



Science

DEVELOPMENT OF VALUE ADDED PRODUCTS FROM SHODDY YARN

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ABSTRACT

This study was undertaken for development of value added products from shoddy yarn (Recycled yarn). For the study, shoddy yarns were collected from Ludhiana and Amritsar districts of Punjab for preparing the fabric. Two count of shoddy yarn i.e. 10Nm and 12Nm were selected for the product development. Twenty four prototype samples were designed, from which six most preferred design was obtained for development of value added product from developed fabric then consumer acceptability were assessed and found that majority of the respondents preferred the developed products.

Keywords:

worsted fibre, shoddy yarn, recycling, waste, designing, textile products.

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1. INTRODUCTION

Indian textile industry is not only the oldest industry in the country but also one of the major industries providing employment and fetching foreign exchange for the country. It caters to the most essential consumer needs such as draperies, carpets, rugs and other textile products. While the textile industry has a long history of being thrifty with its resources, a large proportion of unnecessary waste is still produced each year [1].

One of the biggest problems in the globe is management of solid waste. The concept of "green chemistry" and sustainability has been discussed from various ages in many manufacturing processing industries. Recycling of thermoplastic has therefore become a subject of vital importance, keeping in the view of long term environmental effect of waste disposal. The current concern regarding the disposal of industrial and post- consumer waste in diminishing landfill sites have focused attention on developing effective reclamation and recycling process. Recycling is the most feasible approach to reduce the solid waste. It is the reprocessing of materials into new products. Recycling prevents useful material resources being wasted, reuse of

the wasted polymer hence reduces the consumption of raw materials and reduces energy usage, and hence greenhouse gas emissions, compared to virgin production. Recycling is a key concept of modern waste management [2].

Textile recycling is gaining widespread popularity as clothing and fabric generally consist of composites of biodegradable natural fibres and un-biodegradable synthetic plastics which can be easily recycled. Recycling provides both environmental economic benefits by lowering the need for landfill space and helps reduce the use of modest resources, pollution and energy consumption. Taiwan and Japan have been working closely for manufacturing of recycled fabrics as Libolon Co Ltd; Taiwan has launched RePET and Ecoya yarn made from recycled polyester PET bottles. Patagonia, the US, has also successfully built a recycling system of polyester fabrics and aims to produce recycled apparel by 2010. The company has recycled more than 6,000 Kg of garments and has conducted an analysis of the common threads process to calculate the energy and carbon dioxide emission for recycled garments. Global Recycle Standard has also been launched in 2008 which works on the principle of traceability, environmental management and social responsibility [3].

Interest in recycling is a result of many factors including green consumerism, rising waste disposal problems and raw material costs, legislative mandates and the evolution of waste into a smoothly running commodity industry. Several industries have been involved in recycling programmes and have successfully created products from recycled fibres such as carpets, cushions, clean up products, home insulations, fibre stuffing clean-up products, mattress, pads, geo-textiles, landscaping and concrete reinforcement [4].

These days the 'rag and bone' men are textile reclamation businesses, which collect textiles for reuse (often abroad), and send material to the 'wiping' and 'flocking' industry and fibres to be reclaimed to make new garments. Textiles made from both natural and man-made fibres can be recycled. It is estimated that more than one million tons of textiles are thrown away every year, with most of this coming from household sources. Textiles make up about three per cent by weight of a household bin. At least 50 per cent of the textiles we throw away are recyclable, however, the proportion of textile wastes reused or recycled annually in the US is only around 20 per cent. Although the majority of textile waste originates from household sources. Waste textiles also arise during yarn and fabric manufacture, garment-making processes and from the retail industry [5].

The method of reprocessing the used clothing, fibrous material and clothing scraps from the manufacturing processes has already been adopted by the shoddy units. Recycled wool has been re-used in industrial processes for a long time. Old clothing, rags, tailor's clippings of all kinds and waste from wool manufacturing are all important sources, for obtaining fibrous raw materials by these units; which is variously called salvaged, reclaimed or remanufactured but it is best known in the textile industry as shoddy [6].

Shoddy is a term used for the category of recycling that "opens" textile waste and used clothing and returns them to fibrous form. Uses for shoddy include stuffing, automotive components and carpet underlays, building materials such as insulation and roofing felt, and low-end blankets [7]. Shoddy consists of rags and shreds of stockings, flannels, and other soft worsted fabrics torn and

reduced to such fragments of the original fibre as can be made by the operation. High quality fibres can be produced from discarded fabrics if they contain good quality unfelted fibres that have not been severely treated. A good quality of reused wool when woven into a fabric has greater resistance to abrasion than an inferior quality of “wool” fabric produced from fibres that are not only irregular and weak but also lack protecting scales. Re-used wool is often blended with new wool before being re-spun [8].

Most reprocessed fibres are produced by the woollen mills themselves, whereas a large percentage of the reused wools are bought by shoddy manufacturers who may operate independent enterprise for producing woven blankets and carpets [9].

2. MATERIAL METHODS

COLLECTION OF MOTIFS

Study was conducted in Punjab Agricultural University, Ludhiana. Shoddy yarns were collected from Ludhiana and Amritsar district of Punjab for preparing fabric from yarn. Motifs were selected through secondary sources such as internet, encyclopedia, books and magazines in the library.

DEVELOPMENT OF PRODUCTS

On the basis of preferences various designs and colour combinations of textile products were used. The six most preferred designs were used for preparing value added products namely cushion cover, tablemat, carry bag, wall hanging, stole and muffler.

EVALUATION OF PRODUCTS

An inventory was prepared to record the views of the consumers/respondents. The respondents were asked to give their preferences regarding innovativeness, texture, colour combination and overall appeal prepared textile products. The cost effectiveness of the textile products was studied by asking the respondents to give selling price for each article. Sixty women consumers were randomly selected between the age of 25-35 years to collect the information regarding their acceptance for developed textile products.

3. RESULT AND DISCUSSION

Personal profile of the respondents (Table 1)

The data in Table 1 indicated that the maximum respondents, i.e. 73.3 per cent were in the age group of 25-30 years. Majority of the respondents were post graduate and were having family income of ₹35,000-45,000.

Table1: Distribution of the respondents according to their socio-personal traits
 (n=60)

Socio-personal traits	Respondents	
	Frequency	%
Age group (years)		
25-30	44	73.3
30-35	16	26.7
Educational qualification		
Graduate	15	25
Post-graduate	45	75
Family's income (₹)		
15,000-25,000	15	25
25,000-35,000	16	26.7
35,000-45,000	26	43.3
45,000-above	03	5

Preferences of the respondents for prepared articles

Data in **Fig 1** revealed that majority of the respondents preferred cushion cover (WMS- 4.9) for its innovativeness. Stole (WMS- 3.7), wall hanging (WMS-3.4), carry bag (WMS-3.3) and muffler (WMS-2.7) were obtained second, third, fourth and fifth ranks respectively for their innovativeness.

Regarding preferences of the respondents for colour combination of the prepared articles, it was found that majority of the respondents preferred cushion cover with weighted mean score 5.1 (**Fig 2**). Preferences of the respondents for the prepared articles on the basis of texture have been presented in (**Table 2**). Majority of the respondents considered cushion cover as the ‘best’ with respect to their texture, got first rank.

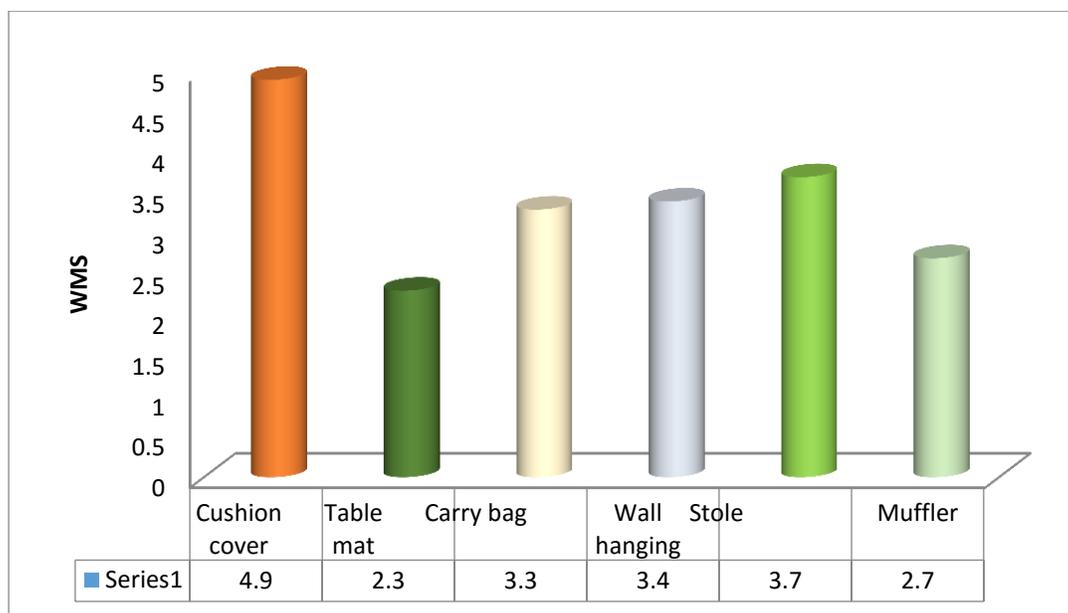


Figure 1: Preferences of the respondents regarding innovativeness

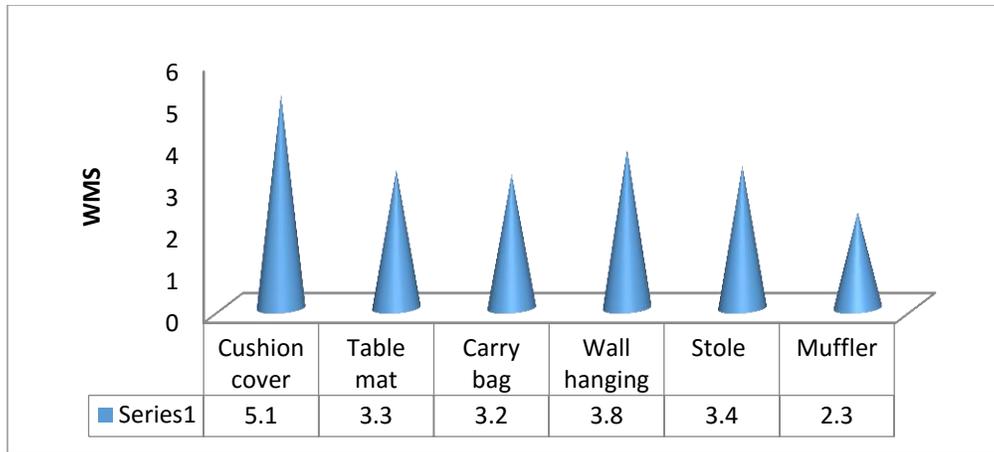


Figure 2: Preferences of the respondents regarding colour combination

Table 2: Preferences of the respondents for texture of the prepared articles

Name of the Articles	Weighted Mean Score	Rank
Cushion cover	4.4	I
Table mat	3.9	III
Carry bag	4.1	II
Wall hanging	2.6	VI
Stole	3.2	IV
Muffler	2.8	V

Assessment of consumer acceptability for the developed products

The results of the percentage profit margin of each article as reported by the consumers have been furnished in Fig 3.

Profit margin on carry bag was found to be highest, i.e. 50 per cent followed by 33.3 per cent and 30 per cent profit in case of muffler and tablemat respectively.

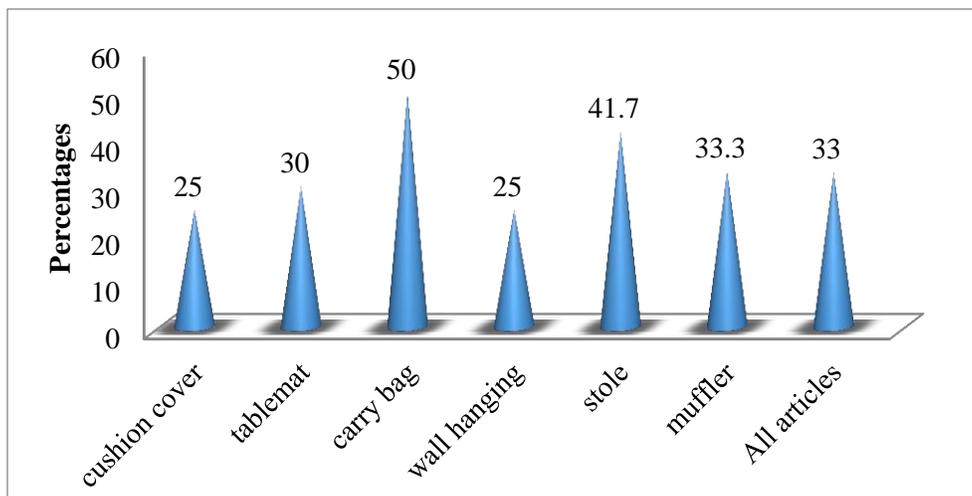


Figure 3: Assessment of the profit margins of the prepared articles

Suitability of quoted price of the products

Majority of the respondents (57%) found the quoted selling prices of the prepared articles as ‘adequate’ (Table 3). Besides, 25 per cent of respondents found the quoted prices as ‘low’ and only 18 per cent of respondents was found price of the articles as ‘high’. When these articles would be manufactured commercially, then the cost of production will reduce and profit margins will increase.

Table 4: Opinion of the respondents regarding suitability of quoted price

(n=60)

Name of the Articles	Quoted price (₹)	f	f	f
		High	Adequate	Low
Cushion cover	200	7 (11.7)	41 (68.3)	12 (20)
Table mat	150	8 (13)	34 (57)	18 (30)
Carry bag	250	7 (11.7)	38 (63)	15 (25)
Wall hanging	800	15 (25)	27 (45)	18 (30)
Stole	600	15 (25)	30 (50)	15 (25)
Muffler	300	10 (16.7)	36 (60)	14 (23.3)

Figure in parentheses indicate percentages, f= frequency



Cushion cover



Table mat



Carry bag



Wall hanging



Stole



Muffler

Figure 4: Developed articles

4. CONCLUSION

The entire developed products are preferred by the immediate consumers. Thus cushion cover was liked by most of the respondents for its colour combination, texture and innovativeness. Quoted price of prepared articles made from shoddy yarn was found to be adequate with a profit margin ranging from 25 to 50 per cent. Most of the developed products were found to be acceptable by consumers. Shoddy yarn was found to be economically utilized and has potential use for developing different textile products.

5. REFERENCES

- [1] Sakhivel S M, Ramachandran T, Chandhanu R, Gowthami R, Padmapriya J and Vadivel P (2012) Development of technical textiles for automotive applications using reclaimed fibres. *J Man Made Tex In Ind*, 6:201-13.
- [2] Aggrawal Y and Jaiswal H (2011) Green eco-Friendly polyester. <http://www.fibre2fashion.com>.
- [3] Phong M (2009) Recycling fabrics gaining popularity. *World Tex* 41:576 (Abstr).
- [4] Chang Y, Chen H and Francis S (1999) Market application for recycled post consumer fabrics. *J Res Fam Con Sci* 27:320-37.
- [5] Anonymous (2010) Textile recycling. <http://www.fibre2fashion.com>.
- [6] Corbman P S (1985) *The Textiles Fiber to Fabric*. Publication Mc Graw-Hill, Inc.
- [7] Hawley J M (2006) Digging for diamonds: A conceptual framework for understanding reclaimed textile products. *Clothing and Tex Res J* 24: 262-75.
- [8] Hess P K (1954) *Textile Fibers and Their Use*. p 186, Publication United States, America.
- [9] Mauersherger H R (1954) *Textile Fibers*. Pp.667-71, New York publication.