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Adaptation of Kantha Motiff for Designing and Development of ready to use Centre Panels using Machine Embroidery

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A B S T R A C T

There is a growing demand for the rebirth of traditional Indian embroideries due to their time-consuming procedures, antiquated appearance, and pursuit of the pinnacle of painting technique. These need to be developed using quicker methods and given a more modern appearance. Machine embroidery is an innovative, economical and time saving technique as compared to the hand embroidery. Present study was conducted on adoption of Kantha traditional embroidery designs for machine embroidery on centre panels. A total of fifteen motifs were collected and arranged to prepare design for centre panels. 8 designs were the prepared designs were evaluated for the selection. Experts' choices for developed centre panel was based on a variety of criteria showed that the machine embroidery approach of two prepared designs for preparation on centre panel a fabric using machine embroidery was the most favoured method in terms of overall appearance. The study will provide to create items with the same appearance as traditional embroidery techniques using quicker methods. It will provide women entrepreneurs with new opportunities to produce in-demand, low-cost items. Additionally, it will improve the classic Kantha embroidery's visual appeal.

Introduction

Kantha embroidery had its origins in pre-Vedic. The quilt was specially used in kantha embroidery. Embroidery was used in two forms in making quilts. In the first type, old and discarded cotton sarees quilts stacked on top each other. In second type, embroidery was done by spreading cotton or cloth on the top and bottom, or by making a shell.

Embroidery may use silk thread to make it durable. In this, sometimes old clothes were also used between the sarees. Embroidery refers not only to the stitch employed rather it is the individual's creative, also reflects the imagination and craftsmanship of artisan.

The embroidery basically involves outlining decorative motifs with running stitch, using colourful threads. There are several patterns that can be used to cover the entire cloth. Traditional artisans who have mastered their profession and inherited the art of needlework from their ancestors employ hand embroidery.

Compared to hand embroidery, machine embroidery takes less time. In India, this is also a very old custom. These days, machine embroidery has become so

revolutionary that many people enjoy making their own handmade crafts with it. It is how fabrics express themselves vibrantly. It is possible to get very economical machine embroidery with a few basic techniques and procedures. Individuals who works with fabric decorations will find it more convenient and time-efficient, which will increase their earnings.

The rebirth of traditional needlework and its modern, trend-forward appearance can be achieved by transforming classic embroidery designs. Centre panel has become a part of summer dress. Wearing a central panel on any given event conveys your social standing and elegance. The more formal designs would emphasise your professionalism, while the more relaxed ones would reflect your inner appeal. It is wise to keep an eye out for the most stylish and well-designed centre panels for use at work or other events. In light of these details, the following goals were pursued in a study to convert traditional Kantha embroidery to machine embroidery. To study the existing status of the kantha embroidery in terms of, material used, colour designs, motif and technique used, to create design using selected motifs for Centre panel, to develop products with selected design.

Materials and Methods

Adaptation of Kantha motifs for design development of fusion designs

Various motifs and designs of Kantha embroidery were collected from the respondents. These were also collected from secondary sources including Internet, available literature and through visit to various retail outlets showcasing these embroideries.

Sample Selection

A total of 15 traditional Kantha motifs were selected based on their relevance and cultural significance. These motifs were curated from accessible resources representing traditional designs.

Development of fusion designs, centre panels

The motifs and designs of Kantha embroidery were modified and used for the development of fusion designs. The designing was done through CAD software 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.

Screening of the developed designs through visual evaluation

Prepared centre panel designs were subjected to visual evaluation for the selection of eight most preferred designs.The evaluation was done by a panel of thirty judges. All the designs were ranked according to their preferences obtained. The attributes for the evaluation of designs were arrangement of motifs, appropriateness of designs, colour combination and overall appearance of the designs. Five point scale was used for the evaluation of developed designs and marks 1, 2, 3, 4 and 5 corresponding to poor, fair, good and excellent, respectively were assigned.

Preparation of centre panels for machine embroidery

Selected designs were using machine embroidery applied on centre panel. A total of Eight products of centre panel were prepared. The cost of each product was calculated on the basis of raw material cost (fabric, thread etc.) labour charge and finishing cost. The sale price was calculated by adding 25 per cent profit margin in the cost price.

Acceptability of the prepared centre panels

Each prepared centre panel was evaluated to find out the acceptability of the prepared products. The same panel of 30 judges was taken for the evaluation. A ranking performs was given in order to evaluate the acceptability of the developed products. The attributes assigned were colour combination, suitability of the design for the end products, cost range, suitability of surface enrichment techniques used and overall appearance. Rank 1, 2, 3, 4 and 5 was given to those products which stood for poor, fair, good, very good and excellent, respectively.

Results and Discussion

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads:

Developed designs

The motifs and designs of Kantha embroidery were modified and used for the development of fusion designs. The designing was done through CAD software. 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. The designs prepared for various centre panels are shown in plate

Scores obtained based on visual evaluation

The score obtained by each design of centre panel are shown in Fig.1. It was observed that among the deigns developed for centre panel, C2 got the highest score (3.5) followed by C6 (3.4). Centre panels, highest score was given to the C8 (3.3) followed by C4 (3.2) all these designs were using prepared centre panels.

Cost of prepared articles

The cost of prepared products are given in Table 1 to 5.

Acceptability of the products

Each embroidery was subjected to visual evaluation for assessment of acceptability and the result are reported in table 4. It was observed that irrespective of higher cost, centre panel VIII

Each centre panel was subject to visual evaluation for assessment of acceptability and the results are reported in Table 1, 2, 3, 4 and 5. It was observed that irrespective of higher cost, centre panel II was given 1st preference due to its colour combination and neatness. Among the prepared centre panels similar results were obtained. Centre panel I, centre panel IV, centre panel V and centre panel VI was given first preference with the total score of 4.25 while centre panel was scored second.

Main Findings

- **Cultural Significance:** Kantha embroidery, with its rich history and cultural significance, serves as a source of inspiration for contemporary textile designs.
- **Design Adaptation:** The study outlines methods for translating hand-stitched Kantha patterns into machine-compatible formats while preserving the essence of the original motifs.
- **Technical Challenges:** Key challenges include maintaining the texture and appearance of hand-stitched work when produced by machines.
- **Prototype Development:** Various prototypes were developed, showcasing successful adaptations that reflect Kantha's aesthetic while being suitable for machine production.

The Kantha embroidery were successfully adapted for designing the centre panel using machine embroidery. All the prepared products were highly appreciated and well accepted with regards to visual evaluation and cost effectiveness.

Among centre panels pink colour and Orange colour were highly appreciated. The cost of centre panels between Rs.625/- to Rs. 837.5/-.

The integration of Kantha motifs into machine embroidery can enhance the appeal of textile products, merging traditional craftsmanship with modern technology.

Future research could explore further refinements in technique and design to better replicate the intricacies of hand-stitched Kantha.

Adaptation of motifs of Indian embroideries for machine embroidery was explored. Since the current study uses a less time-consuming technique, it will also help improve the marketability of centre panel items by providing recommendations for a new designer to create articles using traditional embroidery technique that are modified into other faster techniques.

Machine embroidery's advantages over hand embroidery. The fastest method of embellishing fabric, machine embroidery is mostly used for business purposes.

"Free-motion machine embroidery" and "computerised machine embroidery" are the two methods available for machine embroidery. In contrast to hand stitching, machine embroidery requires less time, but it offers less options for using innovative stitches and accessories.

Table.1 Clearly indicates that the cost of centre panel II was higher (Rs.781.25) then the centre panel I (Rs.625) due to the more consumption of fabric.

	Cost of cetre panel Centre panel I			Cost of cetre panel Centre panel II		
Items	Consumption	Rate(.)	Value(Rs.)	Consumption	Rate(Rs.)	Value(Rs.)
Cut length of fabric	1/2meter	100/meter	50/-	1meter	150	150/-
Cost of Threads	2 thread	25/-	50/-	3 threads	25/-	75/-
Labour cost	1	400	400	1	400	400
Actual cost			500			625
25% profit			125			156.25
Sale price			625			781.25

Table.2 Clearly indicates that the cost of centre panel IV was slightly higher (Rs.687.5) then the centre panel III (Rs.650) due to the more consumption of threads.

Table 2: Cost of cetre panel	Centre panel III			Centre panel IV		
Items	Consumption	Rate(.)	Value(Rs.)	Consumption	Rate(Rs.)	Value(Rs.)
Cut length of fabric	1meter	50/meter	50/-	1meter	60/-	60/-
Cost of Threads	2 thread	25/-	50/-	2 threads	25/-	50/-
Labour cost	1	400	400	1	500	500
Actual cost			500			610
25% profit			125			152.5
Sale price			625			762.5

Table.3 Clearly indicates that the cost of centre panel VI was slightly higher (Rs.750) then the centre panel V (Rs.837.5) due to the more consumption of fabric.

Table 3: Cost of cetre panel	Centre panel V			Centre panel VI		
Items	Consumption	Rate(Rs.)	Value(Rs.)	Consumption	Rate(Rs.)	Value(Rs.)
Cut length of fabric	1meter	70/meter	70/-	1meter	75/-	75/-
Cost of Threads	2 thread	25/-	50/-	3 threads	25/-	75/-
Labour cost	1	400	400	1	400	400
Actual cost			520			550
25% profit			130			137.5
Sale price			650			687.5

Table.4 Clearly indicates that the cost of centre panel VII was slightly higher (Rs.837.5) then the centre panel VIII (Rs.750) due to the more consumption of fabric.

Centre panel VII			Centre panel VIII		
Consumption	Rate(Rs.)	Value(Rs.)	Consumption	Rate(Rs.)	Value(Rs.)
1meter	120/meter	120/-	150	150	150/-
2 thread	25/-	50/-	2 threads	25/-	50/-
1	500	500	1	400	400
		670			600
		167.5			150
		837.5			750

Table.5 Acceptability score of the developed centre panels

Products						
Centre panel	Colour combination	Neatness	Cost	Overall appearance	Acceptability scores	Rank
I	4.3	4.4	4.1	4.2	4.25	II
II	4.4	4.5	4.3	4.2	4.35	I
III	4.8	4.1	4.1	4.2	4.3	III
IV	4.3	4.4	4.2	4.1	4.25	II
V	4.1	4.2	4.4	4.2	4.25	II
VI	4.8	4.2	4.1	4.2	4.25	II
VII	4.2	4.1	4.1	4.8	4.3	III
VIII	4.3	4.8	4.2	4.1	4.35	I

Figure.1 Score obtained for developed designs of Centre panels

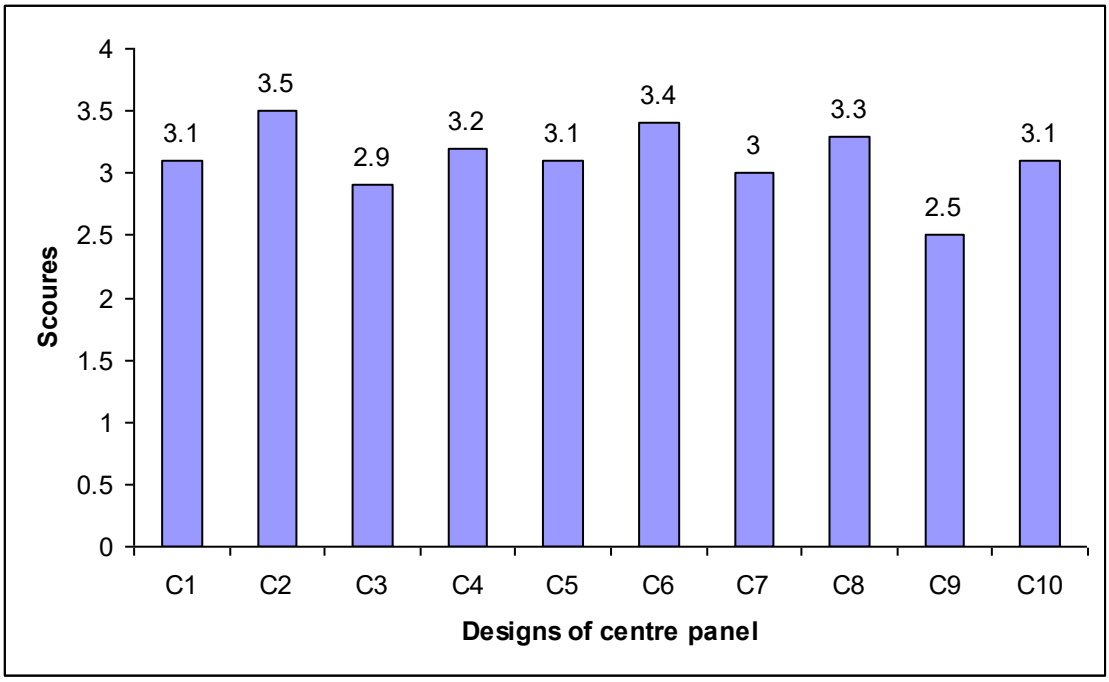

Figure.2

Centre panel I	Centre panel II
	
Centre Panel III	**Centre Panel IV**
	

Centre Panel V	Centre Panel VI
	
Centre Panel VII	**Centre Panel VIII**
	

Thus, following are the impact of machine embroideries

- Machine embroideries are done on large scale majorly in export houses for bulk production. Thus, it reduces the cost and garments are easily available at cheaper rates. Computerized machine embroidery allows various stitches in order to copy hand embroidered motifs, which result in duplication of traditional craft.
- In machinery embroidery threads are made up of rayon, polyester or metallic which gives artificial and smooth texture and makes a sense of attraction for customer.
- Hand embroidery takes lots of time and efforts, which increases the cost but that is worthwhile due to its excellent beauty and natural look. Thus, it is afforded by few customers.
- In computerized machine embroidery motifs are designed through software in a very short period of time. These are uniform and same motif can be easily applicable on various apparels without any differences, unlike hand embroidery.
- Beside this, in present time most of the famous designers are working on hand embroidery not only because of its beauty but also for modification and exploration based on their inspirations, which is very rigid through machines.

Author Contributions

Ragini Tripathi: Investigation, formal analysis, writing—original draft. Ekta Sharma: Validation, methodology, writing—reviewing. Nargis Fatima:—Formal analysis, writing—review and editing.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical Approval Not applicable.

Consent to Participate Not applicable.

Consent to Publish Not applicable.

Conflict of Interest The authors declare no competing interests.

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