



Consumer Acceptance of Household Articles Developed through Recycled Agro textiles

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ABSTRACT

The textile technology has widened its purpose of safeguarding the agricultural products by offering various textile materials that find application in various areas like agriculture, horticulture, fishery, etc. Agro textiles are the textile materials used to protect, gather and store agro products. Govind Ballabh Pant University of Agriculture and Technology has different farms where a variety of crops are grown for research, instructional and commercial purposes. These agricultural farms utilized a variety of agro textile materials to enhance the productivity of agro products. The major problem arose when the agro textile materials add up to the solid waste production after their intended use. Hence, the present study was an attempt to explore the application of used agro textile materials in household value added products using the approach of sustainability through reuse, reduce and recycling of used materials. The used textile materials were collected from various agricultural farms. Four value added products were developed by the used materials collected from the farms namely, hanging basket, lampshade, coaster and wind chime. The purpose of the study was to assess the consumer acceptability of the developed products among the rural people. The products focused in awareness generation regarding the product development from waste materials through the aspects of sustainability and were greatly accepted by the people.

Key Words: Agro textiles, Product development, Recycling, Sustainability.

INTRODUCTION

The class of textiles used in the agriculture sector is referred to as agro textiles. The development in textiles and their industrial usage has led to the growth and development of agro textiles. The era of modernization and technological advancement has greatly affected the agriculture and helped in expansion of its horizons. Agro textiles serves as a boost to the productivity in the textile sector (Anonymous, 2017).

The agro textiles prevent the soil from drying and help in increasing the yield. These improve the quality of the agricultural produce and help the farmers to minimize the use of harmful pesticides. About 40 per cent energy can be saved by the usage of greenhouses. The agro textiles find their use in products like sunscreen, bird protection net, root ball net, wind shield, insect protection meshes,

monofil net, harvesting net, cold and frost control fabric, turf protection net, fishing and aquaculture net, agro bags, erosion control blankets, mulch blankets, basket liners, bio-rolls, roof green mats and grow sticks (Subramaniam *et al*, 2009). The vast use of agro textiles in agriculture also demands the proper disposal of waste generated after its end use. Thus, the concept of environmental goods and services should be taken into consideration by reusing the textile products of daily utility like jute and polyethylene. Recycling and reusing of textiles is regarded to bring huge ecological and financial advantages. The agricultural wastes can be used extensively in textile product development which will eventually lead to increased income generation of the people and will be able to provide more employment opportunities. The waste can be reutilized through product development. The

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product should be able to form a liaison between the customer and the organization and should strengthen their bond (Annacchino and Heinemann, 2003). The value addition refers to a product that helps to increase the value of the product in the market and provide monetary gains. It also helps to increase the profit margin involved in development of the product (Chait, 2017). Siddiqui (2012) suggested that green fashion products can be developed using the principles of sustainability. The waste textile and other waste materials were used for development of green fashion products. The textile related waste was recycled to develop the products having high market demands.

Thus, the present study was planned to use the agro textile waste of the university farms for development of value-added products. The main objective of the study was to assess the acceptance of the developed recycled products among the customers.

MATERIALS AND METHODS

Procurement of used textiles from the agricultural farms

The available used textiles were collected from the university farms, Pantnagar to plan the development of value-added products by using them. The various types of textile materials were collected from the farms like storage bags (biaxially oriented polypropylene bags, jute and cotton bags, leno and polyethylene bags), nets (shade net, drag net, fry net and cast net), sheets like polycarbonate sheet, mulch sheet, cloth and polyvinyl chloride tarpaulin, ropes (nylon and jute rope) and other miscellaneous textile materials like bird reflective tapes, plastic pipe, rubber gloves and hatching cloth.

Product Planning

The value-added household products were planned like, hanging basket, wind chime, lampshade and coasters for recycling and reuse of the used textiles available in the agricultural farms. The products were useful in the daily household

chores and would decrease the expenditure incurred in purchasing similar products from the market.

Cleaning of procured textile materials

The collected textile materials from the university research farms were used materials thus they needed cleaning. The woven textile materials like jute and muslin were machine washed. The non-woven textile materials like shade net, polycarbonate sheet, polyethylene bag, mulch sheet, bird reflective tape, polyethylene sacks and biaxially oriented polypropylene bags were wiped clean by the dampened cloth. This process helped to enhance the suitability of textile materials for the planned products.

Product preparation

The products were developed manually from the used textile materials procured from the university farms. The common processes used in making the products involved stitching, pasting and material shaping. Finally, the prepared products were brushed to get finished effect.

Cost calculation and assessment of prepared products

The cost of the prepared products was calculated by adding up the expenses involved in manufacturing the product. The expenses involved the manufacturing cost and cost of materials used in product development used for value addition.

The developed products were assessed on the five- point rating scale by thirty respondents (from the selected villages) based on six parameters and weighted mean score (WMS). The parameters on which consumer acceptability of the products was assessed included parameters like aesthetic appeal, design innovation, product utility, quality and craftsmanship, suitability of cost and training required in product development.

Selection of respondents

The respondents were randomly selected from village Gehna, Block Ramgarh and village Gethia, District Bhimtal.

Consumer Acceptance of Household Articles

RESULTS AND DISCUSSION

The products developed from the used textile materials collected from the agricultural research farms are given in Figures 1-4



Cost calculation of the developed products from the used textile materials

The raw material charges and production charges of each product were calculated and final cost calculation of products was done. The estimated cost for hanging basket, wind chime, lampshade, coasters and doormat was calculated as Rs. 121/-, Rs. 132/-, Rs. 168/-, Rs. 22/- and Rs. 90/-, respectively. Thus, the lampshade had highest cost as compared to other developed products while coasters had lowest calculated cost. The high cost of lampshade and hanging basket was due to the cost of electric and metallic wires respectively used in it.

The weighted mean score was highest for lampshade and coaster on the aspect of aesthetic appeal (4.46) while weighted mean score was highest for wind chime and coaster on the aspects like design innovation (4.4), hanging basket and coaster on product utility (4.06) and lampshade on quality and craftsmanship (4.33) (Table 1).

The weighted mean score was highest for coaster for aspects like suitability of cost (3.93). The majority of respondents also stated that they needed training in product development from waste or used materials. The products were compared for different parameters on the basis of their average WMS obtained for different criteria of each product. Fig 5 compares the average weighted mean scores obtained by each of the developed product. It is clear from the figure that lamp shade and coaster was widely accepted by the respondents while hanging basket had comparatively less acceptability. The possible reason for high acceptability of lampshade and coaster can be the use utility of product and less cost of products as compared to market price.

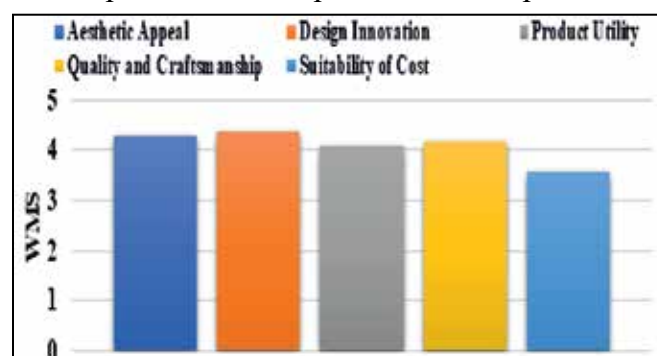


Fig. 5: Comparison between different products on the basis of their average WMS obtained in different parameters

All the products developed from waste agro textiles were highly acceptable as utility articles with design innovation. It was apparent from the Fig. 6 that the design innovation parameter obtained highest average weighted mean score while the suitability of cost obtained least average weighted mean score.

The possible reason stated for high acceptability was that the products developed were innovative and aesthetically appealing but the cost of the products were considered high. The products were developed from used textile materials which made the respondents believe the cost of the products to be comparatively high. The figure clearly shows that the products developed from used textile materials procured from the agricultural research farms had

Table 1. Weighted mean scores on different parameters for products developed from used textile materials.

Product Name	Weighted mean score of different parameters					
	Aesthetic Appeal	Design Innovation	Product Utility	Quality and Craftsmanship	Suitability of Cost	Overall WMS
Hanging Basket	4.13	4.2	4.06	4.03	3.23	3.93
Wind Chime	4.1	4.4	3.96	4.1	3.46	4
Lampshade	4.46	4.5	4.3	4.33	3.76	4.27
Coaster	4.46	4.4	4.06	4.2	3.93	4.21
Overall WMS	4.28	4.37	4.09	4.16	3.59	

good acceptability among the respondents. They would prefer to buy the products when available in the market as the WMS value for most parameters was above 2.5 *i.e.*, more than half of highest WMS of 5 rating.

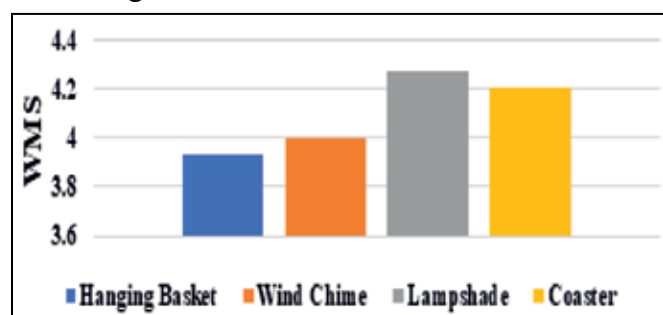


Fig.6: Comparison between different parameters assessed for products on the basis of their obtained average WMS

CONCLUSION

The used, defective and damaged textile materials were collected from the university research farms. These materials collected were reused or recycled for development for the household utility items like lampshade, doormat, wind chime and coasters. The developed products were assessed for their consumer acceptability among the rural people of selected villages. The products were acceptable

among the respondents. The products grabbed the attention of respondents due to the aspects of sustainability and design innovation. Further, it also carves a path to generate a source of income and supports empowerment. Also, it would be useful to develop products from the agro textile materials which will surely cut down the amount of textile material supposed to be disposed off.

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