

Production of Embroidered Cushion from the Safavid Period Using Different Methods on Leather

Walid S. Mustafa⁽¹⁾, Sawsan A.Rizk⁽¹⁾, Sanaa S. Saleh⁽²⁾, Rania SadekSaif⁽²⁾, Fatma M. Hassan⁽³⁾.

(1) Home Economics Collage –clothing and textile - Helwan University.

(2) Woman's College – clothing and textile– AinShams University

(3) Faculty of Education –clothing and textile – AinShams University

Abstract

The Aim of the work in this paper is to produce a cushion leather both by handmade and machine embroidery, The design which used was from the safavid period (animal type).

100% cotton threads have been used for sewing the whole designs by the two methods (manual and machine). **Needles** have been used for sewing designs by the two methods (manual and machine). The **machine** which used is **Tajima TCMX** mixed type which speed reach to **700rpm**, needles number was **9**. The numbers of heads used were **15** for producing machine embroidery design. The material which was used in this project was **leather**. Analysis and discussion which include the problems were mentioned, finally the conclusion obtained were presented.

Keywords: Embroidery, leather tools, safavid arts, machine embroidery.

1. Introduction and literature of review.

1.1 Safavid Period

The Safavid Empire was based in what today is Iran; this Islamic empire was strong enough to change the ottomans, in the west and Mughals in the east.

The safavid empire lasted from 1501-1722, it is covered all of Iran, and parts of turkey and Georgia, the safavid empire was a golden age of textile arts. Iran was both a producer and exporter of fabulous textile, In the sixteenth century the classical Persian carpet achieved its fully development from under royal patronage, woven silk and velvet reached the most textile advanced in this period. Numerous painted cotton textiles from the nineteenth century are preserved. Persian ornaments is one of Persian art, it uses mostly floral, animal, geometric, and human ornaments.

Figures will show some types of Persian design



Figure (1): One of the rugs with vases drawings on the ground with multi colors from sixth century AD, and it is preserved at the Museum of Berlin.



Figure (2): A carpet from the Safavid era that has plant decorations for cypress Iran trees, and it is at the Museum of Berlin.



Figure (3): A wool carpet illustrated on it plant motifs such as pomegranate flower on a red ground and decorated with colors including yellow, blue and orange. The Safavid era, the seventeenth century AD. The Safavid era in Iran.



Figure (4): A carpet from the Safavid era has geometric motifs that represent a group of adjacent triangles with each other and correspond to each other to be a square shape in the middle of the carpet. The safavid era in Iran.



Figure (5): A carpet from the Safavid era has Geometric motifs made up like interlocking rings as a chain consists of plant serrated leaves, it is one of the common used motifs in the Safavid era, and it is preserved in the Museum of Berlin.



Figure (6): A carpet from the Safavid era has animal motifs like a bird and plant motifs in addition to plant motifs like a circle in addition to square shaped letter (T), and it is preserved in the Museum of Berlin.

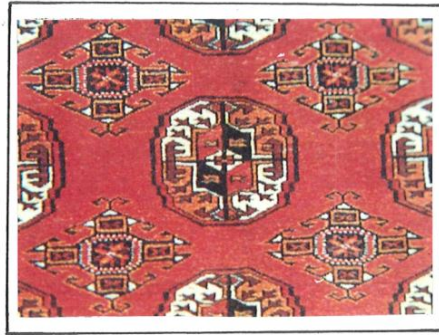


Figure (7): A carpet from the Safavid era has geometric motifs consists of four papers converged with each making the decorative shaped Cross. The Safavid era in Iran.



Figure (8): A wool carpet from the Safavid era has a human drawings and it has been done in a geometric method, consists of various geometric shapes like the rectangle, the triangle, the square and different lines. The Safavid era in Iran.

1.2. Methodology: This search belongs to the comparable applicable methodology.

2. Materials and Methods

2.1 The Materials

Leather material was used in this project which was implemented by hand method and machine method.

2.2 The methods

There are some tools with leather were used to finish this project as the following:



Fig. (10): Round Punch (A)



Fig. (11): Stitching needle (B)

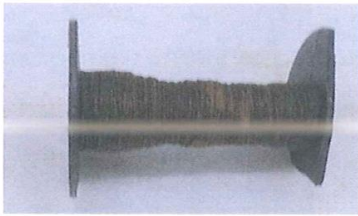


Fig. (12): Stitching thread (C)



Fig. (13): Rawhide Mallet (D)



Fig. (14): Revolving Punch (E)



Fig. (15): Cutter (F)

2.3 The Machines Used

Tajima Embroidery Machine was used to finish this project



Machine embroidery for sewing leather

Model	Needles	Pairs	Chenille heads	Standard heads	Head interval	Embroidery Space (D×Wmm)		Table Size (D×Wmm)
						D×W (Alternate)	Continuous design	
TCMX-60910	9	10	10	10	570	680×570 (230)	5,700	1,830×7,745
TCMX-60912	9	12	12	12	510	800×510 (230)	6,120	2,070×8,115
TCMX-60915	9	15	15	15	510	1,000×510 (230)	7,650	2,470×9,645

TCMX Mixed Type
A Mixed type series to increase production efficiency and open the way to versatile embroidery expressions.

*Consultation for orders of special embroidery machines is also available.

Fig. (16): Machine for Sewing Leather

- Tajima embroidery machine for making spangles on a cushion leather with 100% silk thread, (9) number of needles, 15 heads and 700 rpm.



Fig. (17): laser cutting machine for leather

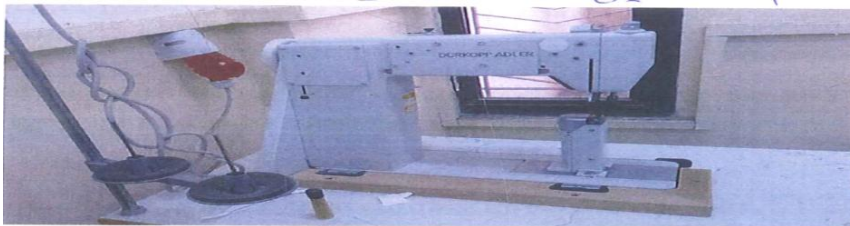


Figure. (18): Machine for Sewing leather

- (Adler) sewing leather machine which works with ordinary stitches, by 100% polyester thread and with number of needle 16.

2.4 Test methods:

Physico – mechanical test for a cushion leather have been carried out to check the quality of leather and the suitability to withstand stress during embroidery or after using it.

2.4.1 Tensile strength

Tensile strength and elongation at break was determined according to **ASTM 1506-2007-ES 1506-2007, EG 122/2008**

2.4.2 Abrasion resistance

Abrasion resistance was determined according to **ASTM 4966-2002, ES 122\2008.**

2.4.3 Tearing Strength:

Tearing strength was determined according to **IO 13937-4: 2003-ASTMD4533.**

2.4.4 Colour fast to abrasion (leather)

Colour fast to abrasion was determined according to **ES 122/2008.**

2.4.5 Thickness (leather)

Fabric thickness was determined according to **ES 122/2008.**

2.4.6 Reflecting (leather)

Reflecting was determined according to **ES 122/2008.**

3. Results and Discussions:

In this paper, animal design was used by two methods (manually and machine) to produce a cushion application.



Shows the original design from safavid age (1501-1722)

Figure (19): One of the pieces which found in safavid age in colors of navy, yellow and blue, from the seventeenth century, which represent the two fishes adjacent to each other in circle shape surrounded by geometric shapes in the four corners

3.1 Specifications of Leather cushion:

	Manual Embroidery	Machine embroidery
period	Safavid	
Size	30 x 40	
Materials	A.Leather:- This material was used to accomplish the forth project as a background	
	B.Threads 100% cotton threads were used in manual embroidery and machine embroidery. C.Spangles and Astras were used in manual embroidery and machine embroidery. D.Plastic eyes as an accessories were used in hand embroidery and machine embroidery	
Technique used	A. Embroidery technique used:- 1-Satin stitch was used in machine embroidery and hand embroidery	
Machine used	-----	Tajima TCMX multi head embroidery machine speed 700 rpm, needle no 9,and 15 head.
Needles	In hand embroidery needle number10 was used	In machine embroidery needle number 14 was used

3.2 Production stages of this project:

Handmade production stages

Machine production stages

3.2.1 Handmade production stages:

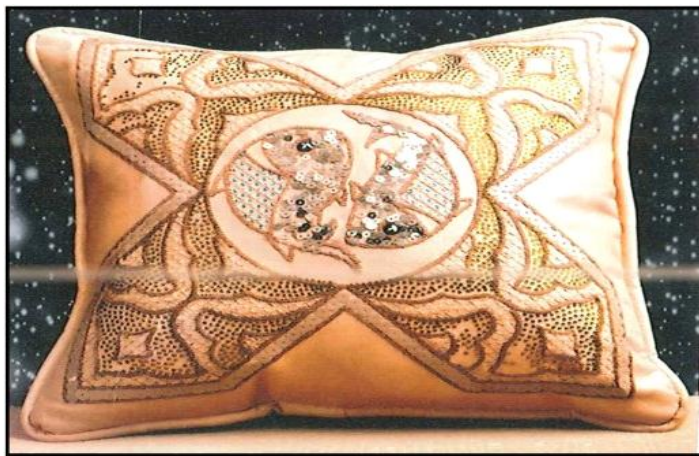
1. Preparing the material (leather).
2. Clean (leather) with wet sponge.
3. Fix the design on leather material.
4. Tracing the design by transparent paper on leather by empty pen.
5. Start stitching with suitable thread on leather.

3.2.2 Machine production stages:

1. Prepare the design on computer.
2. Recording film (DST) design stitch Tajima on computer embroidery machine.
3. Fixed the film on computer screen of machine embroidery.
4. Adding vasline layer on embroidery machine and select the unit or (design), putting leather, preparing colors for running embroidery which were selected then run on machine to start embroidery.

3.3 Final products

The cushion which have been implemented by hand and machine method.



Cushion by handmade.



Cushion by machine.

3.4 Analysis of leather cushion:

1-For this project (**Leather cushion**) Leather material was used.

2-**Satin** stitches used in both hand embroidery and machine embroidery

3-**100% cotton thread** is the most suitable in **hand embroidery** and machine embroidery because it is strong enough to start the work with machine, and to facilitate work with hand embroidery when give excellent covering with its soft colors which enhance the appearance.

4-**Spangles and Astras:** pieces of glittering metal used for decorating cushion and to fill the spaces gently in both hand embroidery and machine embroidery

5-**Needle size** is very important for easily implementation in this project to accommodate with nature of materials and its thickness. In this project, needle number **14** in machine embroidery gives the best results, while in hand embroidery needle number **10** gives the best results to avoid the appearance of holes or tears on material.

3.5 Problems associated with the machine product:-

Problem	Suggestions for solution
<ul style="list-style-type: none"> • The machine stops for several reasons. <p>A- cutting of filament because of:</p>	<ul style="list-style-type: none"> • Adjustment of the machine caliber • Using filament suitable to the thickness and type of fabric
<p>B- break of needles because of:</p> <ul style="list-style-type: none"> • Speed of machine on revolutions • Dense stitches in the drawing in the place, which leads to break of needle. • Type of needle is not suitable to the fabric. • Shuttle is misplaced 	<ul style="list-style-type: none"> • Adjustment of machine during the revolutions to work slowly • Requires increase of the needle thickness to prevent breaking • Change of the needle number to be suitable to the fabric type • Right repositioning of shuttle
<p>C. termination of filament because of:</p>	<ul style="list-style-type: none"> • Change of filament in case of upper filament. • Change of shuttle in case the shuttle filament ends. The worker shall assure that the shuttle is filled in all heads before starting the work.

4. Conclusions

1-The target of this research has been fulfilled.

2-100%cotton thread is the most suitable in hand embroidery and machine embroidery as a result of its suitability while working on hard material like leather to give good appearance

3-Satin stitch was used in both hand and machine embroidery.

4-Needle size is very important factor which was number **10** in hand embroidery and number **14** for machine embroidery for best results.

The new innovation in design:

5-Using Tajima TCMX embroidery machine which speed reach to 700 rpm, the number of needle is **11**, and using **15** head, to achieve the best embroidery results.

6-Spangles and Astras which used in hand and machine embroidery add a wonderful look to the whole design and weren't found in safavid period.

References:

Annual book of ASTM standards,section 7,textile,ASTM organization.

C. Groneman, leather tooling and carving, courier corporation, 2012.

E. Letcavage, Basic Leather Crafting: All Skills and Tools you need to get started, stack pol books, 2014.

G. West, leather work: A manual of Technique, Crowood, 2011.

Internet, [http://www.flickerphoto\(iran\).com](http://www.flickerphoto(iran).com)

Internet: <http://www.ebay.com>, leather working tools, 2015.

L. Galvin, Making Leather Purses & Totes Sterling Publishing Company, Inc., 2005.

W. Shaaban, "The Decorative Traditional Heritage in The Safavid Age in Iran and its use to enrich the upholstery "an empirical study", 2002.

الملخص العربي

إنتاج وسائد مطرزة من العصر الصفوي باستخدام الجلد بأساليب مختلفة

وليد شعبان^(١)، سوسن عبد اللطيف^(١)، سناء صلاح الدين^(٢)، رانيا صادق سيف^(٢)، فاطمة حسن^(٣)

١- كلية الاقتصاد المنزلي جامعة حلوان

٢- كلية البنات جامعة عين شمس

٣- كلية التربية النوعية جامعة عين شمس

في هذا البحث تم إنتاج وسادة جلد بكلاً من الطريقة اليدوية وبماكينة التطريز الآلية.

التصميم المستخدم كان من العصر الصفوي (زخارف حيوانية).

تم استخدام ١٠٠% من خيوط القطن لحياكة كل التصميم بالطريقتين اليدوية والآلية وتم استخدام الإبر لحياكة التصميم بالطريقتين اليدوية والآلية.

ولإنتاج التصميم باستخدام ماكينة التطريز الآلي تم استخدام ماكينة التطريز التاجيما والتي سرعتها إلى ٧٠٠ وحدة وعدد ابرها إلى ٩ ابر وعدد رؤوسها إلى ١٥ رأس والخامة المستخدمة كانت الجلد وتم رصد أهم النتائج وتحليلها متضمنة المشاكل التي تم التعرض لها أثناء الإنتاج وأخيراً تم رصد أهم النتائج المستخلصة من البحث.