Research Journal of Family, Community and Consumer Sciences _____ ISSN 2320 – 902X
Vol. **4(1),** 1-10, January **(2016)** *Res. J. Family, Community and Consumer Sci.*

Digitalization of Motifs Based on Indian folk Paintings through CAD and their Adaptation on Apparels using Digital Printing Technique

Ekta Sharma
Textiles and Apparel Designing, Ethelind School of Home Science, Sam Higginbottom Institute of Agriculture, Technology and Sciences, (Formerly Allahabad Agriculture Institute), (Deemed –to-be-University), Allahabad, Uttar Pradesh, INDIA
groverekta1@gmail.com

Available online at: www.isca.in, www.isca.me
Received 30th July 2015, revised 8th January 2016, accepted 25th January 2016

Abstract

India had always been known as the land that portrayed cultural and traditional vibrancy through its conventional arts and crafts. Every region in India has its own style and folk art which are very exclusive for that particular region and has its own speciality with regards to colours, motifs used that symbolized the rich heritage. Folk art of India has a great demand in the western countries due to its traditional aesthetic sensibility and authenticity. The two most famous folk painting are Warli art of Maharashtra and Madhubani art of Mithila. Traditionally these paintings were done by hand which is time consuming and laborious process, but with technological advancement, these designs can be created directly with the help of CAD and applied on textiles through Digital Printing. It is now possible with CAD and digital printing to go straight from an initial idea to visual representation of fabric showing these designs in combination of colors within minutes. The present study was an attempt to develop fusion designs from these two folk paintings using CAD and adapt them on apparels using digital printing. It will be an effort to reveal the unexplored treasures to the world by introducing the newly developed fusion designs from the Plethora of these arts and to open new avenues for artisans to revolutionize the Fashion world and empower them

Keywords: CAD technology, Fusion Designs, *Madhubani* Painting, *Warli* Painting, Apparels.

Introduction

Idia had always been known as the land that portrayed cultural and traditional vibrancy through its conventional arts and crafts. Every region in India has its own style and folk art which are very exclusive for that particular region and has its own speciality with regards to colours, motifs used that symbolized the rich heritage. Some of the most famous folk paintings of India are *Patachitra* paintings of Orissa, *Nirmal* paintings of Andhra Pradesh, *Mandana* Paintings of Madhya Pradesh and Rajasthan, *Warli* Painting of Maharashtra and *Madhubani* paintings of Bihar etc.

Perhaps the best-known genre of Indian folk paintings is the Mithila (also called Madhubani) paintings from the Mithila region of Bihar state. The Madhubani in literal translation means 'Forest of Honey' (Madhu-honey, Bans-forest or woods) these paintings are basically religious in nature. The paintings are done by women predominantly at home, in anointed areas like the prayer room. Hindu mythology is the main theme. The main figures in Madhubani paintings are adopted from nature and mythology[1].

Similarly *Warli* art is an ancient Indian folk art tradition of painting of a Maharashtrian tribe called *Warli*. These paintings were mainly done by the women folk. The most important aspect of the painting is that it does not depict mythological characters or images of deities, instead they portray social life that includes images of human being and animals along with scenes from daily life that are created in a loose rhythmic pattern. The trademark of *Warli* paintings is the use of geometric designs such as triangles, circles, squares, dots and crooked lines. These are used to depict human figures, animal figures, houses, crops etc[2].

Madhubani and *Warli* paintings, although one of the most intricate art, still governs the entire fashion market. Even today, when the dressing styles and trends are changing continuously, the beauty and charisma of Madhubani and *Warli* art still captures the heart of people. Traditionally these paintings were done by hand which is tedious, time consuming and laborious process. But in due course of time with technological advancement, these designs directly can be created with the help of various softwares like corel draw, Illustrator, photoshop etc. It is now possible with CAD to go straight from an initial idea to visual representation of fabric showing different types of designs and combination of colors. CAD has lead to better quality and flexibility in design development, increasing the efficiency and shortening the time between the design concept and actual marketing[3]. There is no doubt that every effort is to be taken to preserve the traditional crafts. However to popularize these arts and crafts and to get decent income for

craft men, these crafts have to be incorporated in to contemporary scenario especially through textile designing.
The contemporary version of local arts and crafts and fusion of different motifs, designs and other details of two distinct arts could occupy a good place in the field of textile designing due to the changes in fashion trends. Further this can open the avenues for the designers to fulfill the ever changing demands of consumers especially for the ethnic motifs and designs in textile items and products. The fusion designs refer to those designs that are inspired by certain heritage and adapted to fit the customary ensemble of different culture altogether. The fusion designs combine the grace and elegance in a single blend. In other words we can say that fusion designs are the one which can restore the traditional and cultural values of any region, place or country[4].

The present study was an attempt to introduce the fusion designs of traditionally restricted folk paintings, to new textile experimentation, using Computer Aided Designing. It will be an effort to reveal to the world the unexplored treasures, the light of the day, by introducing the newly developed fusion designs from the Plethora of collections of *Madhubani* and *Warli* paintings and to open new avenues to revolutionize them to the 'Design-Fashion' world. The study would be a step forward to the integration of designs and art from two distinct areas into textile world and to preserve these designs by developing a repository, which could be accessed as and when needed.

Methodology

Motifs Used: The motifs used in *Madhubani* and *Warli* Paintings were collected from the available literatures, Paintings and from web for the designing of Apparels.

Development of Fusion designs for apparels: The motifs and designs of *Madhubani* and *Warli* paintings were modified and used for the development of fusion designs. The designing was done through CAD softwares ie. Coral draw and Adobe photoshop. Corel Draw is a comprehensive vector based, also called object –oriented or draw images programme. The vector based images are resolution independent while Photoshop is a raster or paint images programme. The raster images are made of individual dots, called "pixels" that are arranged and coloured differently to form a pattern.

A total of 9 designs, three each for apparels including sarees (Figure-1-3), dress materials (Figure-4-6) and kurties (Figure-7-9) were developed. The fusion designs were developed either by using the entire design or by using the component motifs. The motifs with low resolution were created with the help of "Corel draw" while the high resolution motifs were imported and used directly using "Adobe Photoshop".

Evaluation of the developed designs: The developed designs were evaluated by a panel of 30 judges including staff members, boutiques owners/ shopkeepers, housewives and students for the selection of two most preferred designs in each category of the developed designs to apply them on apparels. The attributes for evaluation were arrangement of motif or designs, colour combinations, appropriateness or suitability of designs for particular product and extent of relation of developed designs to *Madhubani* and *Warli* designs. A five point ranking proforma was used for this purpose. The designs were scored as 1, 2, 3, 4 and 5 corresponding to poor, fair, good, very good and excellent respectively.

Development of products and their cost determination: All the selected designs were applied on apparels using Digital printing technique and cost of each prepared products was calculated on the basis of money spent on raw materials including fashion fabric, lining materials and trimmings used, Digital printing of the fabric, design conversion charges and stitching etc. A total of 25 percent profit margin was added in the calculated cost for getting sale price. The cost of each article was calculated separately. The cost of designing done through computer was not included in the actual cost.

Results and Discussion

The developed designs were evaluated visually for the selection of two most preferred designs for digital printing and the results are reported in Table 1.

Figure-1

Developed Design For Sari I

It was observed from the table-1 that among the developed designs for saries, sari III got highest score (4.77) due to the arrangement of motifs, extent of relation to *madhubani* and *warli* design, followed by sari II. In case of dress materials, design I scored highest marks followed by design II, however among kurties design no. III and I got first and second preference hence these designs were used for the printing of apparels. The prepared articles are shown in Figure-10-12.

Cost of the prepared products: The cost of prepared apparels are shown in Table 2–4. It was observed that the cost of preparing single product in each category were quite high due to the design conversion charges and printing charges but this cost will be reduced if the fabric would have been mass printed digitally. Further the design conversion charges would also be divided in to the total number of the products prepare, thereby could be reduced to negligible.

Table-1
Visual Evaluation scores of developed designs for selection of designs

Design No.	Arrangement of motifs	Appropriateness of design for particular product	Colour combination	Extent of relation to *Madhubani* and *Warli* designs	Overall appearance	Average scores
Saries						
Sari I	4.2	4.1	4.33	4.4	3.96	4.19
Sari II	4.6	4.6	4.6	4.6	4.4	4.56**
Sari III	4.86	4.66	4.63	4.86	4.86	4.77*
Dress materials						
Dress material I	4.8	4.7	4.8	4.7	4.8	4.76*
Dress material II	4.7	4.6	4.5	4.6	4.6	4.6**
Dress material III	4.5	4.4	4.6	4.3	4.5	4.46
Kurties						
Kurti I	4.4	4.46	4.6	4.5	4.2	4.43**
Kurti II	3.9	4.06	4.16	4.03	3.9	4.01
Kurti III	4.6	4.4	4.5	4.5	4.56	4.5*

Figure-2

Developed Design For Sari II

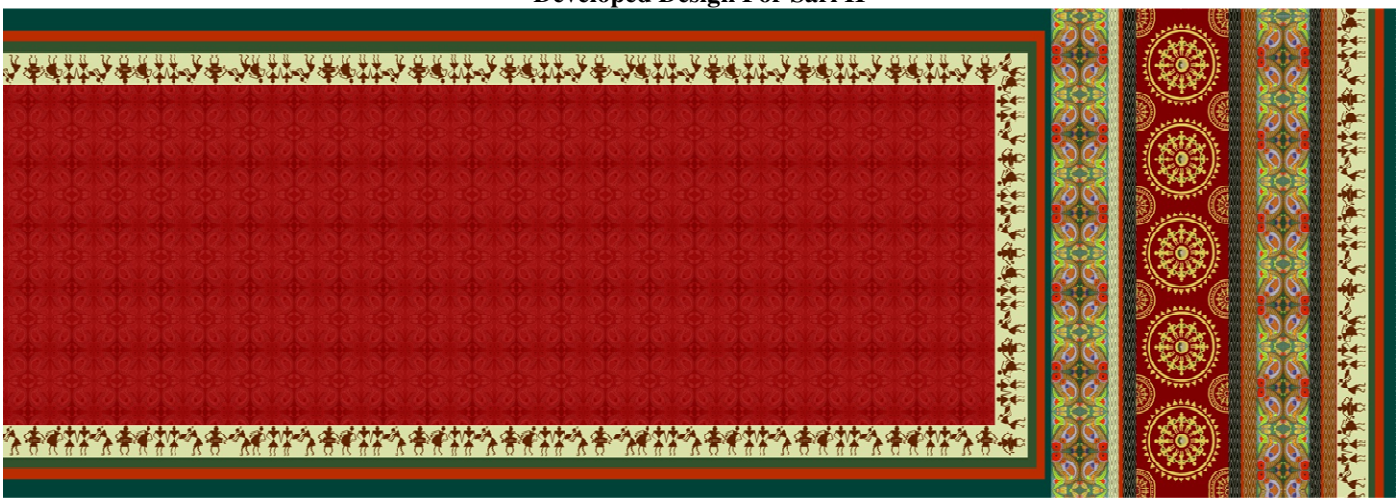

Figure-3

Developed Design For Sari III

Figure-4

Developed Design for Dress Material

Figure-5
Developed Design For Dress Material II

Figure-6

Developed Design For Dress Material III

Figure-7
Developed Design For Kurti I

Figure-8

Developed Design for Kurti II

Figure-9
Developed Design For Kurti III

Figure-10
Printed Saries

Figure-11
Printed Dress Materials

Figure-12
Printed Kurties

Table-2
Cost of printed Saries

Items	Sari I (Red colour)			Sari II (Purple colour)		
	Consumption	**Rate (₹)**	**Value (₹)**	**Consumption**	**Rate (₹)**	**Value (₹)**
Cut length of Pure Crepe Fabric (60 gm)	6 meter	700/ meter	4,200/-	6 meter	700/ meter	4,200/-
Design conversion charges for printing	-	-	1,300/-	-	-	1,000/-
Digital Printing charges	5.5 meter	650/ meter	3,575/-	5.5 meter	650/meter	3,575/-
Actual Cost			9,075/-			8,775/-
Profit (25%)			2,268.75			2,193.75
Sale price			11,343.75			10,968.75

Table-3
Cost of printed Dress Materials

Items	Dress Material I (Golden Yellow colour)			Dress Material II (Off-white and Maroon colour)		
	Consumption	**Rate (₹)**	**Value (₹)**	**Consumption**	**Rate (₹)**	**Value (₹)**
Cotton silk fabric for Kurta	2.75 meter	350/ meter	962.5	2.5 meter	350/ meter	875/-
Lining Mateiral for Kurta	2.25 meter	80/ meter	180/-	2.25 meter	80/ meter	180/-
Cotton silk fabric for Salwar/ Churidar	2.25 meter	120/ meter	270/-	2.25 meter	120/ meter	270/-
Pure Chiffon Dupatta (42" width)	2.5 meter	300/ meter	750/-	2.5 meter	300/ meter	750/-
Design conversion charges for printing	-	-	1,200/-	-	-	1,000/-
Digital Printing charges for Kurta	2.25 meter	600/ meter	1,350/-	2.1 meter	600/ meter	1260/-
Digital Printing charges for Dupatta	2.4 meter	650/ meter	1,560/-	2.3 meter	650/ meter	1,495/-
Actual Cost			6,272.5			5,830/-
Profit (25%)			1,568/-			1,457.5
Sale Price			7,840.6			7,287.5

The Table-2 indicates that the sale price of printed red sari I was higher (₹ 11,343.75) than the purple sari II (₹ 10,968.75). The only reason for this was the difference in design conversion charges as the whole design of sari I was converted into vector graphic to make it into printable form and to bring clarity in design after printing. It is evident that the printing charges for both the saries were same due to the use of similar fabric ie. Pure crepe.

The table-3 clearly indicates that the cost of Dress material I (Golden yellow colour) was higher (₹ 7,840.6) than the Dress material II (Off- white and maroon) (₹ 7,287.55) due to the higher consumption of fabric and thereby the higher printing charges. Further the design conversion charges for dress material were also more than the dress material II that also contributed to the higher sale price of dress material I.

Table-4
Cost of printed Kurties

Items	Kurti I (Mehndi colour)			Kurti II (Blue colour)		
	Consumption	**Rate (₹)**	**Value (₹)**	**Consumption**	**Rate (₹)**	**Value (₹)**
Cut length of Chanderi Cotton fabric	2.5 meter	250/ meter	625/-	2.5 meter	250/ meter	625/-
Cut length of cotton fabric for lining	2.25 meter	80/ meter	180/-	2.25 meter	80/ meter	180/-
Design conversion charges	-	-	700/-	-	-	800/-
Digital Printing Charges	2.25 meter	600/ meter	1,350/-	2.30 meter	600/ meter	1,380/-
Actual Cost			2,855/-			2,985/-
Profit (25%)			713.75			746.25
Sale price			3,568.75			3,731.25

Similarly the cost of printed kurti II (Blue colour) was slightly higher (₹ 2,985/-) than the kurti I (₹ 2,855) (Mehndi colour) only due to the difference in design conversion charges. The design conversion charges of Kurti II (Blue colour) was higher (₹ 800) than the Kurti I (₹ 700) as it had more no. of motifs and used two colours in the background. Other variables such as type of the fabric used, consumption of the fashion fabric and lining material and printing charges were same for both the kurties.

Conclusion

The fusion designs prepared by CAD were successfully applied on various apparels and handicraft items using digital printing and all the prepared articles were highly appreciated and well accepted with regards to visual evaluation and cost effectiveness. The present study was an initial step in direction of creating fusion designs of these two folk arts using CAD technology which can open the avenues for the designers to fulfill the ever changing demands of consumers especially for those who hunt for the ethnic motifs and designs in their attire and other textile products. The study would be a step forward to the integration of designs and art from two distinct areas into textile world and to preserve these designs by developing a repository, which could be accessed as and when needed. The adaptation of the prepared designs on the apparels using digital printing techniques further facilitates the faster production with high accuracy within less time span. The use of advance digital printing technique produces vibrant and even coloration on textiles with no release of effluents; thereby reducing the load on environment and its degradation. It also facilitates faster product development, so commercialization and economic gain is better.

References

1. Sharma E. (2015). Tribal Folk Arts of India, *Journal of International Academic Research for Multidisciplinary,* 3(5), 300-308.

2. Vedika Grover E. and Paul S. (2014). Adaptation of *Warli* art for the development of blocks for printing of apparels, *Asian Journal of Home Science,* 9(2), 417-421.

3. Jyoti and Grover E. (2009). Designing and printing of bed covers using CAD technology. *Textile Trends,* 52(7), 29-32

4. Sharma E, Kalsy M. and Paul S. (2014)**.** Digitalization of *Madhubani* Designs for transferring on Apparels using Screen Printing Technique. *Eduved International Journal of Interdisciplinary Research,* 1(7), 75-89.