Development of digital printed household linen inspired from art and craft of Gujarat

■ S. BHUDHIRAJA, D. KAUR AND V. GANDOTRA

■ **ABSTRACT :** The investigation entitled "Development of digital printed household linen inspired from art and craft of Gujarat" was carried out in Ludhiana city. Large number of motifs were considered from secondary sources such as books, research articles and internet from which twenty motifs were documented. By showing these motifs to the panel of twenty judges of College of Home Science, Punjab Agricultural University, Ludhiana, the six most preferred motifs were selected. Twelve designs were developed in two colour combinations and different placements in Corel Draw 13 were developed by using six selected motifs used for the development of final six digital printed household linen. Thus, these designs were then shown to twenty panel of judges for final selection of the six most preferred designs, their colour combinations and placements. An inventory was employed to study the preference of ninety respondents between the age group of 30-40 years, selected randomly from three localities of Ludhiana city. The results of the study revealed that majority of the respondents were between the age group of 30-35 and were graduate, belonging to nuclear families and had monthly family income ranging between Rs. 71,000-1,00,000. 58.89 per cent of the respondents were aware of art and craft of Gujarat. Majority of the respondents, *i.e.* 57.78 per cent were aware of digital printing techniques. Whereas 93.33 per cent were interested in purchasing digital printed household linen. Appearance was the most affecting factor for purchase of the developed digital printed household linen and colour combination was the most important attribute considered by the respondents regarding purchase of the developed digital printed household linen.

■ **KEY WORDS:** Digital printed, Art, Craft, Inherent good taste, CAD

See end of the paper for authors' affiliations

D. KAUR
Department of Apparel and Textile Science, College of Home Science, Punjab Agricultural University, LUDHIANA (PUNJAB) INDIA
Email : devinderct@pau.edu

Gujarat is one of the most vibrant states of India. This is due to the fact that it has a rich culture. The people of the state still follow the ancient practices of art and craft with great zeal. Gujarat arts and crafts are famous worldwide. They were originally made for daily use purpose in homes, but with time, the stature of the crafts grew, converting it into a full-fledged industry. Skilled artisans, inherent good taste, creativity and economical use of the resources contributed to the growth of the art and craft (Anonymous, 2010).

In present scenario of changing life style, creating designs with assistance of CAD has not only widened the boundaries of designing but also one can create any number of designs and save them in the library to use as and when required. CAD systems are more advantageous with respect to speed, pattern creation, editing, repeating, flexibility, variety and cost. Computers have already been put to use in the textile industry for accounting, production and management of information system etc. for some years.

Now the researchers have been working on the development of computer based design system as well as micro-processer based machines. Chatterjee *et al.* (1992) reported that the micro-processor based machines improve reliability and accuracy of operation, producing better quality yarn/fabric and minimizing labour/material wastage.

When compared to traditional rotary- and flatbed silk-screen methods, digital textile printing has more eco-awareness. Bowles and Isaac (2009) estimated that digital printers only consume fifty per cent less energy than traditional rotary screen printing machines. There is also less wastage of materials as less dye or pigment is used in laying down the image than in established industrial methods, and there are no screens to wash because water is saved a lot.

Many studies on the Gujarat art and craft have been conducted. But, no investigation has been carried out on the combination of traditional art and craft motifs of Gujarat with digital printing. The blending of traditional art and craft of Gujarat with digital printing for household linen is likely to have broader scope for both domestic and export market, so the study is planned to develop digital printed household linen inspired from art and craft of Gujarat.

Objectives :
– To document the art and craft motifs of Gujarat suitable to develop designs for household linen.
– To develop the selected household linen through the most preferred motifs, designs, colour combinations and placement through digital printing.
– To study preference regarding motifs, designs, colour combinations and placement for the development of selected household linen.

■ **RESEARCH METHODS**
The present study was undertaken to develop the

digital printed household linen inspired from art and craft of Gujarat. The investigation was conducted in Ludhiana city. Large number of motifs were considered from secondary sources such as books, research articles and internet from which twenty motifs were documented. By showing these motifs to the panel of twenty judges of College of Home Science, Punjab Agricultural University, Ludhiana, the six most preferred motifs were selected. Twelve designs were developed in two colour combinations and different placements in Corel Draw 13 were shown to twenty panel of judges for final selection of the six most preferred designs, their colour combinations and placements.

An inventory was prepared for studying the preference of the respondents regarding surface embellishments material, factors affecting and attributes considered by them regarding the purchase of digital printed household linen were also explained. On the basis of preference taken from respondents, digital printed household linen were prepared. The data collected through inventory for research study was coded, tabulated and analysed.

■ **RESEARCH FINDINGS AND DISCUSSION**
The results of the study have been discussed under following categories.

Identification, documentation and selection of motifs inspired from traditional art and craft of Gujarat:
The results pertaining to the preference of the panel of judges regarding motifs inspired from art and craft of Gujarat were selected from secondary sources have been furnished in Table 1. Data revealed that out of twenty collected motifs (Plate 1-20), six the most preferred motifs (Plate 21-26) were selected for further research outcomes. The *Abhla bharat*, with a weighted mean score 9.3, was the most preferred motif and hence was given the first rank. Depiction of *garba*, *Padma* (lotus), *Patola* patterns, *Sathiya* (*rangoli*), *Ajrakh* printing were assigned the weighted mean score of 5.35, 4.05, 3.8, 3.75, 3.3 and were given second, third, fourth, fifth and sixth ranks, respectively.

It was found that *Abhla bharat* was the most preferred among all the motifs followed by depiction of *garba*, *Padma* (lotus)*, Patola* patterns and *Sathiya* (*rangoli*) whereas *Ajrakh* printing was the least preferred motif by the respondents.

Table 1 : Preference of judges for various traditional motifs of Gujarat		(n=20)
Motifs	Weighted mean scores	Ranks
Moti bharat (bead work)	2.3	-
Pichwai	0.85	-
Depiction of *garba*	5.35	II
Padma (lotus)	4.05	III
Patola patterns	3.8	IV
Paan bhat (leaf pattern)	2.55	-
Pithora	3.25	-
Lippan work	2.75	-
Sadeli craft	2.6	-
Aari bharat	2.55	-
Chhabdi bhat (basket design)	2.7	-
Sathiya (*rangoli*)	3.75	V
Ajrakh printing	3.3	VI
Abhla bharat	9.3	I
Navaratna bhat (nine-gem pendant design)	1.7	-
Toran (kathi work))	1.9	-
Applique work	2.55	-
Mata ni pachedi (ritual painting of Gujarat)	3.05	-
Popat (Folk design of Gujarat)	2	-
Resist printing	2.65	-

Selection of developed designs, their colour combinations and placements for the development of digital printing :

The preference of respondents regarding the development of designs with selected motifs, their colour combinations and placements with base colour and motif colour have been furnished in Table 2. After the selection of six the most preferred motifs, each design was prepared with two different colour combinations for the development of twelve designs (Plate 27- 38). These designs were then shown to a panel of judges for the final selection. Two designs of each household linen were prepared. It was found that curtain (A_1) (Plate 27) from the two designs, their colour combinations and placements with weighted mean score of 1.55 was selected for the product development. Similarly for bed sheet (B_2) (Plate 30) design, its colour combination and placement was selected with weighted mean score of 1.60, for table cloth (C_2) (Plate 32) design, its colour combination and placement with weighted mean score 1.60 was selected, for pillow cover (D_2) (Plate 34) design, colour combination and placement with weighted mean score 1.60 was selected while for runner (E_1) (Plate 35) design, its colour combination and placement with weighted mean score 1.80. Similarly for cushion cover

(F_1) (Plate 37) design, its colour combination and placement with weighted mean score 1.70 was selected for the final development of household linen from digital printing.

Preference of respondents regarding surface embellishments material used along with digital printing :

Data presented in Table 3 indicate that laces, sequins, ribbons, beads and beaded tassels were the most preferred surface embellishments material by the respondents for the development of digital printed household linen. Their weighted mean scores *i.e.* 2.88, 2.78, 2.45, 2.42 and 2.32 were given first, second, third, fourth, fifth rank, respectively. Embroidery threads and glitters were the least preferred surface embellishments material with weighted mean scores of 1.32 and 0.82. Since the Kruskal –Wallis H-test statistically follows χ^2distribution=12.59. The Kruskal –Wallis H-test *i.e.* H=13.79* was found to be significantly different from each other at 5 per cent in all the cases.

A study by Ritamabhara (2004) on "Development of designs for screen printed household articles" also revealed that embellishments used in printed household articles such as laces and beads were the most preferred

by the respondents.

Awareness and preference of respondents regarding the development of digital printed household linen:

Awareness regarding art and craft of Gujarat and printing techniques were studied. Preference of respondents regarding the development of digital printed household linen on the basis of their factors and attributes were also studied.

Factors affecting on purchase of digital printed household linen :

Many economical and socio-cultural factors influence the purchase of digital printed household linen. The data shown in Table 4 revealed that appearance was

the most influenced factor (weighted mean score 2.27) and hence was given the first rank. Price, with a weighted mean score 1.97 was given the second rank and durability was at the third place (weighted mean score 1.77).

Attributes considered regarding purchase of digital printed household linen :

Data regarding the attributes to be considered by the respondents regarding purchase of the digital printed household linen shown in Table 5 reveal that colour combination, was the most important attribute considered by the respondents (weighted mean score 2.5) and hence was given the first rank. Colour fastness, with a weighted mean score 1.9 was given the second rank and overall impact was ranked at the third place with

Table 2 : Preference of judges for designs, their colour combinations and placements of various traditional motifs of Gujarat		(n=20)
Designs	WMS	Ranks
Curtain		
A_1	1.55	I
A_2	1.45	II
Bed sheet		
B_1	1.40	II
B_2	1.60	I
Table cloth		
C_1	1.40	II
C_2	1.60	I
Pillow cover		
D_1	1.40	II
D_2	1.60	I
Runner		
E_1	1.80	I
E_2	1.20	II
Cushion cover		
F_1	1.70	I
F_2	1.30	II

Weighted mean score-WMS

Table 3 : Preference of respondents for surface embellishments material							(n=90)
Embellishments	Order of preference					WMS	Ranks
	I	II	III	IV	V		
Glitters	8 (8.88)	4 (4.44)	1 (1.11)	5 (5.55)	7 (7.77)	0.82	-
Laces	9 (10)	16 (17.78)	18 (20)	26 (28.89)	12 (13.33)	2.88	I
Sequins	16 (17.78)	13 (14.44)	28 (31.11)	11 (12.22)	16 (17.78)	2.78	II
Beaded tassels	19 (21.11)	33 (36.67)	12 (13.33)	17 (18.89)	4 (4.44)	2.32	V
Beads	16 (17.78)	3 (3.33)	5 (5.55)	9 (10)	29 (32.22)	2.42	IV
Embroidery threads	1 (1.11)	4 (4.44)	2 (2.22)	6 (6.66)	16 (17.78)	1.32	-
Ribbons	21 (23.33)	17 (18.89)	24 (26.67)	16 (17.78)	6 (6.67)	2.45	III

Figures in parentheses indicate percentages   Weighted mean score - WMS
Kruskal –Wallis H-test   H=13.79*   *indicates significance of value at P=0.05

weighted mean score 1.6.

Details of the developed of digital printed household linen:

Curtain (A₁) :

Base colour of the curtain (A_1) (Plate 39) was textured lemon yellow while colours used in the motifs were red, orange, light green, pink, black, white, dark green, purple and light purple. Small designs were used in this from motif of *Abhla bharat* (mirror work). Ribbon of two colours were used on the three edges while lace was applied at the bottom and satin was ruched on the top of curtain for its embellishment.

Bed sheet (B₂) :

Bed sheet (B_2) (Plate 40) composed of texture of off white and light purple where as colours used in the motifs were red, grey, yellow and dark green. *Padma* (lotus) motif was used to design the bed sheet with the repetition of motifs in it. Lace was applied at the edges of central part of the bed sheet.

Table cloth (C₂) :

Table cloth (C_2) (Plate 41) in which base was textured with sky blue and lemon while colours used in motifs were purple, red, yellow, dark green, pink, light green, brown and mustard. The motif used to design the table cloth was *Sathiya* (*rangoli*). The lace was applied on edges of inner rectangle ribbon used to finish the edges and beads were used to embellish the motif.

Pillow cover (D₂) :

Base colour used in pillow cover (D_2) (Plate 42) was grey while other colours used in the motifs were yellow, black, dark green, brown, red, white and pink with the repetition of motifs of *patola* pattern. Edges of the pillow cover were finished with lace.

Cushion cover (E₁):

The cushion cover (E_1) (Plate 43) with purple as base colour and orange, light purple, light olive green, beige, brown, black and white colours were used in the motif of depiction of *garba*. Textured border was printed on all the sides of the cushion cover. Beaded tassels on four corners and sequins were used for embellishing the motif.

Runner (F₁):

For runner (F_1) (Plate 44) base colour was textured yellow and white while motifs of *Ajrakh* printing were developed in maroon, white, yellow and black colours. Edges of the runner were finished with lace.

Summary :

The conclusion drawn on the basis of the results of study are:

– The six most preferred motifs namely *Abhla bharat*, Depiction of *garba*, *Padma* (lotus), *Patola* patterns, *Sathiya* (*rangoli*), *Ajrakh* printing were ranked one to six.

– It was elicited that laces, sequins, ribbons, beads and beaded tassels are the most preferred surface embellishments material preferred by the respondents for the development of digital printed household linen. These were given first, second, third, fourth, fifth rank, respectively. Embroidery threads and glitters were the least preferred surface embellishments material.

– Majority of respondents (58.89%) were aware

Table 4 : Factors affecting purchase for the development of digital printed household linen					(n=90)
Factors	Order of preference			WMS	Ranks
	I	II	III		
Price	29 (32.22)	35 (38.89)	26 (28.89)	1.97	II
Appearance	22 (24.44)	22 (24.44)	46 (51.11)	2.27	I
Durability	39 (43.33)	33 (36.67)	18 (20)	1.77	III

Table 5: Attributes considered by the respondents regarding purchase of the development of digital printed household linen					(n=90)
Factors	Order of preference			WMS	Ranks
	I	II	III		
Colour combination	9 (10)	27 (30)	54 (60)	2.5	I
Overall impact	45 (50)	36 (40)	9 (10)	1.6	III
Colour fastness	36 (40)	27 (30)	27 (30)	1.9	II

Figures in parentheses indicate percentages   Weighted mean score - WMS

of Gujarati art and craft while 41.11 per cent were not aware of it.

– Majority of (57.78%) of the respondents showed interest in the practice of printing techniques at home while 42.22 per cent of respondents do not showed their interest.

– It is elicited that 93.33 per cent of the respondents were interested in buying the digital printed household linen while 6.67 per cent were not interested.

– Factors affecting purchase of the developed digital printed household linen were appearance at the first rank, price was at second rank and durability was at the third place.

– Colour combination, was the most important attribute considered by the respondents regarding purchase of the developed digital printed household linen and hence was given the first rank. Colour fastness, with the second rank and overall impact was at the third place.

– Digital printed household linen can be taken up as profitable enterprise when produced commercially.

Authors' affiliations:
S. BHUDHIRAJA AND V. GANDOTRA, Department of Apparel and Textile Science, College of Home Science, Punjab Agricultural University, LUDHIANA (PUNJAB) INDIA

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