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TRANSFROMTION OF TRADITIONAL MADHUBANI PAINTING MOTIFS USING CAD FOR WOVEN JACQUARD SARI DESIGNING

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ABSTRACT

Traditional painting is one of the oldest and beautiful ways of surface ornamentation. The revival of traditional painting needs and aspirations of future citizens of the world, valuing the tradition. Madhubani painting is the exploration of the relationship between nature, culture and human psyche. Therefore, the present study on transformation of Madhubani traditional painting motifs for sari design was conducted to explore the possibility to enhance creativity by traditional painting motifs. Selected geometrical, floral, animal and bird Madhubani motifs were converted into simulations. Variety of design was created using CAD employing design tools which aided creativity and made the process more efficient. It was found that transformation of Madhubani traditional painting motifs as contemporary designs for sari simulation has enhanced the range of designing and the same was converted to jacquard woven sari. Developed sari simulation and woven jacquard sari were highly acceptable by respondents in terms of created designs, design placements, colour ways, CAD designing and overall appearance. Respondents highly appreciated the developed new simulation sari designs using the traditional Madhubani motifs.

Key words: Traditional Painting, Madhubani motifs, Contemporary designs, CAD.

1. INTRODUCTION

India has always been known as the land that portrays cultural and traditional vibrancy through its conventional arts and crafts. The thirty-five states and union territories sprawled across the country have their own distinct cultural and traditional identities and are displayed through various forms of prevalent art. Every region in India has its own style and pattern of art, which is known as folk art. The folk and tribal arts of India are very ethnic and simple, and yet colorful and vibrant enough to speak volumes about the country's rich heritage. Indian arts and crafts have a great potential in the international market because of its traditional aesthetic sensibility and authenticity intimate Sharma (2015). Indian arts and crafts encompass various forms such as painting, pottery, home decorations, cloth marking, needlecraft, jewellery and so on with exquisite designs and patterns. These crafts are not only used for decorative and religious purposes but also cater to the day-to-day needs of the people. These are source of inspiration for contemporary designers and have emerged as the subject for representation of India at global platform because of their ethnic and traditional beauty. Printing, painting, dyeing, brocading and embroidery techniques are some of the techniques that have been traditionally used all over the world to decorate textile, apparel and home furnishing articles for their personal use.

Painting as an art form has flourished in India form very ancient period. The unique thing about Indian painting is that they are usually representative and connected to highly significant religious forms as culture events. The rural folk paintings of India bear distinctive colorful designs, which are treated with religious and mystical motifs. Some of the most famous folk paintings of India are the Madhubani paintings of Bihar, Patachitra paintings from the state of Orissa, Phad paintings of Rajasthan, Kalamkari of Andhra Pradesh, Pichwai paintings Rajasthan, Warli paintings of Maharashtra, Nirmal paintings of Andhra Pradesh, Apian of Uttarakhand, Pithora painting of Gujart, Gond and Mandana painting of Madhya Pradesh, Kalighat paintings of Calcutta and many more forms state Sharma (2013). Perhaps the best known genre of Indian folk painting is Madhubani. The Madhubani in literal translation means 'Forest of Honey' also known as Mithila painting from the Mithila region of Bihar state. These paintings are basically religious in nature. The paintings are done predominantly by women at home. Hindu mythology is the main theme in Madhubani paintings. Sharma *et al* (2015) reveals it is an Indian living folk art inspired from mythological epics of Mahabharata and Ramayana. It is a divine and prayful expression of unconditional surrender and thankfulness to the God.

Madhubani painting are believed to be originated from the town of Madhubani of Mithila in the North Indian state of Bihar. The exact reason or tie of the origination of Madhubani art is unknown. However, the legend has come into vogue during the time of Ramayana, when Janak ordered the artists in his own kingdom to make beautiful paintings for the wedding of his daughter Sita, to Lord Rama. This art, with a tradition going back to the centuries, is today an exclusive monopoly of women artists. They paint figures from nature and myth on household walls to mark the seasonal festival of the religious year, for special events of the life-cycle, when marriage are being arranged they prepare intricately designed wedding proposal. Sharan (2012) convey initially, the woman in Bihar makes paintings on the walls of their huts. With time the artists began creating Madhubani art on paper, cloth and canvas.

Hence, the present study on "Transformations of traditional Madhubani painting motifs using CAD for sari designing" was conducted to strengthen creativity by exploring the possibility of fusion of traditional Madhubani motifs to contemporary traditional design for Sari. The concept behind the theme was to create new range of textile design by maintaining the beauty and originality of madhubani traditional painting Sari Designing.

2 METHODOLOGY

The methodology comprises of the following steps:

2.1 SELECTION OF PAINTING

Madhubani painting technique is distinguished by complex and bright paintings that frequently reflects images from Hindu mythology, everyday life and the natural world. One of the distinguishing features of Madhubani painting is its inability to be easily copied. Madhubani painting is frequently praised for its brilliant colors, elaborate patterns and thematic variety. The painting frequently portray events for Hindu epics like the Mahabharata and Ramayana, as well as representations of deties, flora and fauna views Agrawal *et al* (2022). Rain *et al* (2019) suggests the use of bold, geometric shapes and pattern is a trademark of the Madhubani style with painters frequently employing repeating components to create a feeling of rhythm and harmony within their creations. Designers use distinctive patterns and methods into their design for designing. So the investigator chose Madhubani painting motifs for the study.

2.2 SELECTION OF FIBER

Cotton and hemp fibers have long been recognized as valuable natural resources each with its own distinct characteristic and advantages. Cotton, a staple crop grown globally is renowned for its soft, breathable and versatile nature making it a preferred choice for a wide range of textile and industrial applications. On the other hand hemp a member of the Cannabis Sativa plant family has gained increasing attention in recent years due to its exceptional strength, durability and environmental benefits has made it sustainable economically viable alternative to cotton reveals Schumacher *et al* (2020). Motivated by hemp's lower ecological footprints researchers have explored the feasibility of producing hemp fiber in a manner that is competitive with the established cotton industry points Santiagoo *et al* (2021). Both cotton and hemp exhibits

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advantageous properties such as high specific strength toughness and biodegradability making it an attractive option for various applications. So the investigator planned to select cotton and hemp fibers for the study.

2.3 SELECTION OF YARN

Blending a fundamental process in the textile industry refers to the combination of different types of fibers or yarns to create a new unique yarn with desired characteristics. This technique allows for the incorporation of various properties such as strength durability and aesthetic into a single yarn ultimately enhancing the versatility and performance of textile products define Chakraborty (2010). Hence the investigator selected the blending proportion of cotton hemp as 60:40 for the study.

2.4 SELECTION OF DYES

Natural dyes have gained renowned interest in recent years as consumers become increasingly conscious of the environmental and health impacts of synthetic dyes. Natural dyes offer several advantages over their synthetic counterparts, making them a more sustainable and eco-friendly alternative.

One of the primary advantages of natural dyes is their biodegradability and reduced environmental impact. Natural dyes are extracted directly from natural sources such as plants, animals and minerals without the need for extensive manufacturing processes. These dyes can be easily decomposed in nature and do not contribute to environmental pollution, unlike synthetic dyes which often contain harmful chemicals mention Samantan (2020). So the investigator decided to dye the 60:40 cotton hemp yarn with natural dyes.

2.5 COLLECTION OF NUTURAL DYES

Based on the colour preference the natural dye source was selected by the investigator. From deep navy to sky blue indigo which is derived from the indigo plant can be obtained through extraction or fermentation. Reds ranging from light pink to deep burgundy are produced by madder root (Rubia Tinctorum), with pH variations affecting the color. The rhizomes of the curcuma longa plant produce turmeric which is well-known for its culinary application and bright yellow hues that make it a reasonable dye choice. Frequently thrown away onion skins produce earthy yellows and warm oranges that give fabrics with differences in onion types and dyeing times a rustic charm. While other plant-based sources such as logwood, marigold, brazilwood avocado pits and chamomile yield hues of purple, yellow, red, pink and warm yellow respectively. Weld or Reseda luteola, generates bright yellow dyes. These sources were collected washed dried in shade powered and taken for natural dyeing process. Based on the weight of the material required grams of natural dye powder was taken and mixed with M: L ratio and boiled for defined temperature to extract the natural dye. To this natural dye bath required ratio of 60:40 cotton hemp yarns was taken and steeped into for half an hour. After the desired time the 60:40 cotton hemp yarn is now dyed with desired colour natural dyes.

2.6 SELECTION OF GARMENT

The sari significance extends beyond its aesthetic appeal, as it has become a symbol of Indian femininity, dignity and respect convey Carbone (2016). The manner in which a sari is draped and worn can convey a wealth of information about the wearer's social status and personal style view Mount (2017). Barnes and Kraamer (2015) shares that the sari has undergone a process of "sartorial golbalization" with influences from various cultures and fashion trends being incorporated into its design.

2.6.1 ANATOMY OF SARI

A sari (saree) is a traditional garment worn by women in South Asia particularly India, Bangladesh, Pakistan Sri Lanka and Nepal. It is a long piece of cloth usually five to nine yards in length draped about the body in a variety of fashions. The main components of a sari (Figure 1) are:

- Pallu (Pallav or Anchal): A ornamental end piece that is often embroidered and draped over the shoulder
- Body (major fabric): The major portion that wraps around the lower body whether plain or patterned.
- Border: Elaborate edges that run down the sari providing structure and aesthetic appeal.

Pleats: Folds tucked at the waist to modify the sari's fit and length.

- A blouse (Choli) is a fitting upper garment worn under a sari that ends belowthe bust.
- Petticoat (Inner Skrit): A long underskirt providing a foundation for tucking in the sari and shaping it.

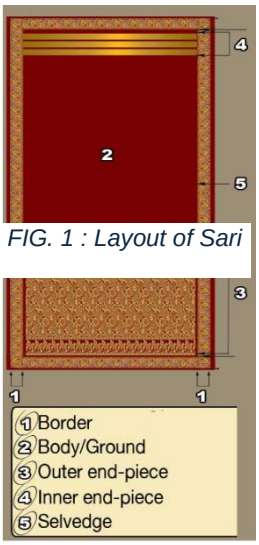

FIG. 1 : Layout of Sari

The sari can be worn in a variety of ways each reflecting regional customs and cultural practices. Some of the draping styles are explained below. The most typical Nivi method is to wrap the sari around the waist and drape the pallu over one shoulder.

The Bengali style has two big pleats in the front, with the pallu draped over both shoulders.

The Maharashtrian style worn without a petticoat folds the sari to reveal one leg. The pallu is moved from the rear to the front, over the right shoulder and spread across the chest. These many draping styles highlight the sari's adaptability and the wearer's individual tastes. So the investigator has selected Sari as a garment for the study**.**

2.7 SELECTION OF CAD SOFTWARE

Photoshop, the ubiquitous image designing software developed, has revolutionized the textile design industry, offering designers unprecedented control over the creative process and enabling them to bring their visions to life with unparalleled efficiency commend Wn (2020). As the textile industry continues to transform due to globalization, sustainability and technological advancements the role of the textile designer has evolved suggests valentine *et al* (2017). Designers now must reconsider the design process and re-evaluate how they communicate both traditional and contemporary design values convey Perivoliotis (2005). At the forefront of innovation, textile designers must incorporate the valuable knowledge of history and heritage into their design process becoming visionaries who drive design business success. Photoshop has become an indispensable tool, empowering designers to explore and experiment with digital textile design in ways that are previously unimaginable. Through the use of Photoshop, designers can now create highly specialized and detailed drawings dramatically increasing their efficiency and productivity. This digital approach to textile design allow for a level of precision and visual representation that was challenging to achieve through traditional hand drawing method which often required exceptional artistic skills. So the investigator has selected the photoshop software for designing the motif and simulation.

2.8 COLLECTION AND SELECTION OF MADHUBANI MOTIFS FOR SARI DESIGNING

Twenty five motifs from madhubani painting were collected and selected randomly (plate 1) through the secondary sources. An expert group which consists of 100 staffs and 500 female students of Chikkanna Government Arts College, Tiruppur, Tamil Nadu was handpicked randomly for subjective evaluation. The evaluation was carried out and based on its results as shown in Table I, the expert preferred motifs which were selected for the study is shown in Plate 2. The preferred madhubani motifs were then developed as contemporary motifs (Plate 3). The contemporary madhubani motifs are renamed and numbered as 1 to 5 for the study.

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S.No.	1	2	3	4	5	6	7	8
Madhubani Motifs								
S.No.	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Madhubani Motifs								

S.No.	17	18	19	20	21	22	23	24	25
Madhubani Motifs									

Plate 1: Original Madhubani motifs

Selected Motif No. For the study	6	11	3	5	20
Original Madhubani Motifs					

Plate 2: Selected Original Madhubani motifs

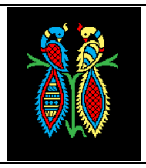
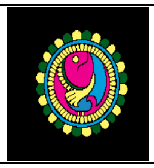
Designed Renamed Motif No.	1	2	3	4	5
Contemporary Madhubani Motifs					
Names	Floral (Fo)	Peacock (P)	Fish (F)	Flower (Fl)	Elephant (E)

Plate 3: Contemporary Madhubani motifs

2.9 CREATION OF MADHUBANI CONTEMPORARY MOTIF USING CAD FOR JACQUARD SARI DESIGNING

The motifs designed can easily be visualized and altered on computers in less time without tedious labour. So computerized designing can swap drawing the design by conventional method. The accuracy gets increased and the motif can be repeated and placement can be done easily and quickly reducing the time period. Three simulations were developed for each selected five motifs (Plate 3) for sari designing with the help of Photoshop. Totally 15 simulation were created from selected contemporary madhubani motifs for the jacquard sari weaving.

2.9.1 PROCESS OF CREATING A MOTIF AND SETTING THE MOTIF OF THE SIMULATION

To begin open Adobe Photoshop and navigate to the File menu. Select "New" (Ctrl + N) to create a new document specifying the desired dimension for height and width then click "OK." Next, choose the Brush tool from the toolbar and proceed to create a motif by either drawing freehand or tracing an existing image. Adjust the motif as needed using tools like Rotate, Resize and Transform. Optionally design can be traced from custom shapes and refine it using the Path Selection tool. Fill the design with color and outline it using the Stroke option to separate it from the background. Once the motif is completed measure its size. Ensure the motif's dimensions are within120, 240 or 420 pixels. Adjust the canvas size accordingly for instance if the motif is 120 pixels and needs to repeat six times set the canvas width to 720 pixels. Duplicate the motifs by pressing V and repeat it as needed using Alt+ right arrow key adjusting 12 times for 120 pixels and six sets. Modify the motif by adding or removing elements to fit both the garment's border and body. Finally save the file in JPEG format to preserve your work.

2.9.2 DESIGN SIMULATION FOR SARI

The five selected contemporary madhabani motif was then created into three saree layouts of each motif with different placement and a combination of motifs were created using CAD. Since the design size of the jacquard hooks cannot be changed the size of the motifs and the design area remained the same for all the three layouts. The layout was drawn with outlines and fillings were given wherever required. The various placements of motifs were arranged only in the body part and the pallu part of the saree. The created layouts are shown in Plates 4. Fifteen simulation where created with the help of 5 contemporary motifs.

2.10 ACTUAL WEAVING OF JACQUARD SARI

As planned and designed fifteen simulation of sari's (S1-S15) were jacquard woven. The woven jacquard saris were again evaluated by the experts. The criteria for the comparison of the CAD simulations with the original weaved sari were suitability of selected motif jacquard woven sari intricate pattern are exactly the same as seen in CAD preserving uniqueness madhubani motif while jacquard weaving placement and overall appearance of the jacquard woven sari with selected madhubani motifs. The received response is response is recorded under result and discussion.

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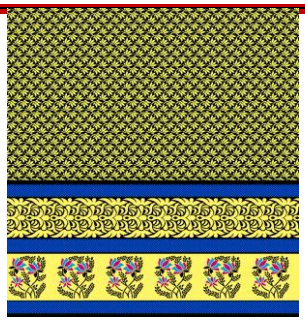
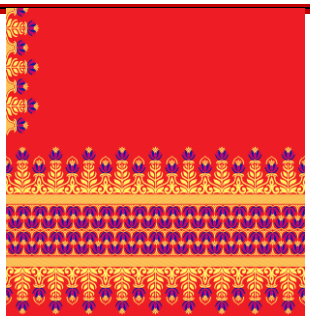
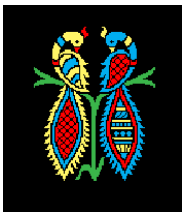
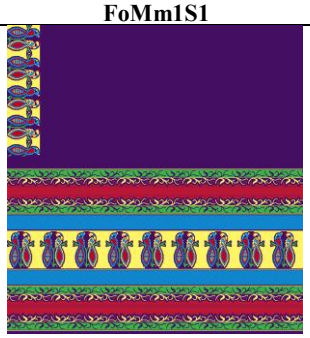
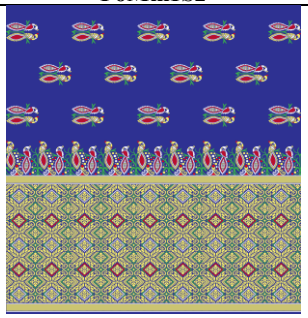
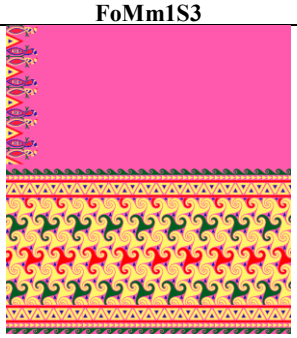
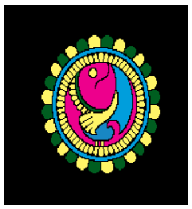
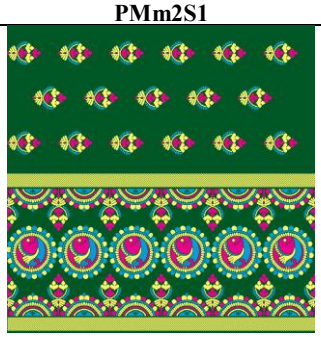
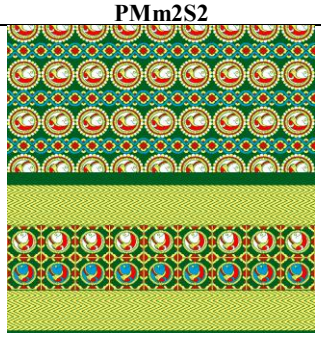
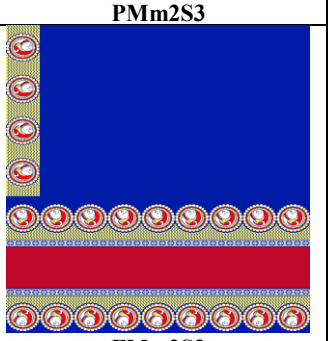
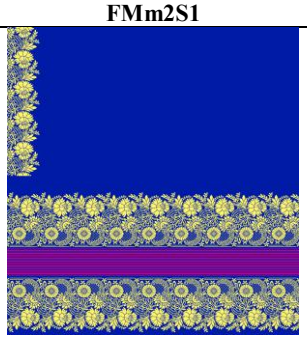
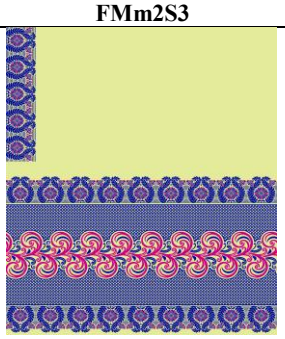
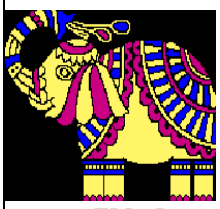
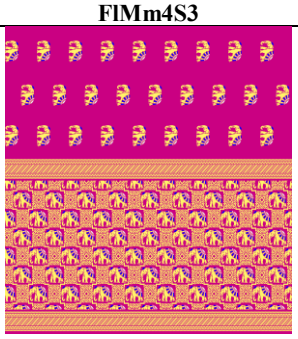
 FoMm1	 FoMm1S1	 FoMm1S2	 FoMm1S3
 PMm2	 PMm2S1	 PMm2S2	 PMm2S3
 FMm3	 FMm2S1	 FMm2S2	 FMm2S3
 FlMm4	 FlMm4S1	 FlMm4S2	 FlMm4S3
 EMm5	 EMm5S1	 EMm5S2	 EMm5S3

Key words: Fo-Floral, P-Peacock, F- Fish, Fl- Flower, E-Elephant, S-Simuation, Mm- Madhubani motif

Plate 4 : Sari Simulations

3. RESULTS AND DISCUSSION: The result and discussion carried for the madhubani painting motifs is as follow:

3.1 PREFERENCES FOR SELECTION OF MOTIFS OF MADHUBANI PAINTING

The preference given by expert for the motif of madhubani painting is given in TableI.

TABLE I: WMA OF MADHUDHANI MOTIF

MADHUBANI PAINTING	1	2	3	4	5	6	7	8	9	10	11	12	13	14
WMS	2.46	0.6	4.33	0.6	3.3	13	1.2	0.5	1.6	0.7	6.50	1	0.8	1.4
Rank Order	VI	XXII	III	XXI	IV	I	XI	XV	VIII	XIX	II	X	XVI	IX

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MADHUBANI PAINTING	15	16	17	18	19	20	21	22	23	24	25
WMS	0.6	1.9	1.1	0.8	0.5	2.60	1	0.7	0.7	0.9	0.9
Rank Order	XXIII	VII	XII	XVII	XIV	V	XIII	XVIII	XX	XIV	XV

From the collected 25 madhubani motifs the motif numbers 6, 11, 3,1,20 which were rated as the highest rank order as per the weighted means score. The highest ranked 5 motifs were undertaken for further study. The data pertaining to preferences of experts depicted in Table I reveal that motif number 6 was ranked Ist (WMS 13.00) followed by motif number 11 (WMS 6.50) ranked IInd motif number 3 (WMS 4.33) ranked IIIrd motif number 1 (WMS 2.46) ranked IVth and motif number 20 (WMS 2.60) ranked Vth. The mean WMS is 2.10, while the median is 1.08 indicating that the distribution of WMS values is skewed to the right with a few high values pulling the mean upwards. The standard deviation of 2.82 shows that there is a significant variation in WMS values among the Madhubani painting.

3.2 ANALYSIS OF DEVELOPED SARI SIMULATION WITH MADHUBANI MOTIFS

32.1 ANALYSIS OF FoMm1 SIMULATION WITH CONTEMPORARY DESIGN

The feedback collected from the expert for floral (Fo) madhubani motif with FoMm1S1, FoMm1S2 and FoMm1S3 are discussed below:

From the figure 2 for FoMm1S1, S2, S3 indicates that the 63-67% of experts strongly agree that the application of Madhubani motif on sari is appropriate. Suitability of Rendered of Madhubani motifs to sari was strongly agreed by 46-63% of experts for S1 while 50% highly agree for the S2 and S3. When assessing the suitability of garment to the recent trends 43-50% strongly agrees and 30-50% agrees for all the three simulation. 76.7% in simulation 1 and lower percent was noted in other two simulations for the placement of contemporary madhubani motif. Colour combination used in all the three simulations were strongly agreed by 46-63% experts. Floral madhubani motif used is well laid on the simulation received 77% strongly agreed for the S3, 73% for S2 and 63.3% as strongly agreed. In all the three simulation the arrangement of the floral madhubani motif was strongly agreed by 63% for S3, 57% for S2 and 46.7% for S3 by the expert. When catered to the designed madhubani motif sari to the present fashion S1 received 63.3% followed byS2 and S3 which showed 63% and 62% respectively. 43-50% strongly agreed that there is good marketability for the designed madhubani motif in the market for all the three simulation designed for the floral motif. 100% uniqueness of the floral madhubani motif was strongly agreed by all experts across all three simulations. Overall appearance for floral madhubani motif sari is highly agreed as appealing by the entire expert for all three simulations. While comparing all the three simulation for FoMmS1 received the highest acceptance from the majority parameters.

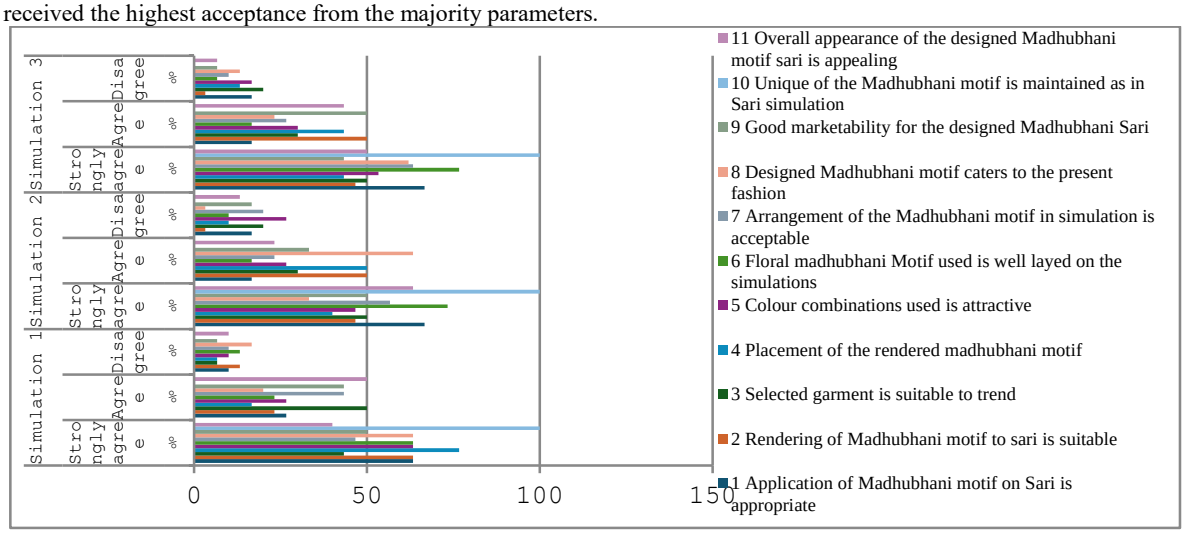

FIG. 2: FoMm1S1,S2,S3

3.2.2 ANAYSIS OF PMm2 SIMULATION WITH CONTEMPORARY DESIGN

The feedback collected from the expert for Peacock (P) madhubani motif with PMm2S1, PMm2S2 and PMm2S3are discussed below: As figure 3 PMm2S1, S2, S3 clearly depicts the application of Madhubani motif on sari is appropriate was strongly agree by 46.7% of experts for S1, S3 and 40% for S2. 53.3% of experts strongly agree that the suitability of rendered madhubani motif to sari for S1 while 50%of experts strongly agree for both S2 and S3. For the suitability of selected garment for recent trend 73.3% of expert strongly agree for strongly agree for S1, 66.7% of expert strongly agree for S2 and 43.3% of experts strongly agree for

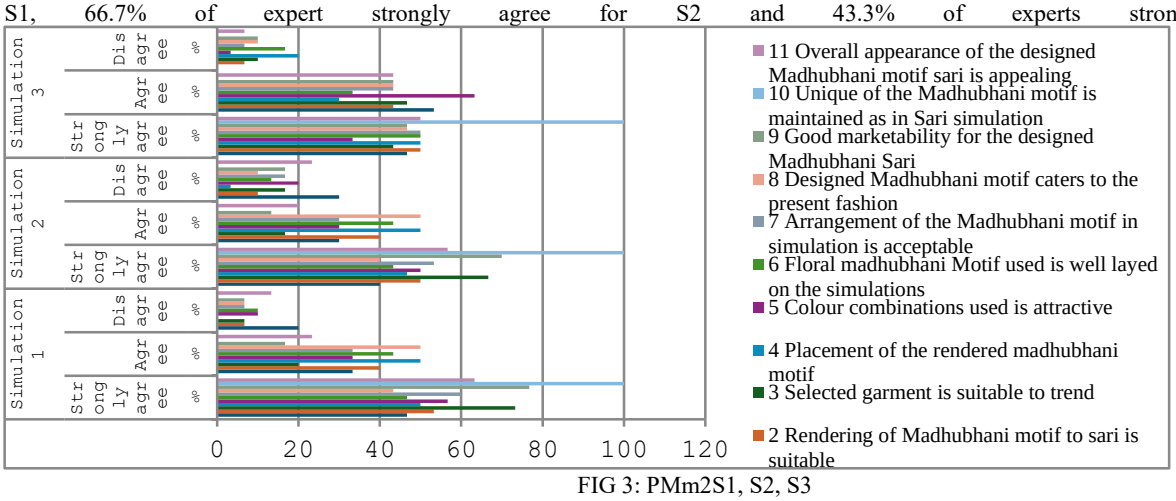

FIG 3: PMm2S1, S2, S3

S3. S1 shows 76.7% strongly agree while the other two simulations have lower percentages for the placement of the rendered madhubani motifs on sari. 56.7% of experts strongly agree that the color combination used was attractive for S1, 50% and 33.3% of experts strongly agree for S2 and S3 respectively. The motif and design is well laid in the simulation which was strongly agree by 50% of expert for S3, 46.7% of experts for

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S1 and 43.3% for S2. 63-76% of experts strongly agree on the arrangement of the madhubani motif in all three simulations. Developed madhubani motifs cater to the present fashion was strongly agreed by 63.3% for S2, 63% for S3 and 62% for S1. 76.7% of experts strongly agree for good marketability for the designed madhubani motif sari motifs for S1 whereas the other two simulations receive the lowest percent. The uniqueness of the peacock madhubani motif was 100% strongly agreed by all experts across all three simulations. 63.3% highly agreed as appealing for overall appearance of the designed madhubani motif sari for all three simulations. The positive response received across various criterias for peacock madhubani motif sari simulation S1 and S2 received the highest agreed percentage.

3.2.3 ANALYSIS OF FMm3 SIMULATIONS WITH CONTEMPORARY DESIGN

The feedback collected from the expert for fish (F) madhubani motif with FMm3S1, FMm3S2 and FMm3S3 are discussed below:

In Figure 4 FMmS1 S2 S3 shows that in each of the three simulations the majority of experts strongly agree that the use of madhubani motif on saris is appropriate 40.3%in S1, 46.7% in simulation 2 and simulation. Fifty percent of experts in S1, sixty percent in S2, and fifty-three percent in S3 think that madhubani for saris. A significant percentage of 66.6 for S1, 43.3% for S2 and 40.4% for S3 agree in the chosen garment is appropriate for current trends. There is significant strongly agree experts of 46.6%, 76.7% and 70% regarding which of the rendered madhubani motif should be placed in simulation 1,2 and

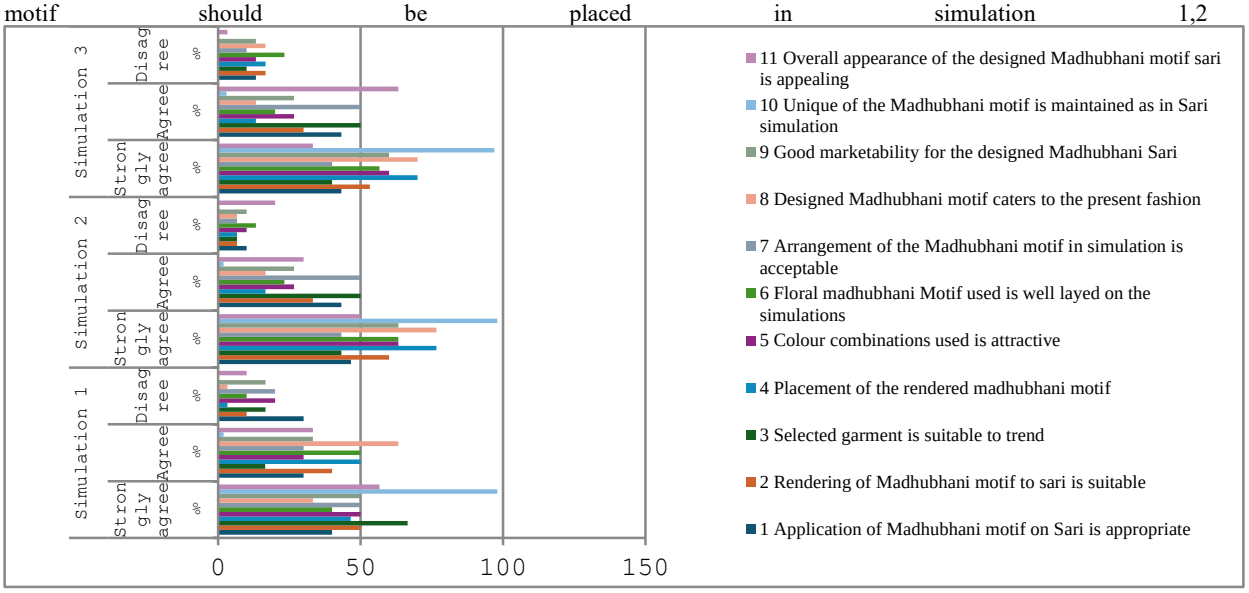

FIG 4: FMm3S1, S2, S3

3. In all the three simulation the color combination is strongly approved with 50% of experts finding it attractive in S1 63.3% in S2 and 60% in S3. 40% of experts in S1, 63% in S2 and 67% in S3 strongly agree that the motif is well laid in simulation. In all the three simulation the majority of experts agree that the madhubani concept have been organized in an effective manner with 50%. 43.3% and 40% respectively. In S1 33.3%, 76.7% in S2 and 70% in S3 strongly agree that the designed madhubani motif catered to the current madhubani motif catered to the current fashion trend. The 50% majority of experts in S, 63% in S2, 60%S3 strongly agreed that the created madhubani sari motifs have good marketability. When over looked for the uniqueness of the fish madhubani motifs experts agree with 98% of S1,S2 and S3. Finally there is a general favorable reaction across the simulations1, 2, 3 with 56.7%, 50% and 33.3% respectively for the overall appearance of the designed madhbaani sari. While comparing all the three simulations for fish madhubani motif simulations (S2), (S3) received the highest acceptance from the majority parameters.

3.2.4 ANALYSIS OF FlMm4 SIMULATION WITH CONTEMPORARY DESIGN

The feedback collected from the expert for flower (Fl) madhubani motif with FlMm4S1, FlMn4S2 and FlMm4S3 are discussed below:

From the figure 5 FlMm4S1, S2, S3 of S1 and 3, experts highly agree that flower madhubani motif applied to saris is appealing. 70% of experts say that the depiction of this motif to sari is very appropriate for S1, 63.3% for S3 and 33.3% for S2. The majority experts strongly agree the chosen garment compatibility to current fashion 53.3% in S1, 50% in S2, and 43.3% in S3. In S1, S2 and S3 respectively 76.7%, 66.6% and 40% strongly approve that the flower motif of madhubani are well arrangement. The color choices receive high acceptance in all scenarios with 70% of respondents finding them beautiful in S1, 63.3% in S3 and 46.6% in S2. When found the expert review for the well laid of the flower motif 60%, 63.3 and 50% in S1, S2 and S3 strongly agree. There is consistent overall approval of the

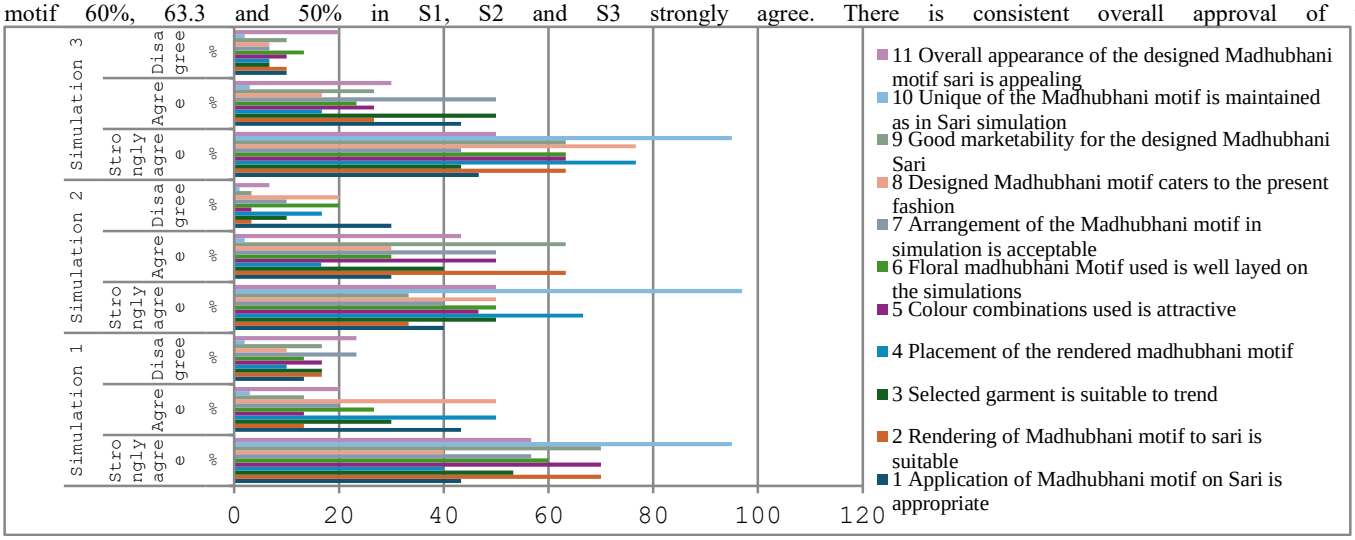

FIG 5: FlMm4S1, S2, S3

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madhubani motif arrangement with 56.7% in S, 43.3% in S3 and 40% in S2. A substantial correlation exists between S1, S2 and S3 with 76.7%, 50% and 40% for designed motif cater to current fashion. Marketability has notable good throughout all simulation with strong agreement shown by 70% in S1, 63.3% in S3 and 33.3% in 2. Nearly all of the simulation 95% in S1, 97% in S2, and 95% in S3 agree that the madhubani motifs are unique. A substantial overall positive response is observed across all simulations which appeal the designed flower madhubani sari is appealing. All the three simulation received positive feedback but when compared S1 is usually the most favoured, followed by S3and S2.

3.2.5 ANALYSIS OF EMm5 SIMULATIONS WITH CONTEMPORARAY DESIGN

The feedback collected from the expert for elephant (E) madubani motif with EMm5S1, EMm5S2 and EMm5S3 are discussed below:

From figures 5 EMm5S1, S2, S3 clearly depicts that the suitability of rendered of madhubani motifs to sari was strongly agreed by 63.3% of expert for S1 while 63% highly agree for the S2 and S3. When assessing the suitability of garment to the recent trends 70% strongly agrees and 63% agree for all the three simulation. 63% in S3 and lower percent was noted in other two simulations for the placement of contemporary madhubani motifs. In all three simulations, the color combination is strongly approved with 50% of experts finding it attractive in S1 60% in S2 and 77% in S3. 70% of experts in S1, 69% in S2 and S3 strongly agree that the elephant madhubani motifs are well laid in simulation. In all the three simulations the majority of experts agree that the madhubani concepts have been organized in an effective manner with 43.3%, 40% and 47% respectively. In S1 40%, 63% in S2 and 50% in S3 strongly agree tht the designed madhubani motif catered to the current fashion trends. The 63.3% majority of experts in S1, 67% in S2, 69% S3 strongly agree that the created madhubani sari motifs have good marketability. When over looked for the uniqueness of the elephant madhubani motifs expert agree with 98% of S1, S2 and 99% of S3. Finally, there is a general favorable reaction across the simulation1, 2 3 with 43.3%, 50%

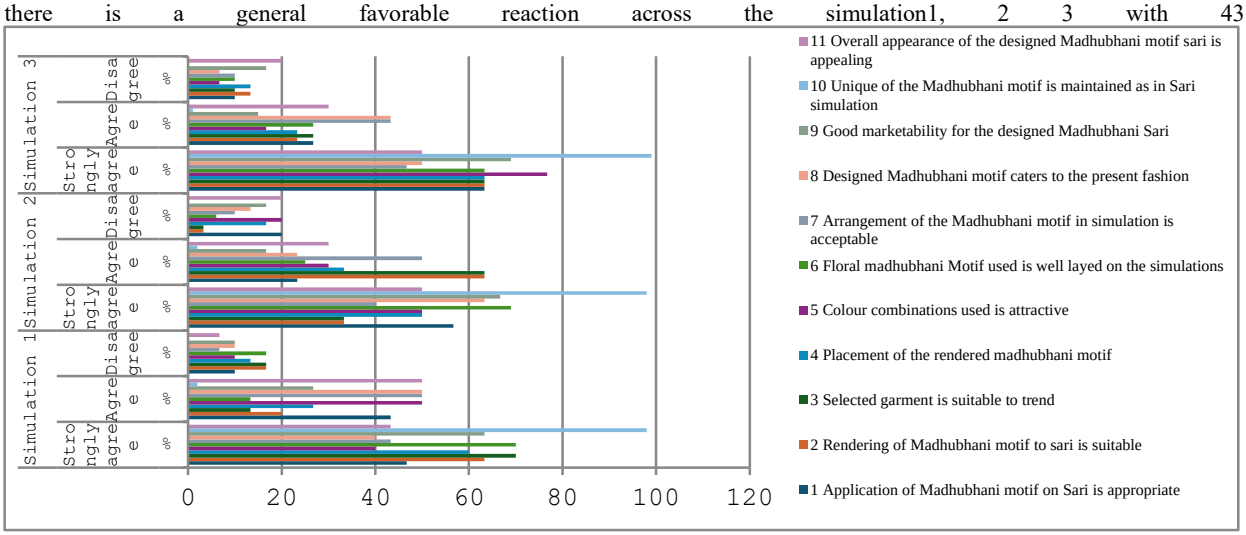

FIG 6: EMm4S1, S2, S3

respectively for the overall appearance of the designed madhubani sari. While comparing all the three simulation for fish. Madhubani motif simulation (S2), (S3) received the highest acceptances from the majority parameters.in spite of a number of variables simulation3 was deemed the most popular choice by the experts.

3.3 ANALYSIS OF WOMEN JACQUARD SARI WITH CAD SIMULATION

The feedback obtained for all 15 (S1-S15) jacquard woven saris based on the motifs Fo1, P2, F3, F14 and E5 simulations (Plate 4) reveals that all the five madhubani motifs taken and woven had received that each motif suitability was accepted by all the experts. When responses were received for the designed intricate pattern perceived from CAD to weaving the uniqueness of the madhubani motifs while jacquard weaving receives 100% of the responses. For the placement and overall appearance of the madhubani motifs in the motifs in the jacquard woven sari received a well-accepted response was received by all respondents.

4 CONCLUSION

Traditional Indian painting motifs that are designed with modern Computer Aided Design (CAD) are highly influenced by designers and highly accepted by the customer which have preserved the traditional painting art especially madhubani art. The blend of modernism and madhubani painting responds to changing consumer tastes and market trends while generating an ethnic appeal. Through the application of Computer Aided Design (CAD) to modernize traditional madhubani motifs designers are able to generate imagination sari designs that skillfully merge vintage and modern components. This method advances arts and crafts by encouraging the creation of original works while simultaneously protecting established creative forms. According to the study, this approach encourages creative approaches to fusing cultural elements into contemporary clothing giving designers additional opportunities to experiment with fusing heritage into clothing. In the fashion industry combining new technology with old art forms fosters creativity and contributes to the preservation of cultural heritage.

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