. That way, we have value-added products that are not owned by your competitors, so that the door of opportunity to win the market competition is more wide open. About Rural India 70% of the nation, poor live in rural areas. The target of halving the number of people living in extreme poverty by 2016 will be achievable if the problem of rural poverty is confronted head-on. Rural Poor Rural people are not only isolated from economic opportunities. They also tend to have less access to social services such as health, sanitation and education; for example, it is estimated that around 1 billion rural households in developing countries lack access to safe water supplies.

Rural poor rural economy is predominantly agriculture based with crops and cattle being the major contributors for the GDP. 80% of the people in the rural areas have to depend on agriculture for livelihood. The Efforts Governments, donors, in particular, have poured in money, mostly in the form of support to agriculture and natural resources.

**RURAL FACTS:**

- a) The poor are small farmers and landless
- b) Agriculture acts as the engine of growth investing in Local skill has long been seen as a means of simultaneously addressing both growth and equity issues.

**Developmental Matrixes:**



**Fig 1: Four Cell Matrix**

Four cell matrixes show the relationship between production centers and consumption centers. The production centers can be divided into two production centers

- (I) Rural production center such as: Agro-inputs, Poultry products, Dairy products, Artisan products.
- (II) Urban production centers: Agro-inputs, Industrial products, FMCG, WGs, Hardware, Software.

Following few factors is important to understand strategy formation for the Rural Marketing.

1. **Segmentation:** The most important factor is the segmentation, as the rural market consists of different groups and socio economic class. They have different lifestyles, Cultures, Economy, and Demography backgrounds. So the company should think of this and make the segmentation in a perfect manner. Depending upon the product and business the company should keep some parameters to make the segmentation. The parameters should be selected in such a way that it affects the demand of the product.
2. **Lifestyle Analysis:** The people will be from different cultures and demographic background. So they will be having different lifestyles and needs. Depending upon their way of thinking and Lifestyle the company needs to understand to think of their product. The lifestyle of the consumer makes an impact on the demand of the product. So by this analysis the company can draw their strategies to market the product.
3. **Defining Needs:** The main theme of the company should look for the needs of the consumer. As from the above factors the marketer can be able to identify the needs which are suitable to their lifestyles. After that they should define the exact need of the

customer. In general terms they should define the needs so as to work out on the target market.

**Target Market:** After so many steps of work flow process the company can easily identify that their product is going to match or not that is the way of matching in their marketing Mix / Business Strategy with the rural market. So by doing all this the company can target a market from the segmented market. So by selecting a segment they can target the group properly and efficiently with their strategies and Marketing Mix.

**Marketing Mix:** Marketing mix of the company is the main component to reach the customers. As there is a heterogeneous lifestyles and geographically diverted market so the company should design or modify the mix depending upon the customer needs. There should be a proper work out of 4A's of Marketing Mix. From the above steps company can easily identify and can design their marketing mix to reach the market.

**Implementation:** Most of the companies feel that implementation is the major problem in rural market, due the factors influences the market. So for implementation the channel players are important. They reach the last mile of rural market. So for the Implementation there should be a full focus from the organization point of view. The planning and working should be in parallel, by which the implementation cannot be a failure.

**Control:** Last but not least, the important factor to think for the model. As there is a huge competition in the market, it will grow in a speedy manner. So there will be a lot of things that companies should always get to update. The R&D should be strong for those areas. There should be a systematic process for the up to date communications, so that they cannot miss the feedback from the customers and work on those things



**Fig2: Showing Village source and needs**

In above diagram it has been shown that within common property resources like a forest farming land, private property resources like own farming land comes then consumption needs then investment produce marketing and production enhancement needs comes.



**Fig3: Village Market needs kernel**

Cane and Bamboo Work Vendors can be spotted selling window screens made of bamboo slats and tied with plain or colored string in designs all over eastern India. These are called chiks. Chikwalas or makers of such screens can be seen in and around the city. Bihar also happens to be an important centre for chairs and stools made of the tall golden-white sarkanda grass, which grows in large abundance in this area.

Basket and Mat Weaving Basket and mat weaving depend solely on what grows locally. Tamil Nadu has bamboo, coconut, date and palm leaves, Rajasthan has reeds, Ladakh has willow, Bihar has the local grass called sikki, and Uttar Pradesh and West Bengal have the sarkanda grass. Villagers often make fodder containers, fish baskets, trinket boxes, modhas (stools), chattais (mats) and grain-threshing trays for themselves while the domestic surplus finds its way to the local haat (weekly village market).

**PRODUCTS MADE OF BAMBOO**



Product Cost	Product Price
Low Price	Depending upon the nature of work
Protects aerial oxidation	Negotiable to all
Erosion	

*Table 1: Showing Product Cost and Price dependability*

**Consumer Behavior:** The purchase decision is evolved overtime and is purely based on rational thinking. There is great stress on value for money. Rural buyers are quality conscious as their urban counterparts but the emphasis is on the functionality was that rural consumption is characterized by collective decision making and it is highly influenced and opinion driven.

While an urban consumer may return for his preferred brand, if it is not available when he goes to buy it, a rural consumer may not. Rural buyers go in for outright purchase rather than any other option. In general, it has been a recognized fact that rural consumers are relatively more brand loyal than their urban counterparts. And here too, the collective

principle works. That is why there are Nirma villages, Wheel villages, Escorts villages and M&M villages. Against this, there are reports that rural people are also exhibiting tendencies of disloyalty.

**Product Strategy:** Product with functional value not frills. It is what the rural consumer prefers to buy. Moderate quality, small unit packing succeed in penetrating the rural markets.

**Price Strategy:** Rural consumer, like the low and middle income urban counter parts are price sensitive. They prefer to buy low priced large packs of popular products of low prices small unit packs of premium products.



Target audience		
Demographic	Geographic	Psychographic
Upper Class	Language	Ethos
Industrialist	Manner	Psychology
	Nature	
	Culture	

*Table 2: Showing depending variables for Target Audience*

### PROBLEMS OF BIHAR

- Migration to the big cities for employment
- Living condition is very poor
- Forest products are not utilized properly
- Farmers do not get cost of crops in season
- There is lack of skilled labour
- Youths are becoming influenced by the extremist who are actively involved in naxal activities. Getting support from govt line department/ commercial bank is very difficult.
- Maximum population of this place is socially & economically backward.

---

## **PROMOTIONAL STRATEGY**

MEDIA TOOLS Print Media Posters, Stickers, Handbills, Hoardings, Pamphlets, Graffiti, Handouts Electronic Media Small Video, Cinema, Slides People Based Media Songs & Drama, Street Plays, Road Shows, Folk Media- Puppet shows Mobilization Events Exhibition, Rallies, Human Chains Behaviour Change Communication Flip Charts, Role Play Method Outreach Activities Peer Education, One to One Interaction, Group Discussion

## **POSITIONING**

- ✚ Competitive edge: Unique model of SHG- Bank linkage
- ✚ Everlasting self sufficient nested institutions
- ✚ Influencing policy decisions and advocacy
- ✚ Upcoming model and future leader to be replicated

## **TRANSFORMING NATURAL RESOURCES TO SOCIOECONOMIC DEVELOPMENT OF AREA**

- ➔ No subsidy burden on government
- ➔ No need to maintain diaries, ledgers etc... of developmental activity
- ➔ Minimize chances of corruption in development programmes
- ➔ Develop the states socioeconomic status by techno-commercial activity of – unique bamboo based fiber units and make Bihar self reliant in textile business – second largest contributor of GDP

## **CONCLUSION**

- Professional approach
- ‘Think globally and act locally’
- Diversified products to suit the needs of people
- Building alliances with different players
- Highly output oriented
- Add on services
- Bulk lending in case of collaboration with players like NABARD & SIDBI
- Having different models in the same umbrella
- Make people participation in governance through SHG • Setting goal for each and every member of the group
- Quality control by transparency in functional as well as financial matters

## **BIBLIOGRAPHY**

- i. A.R. Horrocks, M.Miraftab and. Ecotextiles. woodhead Publishing Limited, 2007.



- 
- ii. "About Bamboo." Bamboosa. <http://www.bamboosa.com/checklist.php?PID=20> (accessed April 21, 2010).
  - iii. Akira, Nakamura. Fiber Science and Technology. 2000.
  - iv. At Home Naturally. <http://athomenaturally.com/> (accessed April 06, 2010).
  - v. Australian Government, Department of Health and Ageing. "The Biology of Gossypium hirsutum L. and Gossypium barbadense L.(Cotton)." 2008.
  - vi. "Bamboo - What is it?" Green Earth Bamboo. 2010. [http://www.greenearthbamboo.com/What-Is-Bamboo\\_a/7.htm](http://www.greenearthbamboo.com/What-Is-Bamboo_a/7.htm) (accessed April 17, 2010).
  - vii. "Bamboo fiber advantages." EnjoyBamboo.com. November 17, 2008. <http://www.enjoybamboo.com/News/Bamboo-fiber-has-lots-of-advantages.html> (accessed May 22, 2010).
  - viii. "Bamboo: A Supreme Technology." Baboo-cloz.com. <http://bamboo-cloz.com/HistoryofBamboo.aspx> (accessed May 16, 2010).
  - ix. "Bamboo-is it organic?" Green Earth Bamboo. 2010. [http://www.greenearthbamboo.com/Bamboo-Is-Organic\\_a/136.htm](http://www.greenearthbamboo.com/Bamboo-Is-Organic_a/136.htm) (accessed April 21, 2010).
  - x. Bamboo-is it really hypoallergenic? 2010. [http://www.greenearthbamboo.com/Bamboo-Hypoallergenic\\_a/139.htm](http://www.greenearthbamboo.com/Bamboo-Hypoallergenic_a/139.htm) (accessed May 10, 2010).
  - xi. "Bamboo-why is it sustainable." Green Earth Bamboo. 2010. [http://www.greenearthbamboo.com/Bamboo-Is-Sustainable\\_a/135.htm](http://www.greenearthbamboo.com/Bamboo-Is-Sustainable_a/135.htm) (accessed April 21, 2010).
  - xii. Bambro Tex. "Technical Guidance Documents." bamboo-t-shirt. 2003. <http://bamboo-t-shirt.com/bambrotextech.pdf> (accessed May 11, 2010).
  - xiii. Bergman AB. <http://www.bergmanrivera.com/company.php> (accessed May 26, 2010).
  - xiv. Bergman, Stephen, interview by Muhammad Adnan Muhammad Imran. (May 27, 2010).
  - xv. COM4TH.com. About Bamboo. <http://bamboo-t-shirt.com/bambooFibers.html> (accessed May 08, 2010).
  - xvi. "Department for Environment, Food and Rural Affairs." March 2008. <http://www.defra.gov.uk/environment/business/products/roadmaps/clothing/documents/clothing-briefing-Dec07.pdf> (accessed May 21, 2010).
  - xvii. Ebbersten, Bengt Bodin and Sten. A Sustainable Baltic Region. Uppsala: Baltic University Programme, 1997.
  - xviii. FiBL. "Organic Cotton Crop Guide." fibl.org. <http://www.fibl.org/fileadmin/documents/en/development-cooperation/production-systems/cotton-guide-large.pdf>.
  - xix. Fletcher, Kate. Sustainable Fashion & Textiles. London: Earthscan, 2008.

- 
- xx. Green Cotton. "Is Tencel an Environmentally Friendly Alternative to Bamboo fabric?" May 09, 2008. <http://greencotton.wordpress.com/category/bamboo/> (accessed May 22, 2010).
- xxi. Hochswender, Woody. "The Green Movement in the Fashion World." nytimes. March 25, 1990. <http://www.nytimes.com/1990/03/25/us/the-green-movement-in-the-fashion-world.html?pagewanted=1> (accessed April 05, 2010).
- xxii. Holme, Lan. "Biofibres by Eco-Friendly Technology." Impact, 2009: 14-15.
- xxiii. International Cotton Advisory Committee. "Organic Cotton Production." March 1993. [http://www.icac.org/cotton\\_info/tis/organic\\_cotton/documents/1993/e\\_march.pdf](http://www.icac.org/cotton_info/tis/organic_cotton/documents/1993/e_march.pdf) (accessed April 20, 2010).
- xxiv. Irwin, Stacey. "Mother of Bamboo." Green Earth News. May 07, 2010. <http://blog.greenearthbamboo.com/20100507/bamboo-sustainability/mother-of-bamboo-women-using-bamboo-to-escape-poverty-in-tanzania/> (accessed May 15, 2010).
- xxv. Khatri, Zeeshan. "Environmental Friendly Textiles." Knol. 2008. <http://knol.google.com/k/environmental-friendly-textiles-a-road-to-sustainability#> (accessed April 06, 2010).
- xxvi. Manning, Johneen. "Bamboo Eco-Fashion." Suite101.com. April 12, 2008. [http://womensfashion.suite101.com/article.cfm/bamboo\\_eco\\_fashion](http://womensfashion.suite101.com/article.cfm/bamboo_eco_fashion) (accessed May 20, 2010).
- xxvii. Mantford, Christopher. "Bio-degradable Fibers Preserves Environment Around Us." ezinearticles. <http://ezinearticles.com/?Bio-degradable-Fibers-Preserves-Environment-Around-Us&id=380319> (accessed April 05, 2010).
- xxviii. National Agricultural Statistics Service. USDA. <http://www.nass.usda.gov/> (accessed May 14, 2010).
- xxix. National Sustainable Agriculture Information Service. Organic Cotton Production. <http://attra.ncat.org/attra-pub/cotton.html> (accessed May 12, 2010).
- xxx. "Organic Cotton - A Little History." <http://athomenaturally.com/shop/pdf/AHNOrganicCotton.pdf> (accessed May 16, 2010).
- xxxi. Organic Cotton. Agronomic Practices. <http://www.organiccotton.org/oc/Organic-cotton/Agronomic-practice/Agronomic-practice.php> (accessed April 15, 2010).
- xxxii. Organic Exchange. "Annual Report." 2007.
- xxxiii. Organic Exchange. "Annual Report." 2008.
- xxxiv. Organic Exchange. "Organic Cotton Market Report." 2007.
- xxxv. Organic exchange. "Organic cotton: Your Healthier choice." [http://greencotton.wordpress.com/category/bamboo/http://organicexchange.org/oecms/images/stories/documents/healthy\\_primer.pdf](http://greencotton.wordpress.com/category/bamboo/http://organicexchange.org/oecms/images/stories/documents/healthy_primer.pdf) (accessed May 17, 2010).
-

- 
- xxxvi. Patagonia. Organic Cotton.  
[http://www.patagonia.com/web/us/patagonia.go?slc=en\\_US&sct=US&assetid=2077](http://www.patagonia.com/web/us/patagonia.go?slc=en_US&sct=US&assetid=2077)  
(accessed April 10, 2010).
- xxxvii. Prakash, Nellyat. "Industrial growth and environmental degradation." PhD Thesis,  
Tiruppur, India.
- xxxviii. R.S.Blackburn. Biodegradable and Sustainable Fibres. 2005.
- xxxix. Sanfilippo, Damien. My Sustainable T-Shirt. 2007.
- xl. Sarah U. Wisseman, Wendell S. Williams. Ancient Technologies and Archaeological  
Materials. 2004.
- xli. Scrimshaw, John. "Lean and Green." IMPACT, 2009: 2.
- xlii. Stolton, Dorothy Myers and Sue. Organic Cotton From Field To Final Product.  
Intermediate Technology Publications, 1999.
- xliii. SwicoFIL. <http://www.swicofil.com/products/015bamboo.html> (accessed April 30,  
2010).
- xliv. Tobler-Rohr, Marion Irene. "Sustainable Textile Production for the Value Added  
Chain." <http://www.emsc.ch/Deutsch/pdf/SustainableTextileProductionContent.pdf>  
(accessed April 15, 2010).
- xlv. "Use of Bamboo." Bamboo Machines and Processing. October 08, 2008.  
<http://bamboohelp.blogspot.com/> (accessed May 10, 2010).
- xlvi. What does sustainability of textiles mean?  
[http://wiki.answers.com/Q/What\\_does\\_sustainability\\_of\\_textiles\\_mean](http://wiki.answers.com/Q/What_does_sustainability_of_textiles_mean) (accessed  
April 10, 2010).
- xlvii. "Viscose from Bamboo Fabric Trends." Green Earth Bamboo. 2010.  
<http://www.greenearthbamboo.com/Eco-Fabric-Trends-Organic-Fashion-s/228.htm>  
(accessed May 09, 2010).
- xlviii. World Commission on Environment and Development . "Towards Sustainable  
Development." UN Documents.