

## **Merging Sashiko Technique and Ancient Egyptian Civilization Arts Using Digital Technology as an Innovative Fashion Design Source**

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### **Abstract**

Sashiko is a Japanese technique of functional and decorative embroidery that started from a practical and functional need during the Edo era (1615-1868) and was used to reinforce or repair worn out places in clothes. Pieces of worn-out clothing were stitched together to make new ones using simple running stitches, eventually making the piece stronger and more durable. White cotton thread was often used on the traditional blue indigo cloth with its distinctive appearance, and sometimes red thread was also used. The color of the thread is limited to white or the traditional indigo color or even the basic stereotypes. The Sashiko patterns is divided into Moyōzashi (pattern sashiko) and Hitomezashi (one stitch sashiko) patterns. But now it is not limited to white thread or the traditional indigo color or even the basic patterns. The sashiko technique is considered an addition of high artistic and aesthetic value to the decoration of the surfaces of fabrics.

The term “Ancient Egypt” as a historical term refers to the civilization of the Nile Valley, from about 3300 BC until the invasion of Alexander the Great in 332 BC. Ancient Egyptian art was able to contribute significantly to the advancement of Ancient Egyptian civilization to this status significantly for more than three thousand years, this civilization was characterized by many features of loftiness and greatness, as the magnificence of their artworks and the beauty of coordination, which is evident through lines, surfaces and harmonious relationships, which created harmony between them that reached the point of creativity in expressing this civilization, that had an impact on preserving the Egyptian Art form with its well-known features.

Many scientists have mentioned various definitions for technology, but it is defined idiomatically as everything that a person has done, all the changes he made to things in nature, and the tools he made to help him in his work. Therefore, technology means the optimal use of scientific knowledge and its applications and adapting it to serve humans and well-being.

Believing in the role of the fashion designer in knowing the historical handicrafts and contributing to increase social awareness of their aesthetics, artistic and functional values, and

the greatness of the Ancient Egyptian Civilization and its arts, this study will present merging between Sashiko technique and various technologies in view of the Ancient Egyptian Civilization Arts "Nefertiti's Bust", to enrich the field of fashion design and form a wearable art that represents personal identity. Using a lot of methods and techniques on the fabrics, as well as using different materials in its diversity according to achieving the design function in new and innovative ways to produce designs that suits with fashion trends.

## Keywords:

Sashiko- Ancient Egyptian Civilization Arts- Nefertiti's Bust- Digital Technology.

## المخلص:

الساشيكو هي تقنية يابانية من تقنيات التطريز الوظيفي والتعزيزي الزخرفي التي بدأت من الحاجة العملية والوظيفية خلال عصر الإيدو (١٨٦٨-١٦١٥)، فكانت تستخدم لتعزيز نقاط البلى أو لإصلاح الأماكن البالية بالملابس أو تجميع الملابس البالية معاً لصنع ملابس جديدة باستخدام غرز بسيطة، مما يجعل القطعة في نهاية المطاف أقوى وأكثر دقاً، وغالباً ما كان يستخدم بها خيط القطن الأبيض على القماش الأزرق النيلي التقليدي ذو المظهر المميز وكان أحياناً يستخدم أيضاً الخيط الأحمر، ومعظم الأنماط التي كانت تستخدم في عمل تلك التقنية أنماطاً هندسية وهناك نمطان رئيسيان هما المويوزاشي والهيتميزاشي (Hitomezashi- Moyōzashi).

أما الآن فلا يقتصر لون الخيط على اللون الأبيض أو اللون النيلي التقليدي أو حتى الأشكال النمطية الأساسية، فتقنية الساشيكو تعتبر إضافة ذات قيمة فنية وجمالية عالية لزخرفة أسطح الأقمشة.

و يشير مصطلح مصر القديمة كمصطلح تاريخي إلى حضارة وادي النيل، منذ حوالي عام ٣٣٠٠ قبل الميلاد حتى غزو الإسكندر الأكبر عام ٣٣٢ قبل الميلاد، فاستطاع الفن المصري القديم أن يسهم إسهاماً كبيراً في الإرتقاء بالحضارة المصرية القديمة إلى هذه المكانة بشكل ملحوظ على مدى أكثر من ثلاثة آلاف سنة، فلقد اتسمت تلك الحضارة بكثير من سمات الشموخ والرفعة والسمو لما تتمتع به أعمالها من روعة المظهر، جلال التعبير وجمال التنسيق الذي يتضح جلياً من خلال الخطوط والسطوح والعلاقات المتناغمة، مما أحدث بينهما إنسجاماً وصل إلى حد الإبداع في التعبير عن تلك الحضارة بكل ما تحويه من فكر وعقيدة كان لهما كل الأثر في الحفاظ على شكل الفن المصري بسماته المعروفة.

وقد ذكر الكثير من العلماء تعريفات عديدة للتكنولوجيا إلا أنها عرفت إصطلاح بأنها كل ما قام الإنسان بعمله، وكل التغييرات التي أدخلها على الأشياء الموجودة في الطبيعة، والأدوات التي صنعها لمساعدته في أعماله، ولهذا فإن التكنولوجيا تعني الاستخدام الأمثل للمعرفة العلمية وتطبيقاتها وتطويعها لخدمة الإنسان ورفاهيته.

وإيماناً بدور مصمم الأزياء في الإلمام بالحرف اليدوية التاريخية والمساهمة في زيادة الوعي المجتمعي لجماليتها وقيمتها الفنية والوظيفية وعراقة الحضارة المصرية القديمة وفنونها، ستقدم هذه الدراسة الدمج بين تقنية الساشيكواليابانية والتكنولوجيات المختلفة في ضوء فنون الحضارة المصرية القديمة "وجه نفرتيتي (التمثال النصفى لنفرتيتي)" لإثراء مجال تصميم الأزياء وتكوين فن قابل للإرتداء وممثل للهوية المصرية باستخدام الكثير من الطرق والتقنيات على الأقمشة، وأيضاً استخدام الخامات المختلفة بتنوعها حسب تحقيقها لوظيفة التصميم بطرق جديدة ومبتكرة لإنتاج تصميمات تتناسب مع اتجاهات الموضة السائدة.

## الكلمات المفتاحية:

الساشيكو- فنون الحضارة المصرية القديمة- التمثال النصفى لنفرتيتي "وجه نفرتيتي"- التكنولوجيا الرقمية

## Introduction:

Fashion design is considered a part of human behavior, as a person usually seeks to satisfy his needs. It is also that innovative and renewable entity in its lines, color, spaces, and various materials, with which the fashion designer tries to translate the elements of composition into an innovative design that copes with the conditions of reality in a beautiful formative way.

Perhaps one of the ways that makes communication occurs between people is hand-made clothing or that relies on crafts and manual techniques, where artisans build an intimate relationship between them and the wearers of these pieces of clothing: These pieces of clothing carry experiences, qualities, stories, passion and love, so those pieces convey authentic meanings, vision and culture of their makers.

### **Sashiko:**

Sashiko is a traditional Japanese art of functional embroidery defined by its use of the running stitch and geometric patterns. It was used to insulate, strengthen, patch, and mend textiles to extend their life and usefulness. Sashiko translates as "little stabs," which perfectly describes the method used to create the distinctive sashiko running stitch. This simple, efficient stitch was used to quilt layers of fabric together with bold, interlocking geometric patterns. It has also sometimes been called 'rice stitch' because in its traditional yarn color of off-white, it resembles a grain of rice. (Jessica Marquez, 2018)

### **Sashiko History:**

Sashiko evolved as a rural domestic craft in Japan during the Edo era (1615-1868), a time of increasing prosperity and peace after more than a hundred years of civil war. It made cloth stronger, improved its thermal qualities and recycled worn-out textiles which is important at a time when all fibers were hand spun, hand woven and hand dyed in labor intensive processes, from linen, hemp, ramie and other bast fibers. Synthetic indigo was introduced in the late 19<sup>th</sup> century and consequently there are few traditional dye shops in Japan today. (Staff J, 2007)

In Japan, three, five and seven are lucky numbers, often reflected in sashiko designs. Zigzag patterns were considered protective, as evil spirits cannot follow the zigzag lines (the same belief behind zigzag bridges in Japanese gardens) and diamond points also kept evil away. A sashiko revival began in the 1970s, parallel to the rise in Western quilting in Japan. People are appreciating stitching sashiko for its creative, relaxing and even therapeutic qualities. (Dollinger, A., 2000)

### **Sashiko Patterns:**

Sashiko patterns is divided into (Moyōzashi and Hitomezashi) sashiko patterns. Most names end with zashi (a mutation from sashi), which translates best as 'stitch', but all the stitches are really running stitch. (Briscoe S., 2005)

### **Moyōzashi Sashiko patterns:**

These designs have curved or straight lines of running stitch which change direction to make larger patterns. As (Spirals in Squares- Circles and Curves- Diamond Stars- Waves Hemp Leaf- Steps and Weaves- Diamonds - Key Forms).



**Figure (1): Examples of: Moyōzashi Sashiko patterns**

### Hitomezashi Sashiko patterns

Hitomezashi (one stitch sashiko) designs are worked as a grid of straight lines, where stitches meet or cross to make the design. As (Kawari kikkōzashi “tortoiseshell stitch variation”- Kawarikomezashi “rice stitch variation”- Kawari “rice stitch variation”- Kusari jūjizashi “chain cross stitch”- Sanjū kakinohanazashi “triple persimmon flower stitch”- Nagarebishi “flowing diamond”- Yabanezashi “arrow stitch”- Futometsunagi “linked bold stitch”).



Figure (2): Examples of: Hitomezashi Sashiko patterns

### Ancient Egyptian Civilization Arts

The various forms of ancient Egyptian art are characterized by their high quality, absolute symmetry, and detailed depiction of human beings like Kings & Queens, Royals, Ministries, and holy Deities and reflective images from their nature and environment. It was also very symbolic as it carried many vivid representations of philosophical topics like time, life, and death. (Adolf, E., 1927)

### The background of the Bust of Nefertiti

Nefertiti's painted bust (1370–1330 BC), discovered in the annex of the reception hall of the house of the sculptor Thutmose at Amarna a royal artist who made statues or paintings of the king and of a few nobles by Ludwig Borchardt on December 6, 1912. (Jordan Taliha McDonald, 2019)



Pic 1: The so-called Berlin bust of Nefertiti (ÄM 21300; H. 49; W. 24.5; by D. 35 cm), the sculptor Thutmose at Amarna on December 6 (1912). Photograph © Ägyptisches Museum

### The beauty of Nefertiti

The Bust of Nefertiti shows the head, neck and an area extending from the clavicle to just above the breasts of a woman whose hairless head is topped by a crown, and whose long, slender neck is encircled by a colorful floral collar incorporating petals and small fruits. The woman has a narrow face with prominent brow ridges and cheekbones, a long nose and full lips. Her eyes are almond shaped, her brows well defined and her chin firm. The bust has been created from carved

limestone (calcium carbonate) – an unexceptional stone – coated with layers of gypsum plaster (calcium hydroxide) and painted, so that the core itself is invisible to the naked eye. The bust is uninscribed, and so our identification of its subject is based purely on our recognition of its tall, flat-topped crown as a headdress that is unique to Nefertiti. (Aidan Dodson, 2009)

### **The iconography of Nefertiti's crown:**

The bust is uninscribed, and so our identification of its subject is based purely on our recognition of its tall, flat-topped crown as a headdress that is unique to Nefertiti. We see this crown repeatedly in Amarna art and sculpture, and every time we see it we identify the wearer as Nefertiti. (Jordan Taliha McDonald, 2019)

### **Digital technologies:**

They are electronic tools, systems, devices and resources that generate, create, store, manage or process data. Examples include digital cameras, personal computers, and all devices that utilize increasingly fast data transmission speeds and that store or process data using digital signals. (Michael, A., 2017)

### **Procreate- app:**

Procreate is a raster graphics editor application for digital painting developed and published by Savage Interactive for iOS and iPad OS. Designed in response to the artistic possibilities of the iPad, it was launched on the App Store (iOS) in 2011. (Yongyeon Cho, 2020)

The aim of Procreate is to recreate the natural feel of physical drawing while utilizing the practical advantages of a digital platform. It offers over 130 customizable brush presets, multiple layers, blend modes, masks, 4K resolution export of process videos, autosave, and many other digital art tools.

### **Research problem:**

The research problem can be formulated through the following questions:

- What is the extent of benefit from using the Sashiko technique to enrich the aesthetic and functional values of fashion design?
- How can the Sashiko technique be adapted to the Ancient Egyptian Civilization arts?
- What is the possibility of innovating new designs by merging the available modern technologies with the Sashiko technique and Ancient Egyptian Civilization arts?
- What is the possibility of innovating designs that are compatible with fashion trends?
- What are the specifications of selecting suitable fabrics for the type of Sashiko technique and the technologies used?

### **Research significance:**

- 1- Learning about historical handicrafts through applying it in innovative designs.
- 2- Benefiting from the artistic and aesthetic values of Sashiko technique by merging it with the Ancient Egyptian Civilization arts "Nefertiti's Bust".
- 3- Shedding light on a new trend in fashion design by merging handicrafts with different technologies.

- 4- Enhancing the role of the designer in raising the level of community knowledge of traditional handicrafts from different cultures and the greatness of the Ancient Egyptian Civilization.
- 5- Contributing to show up a new artistic vision that serves the field of small projects in clothing.

### **Research objectives:**

- 1- Learning about methods of applying Sashiko technique and patterns.
- 2- Keeping up with scientific and technological progress while preserving the revival of handicrafts.
- 3- Innovating designs that deliver a merged cultural and Civilization thoughts.
- 4- Merging different technologies with Sashiko by using the Ancient Egyptian Civilization Arts "Nefertiti's Bust" as a source of inspiration.

### **Research hypotheses:**

- 1- There is a statistically significant difference that using sashiko technique in innovative designs affects the aesthetic and functional values of garments.
- 2- There is a statistical significant difference about the possibility of merging Sashiko with Ancient Egyptian Civilization Arts "Nefertiti's Bust" and being compatible with fashion trends.
- 3- There is a statistical significant difference about possibility of merging different technologies with Sashiko by Using the Ancient Egyptian Civilization Arts "Nefertiti's Bust" as a source of inspiration.
- 4- There is a statistically significant difference that using digital technology applications as procreate-app, enhances the illustration of fashion design.

### **Research limitations:**

Women's clothes between 20-35 years' old

### **Research methodology**

- 1- Descriptive method
- 2- Experimental method

### **Experimental work:**

#### **Steps of the applied study:**

- 1- Sashiko is divided into Sashiko technique which is the "Running stitch" and Sashiko patterns which is "Moyōzashi" Sashiko patterns and "Hitomezashi" Sashiko patterns.

**So, the researcher divided the main idea of the designs into four categories:**

#### **Category "A": Merging Nefertiti's Bust with the original Sashiko patterns and applying these patterns by the original technique**

This is done through the traditional hand embroidery of these Sashiko patterns, using the original technique.

#### **Category "B": Merging Nefertiti's Bust with the original Sashiko patterns but without applying these patterns by the original Sashiko technique**

This is done through digital printing of the original Sashiko patterns that merged with Nefertiti's Bust and this is also done by using laser cut to give the same appearance of the original Sashiko pattern that merged with Nefertiti's Bust.

### Category "C": Merging Nefertiti's Bust with the original Sashiko technique (Running stitch)

This is done through traditional hand embroidery using the original distinctive Sashiko technique stitching, which is the "Running stitch".

### Category "D": Merging Nefertiti's Bust with different digital technologies that indicates Sashiko technique (Running stitch) but without using the original Sashiko technique method

This is done by using different digital technologies that give the same appearance and form of the original Sashiko technique (Running stitch), but without stitching it by the original way.

Example for that, using digitizing machine embroidery that give the Sashiko running stitch shape and digital printing also by printing the Sashiko running stitch shape.

1- The researcher sketched twenty suggested designs, in which she merged the Ancient Egyptian Civilization Arts represented in "Nefertiti's Bust" with Sashiko and this is according to the four categories that were explained above.


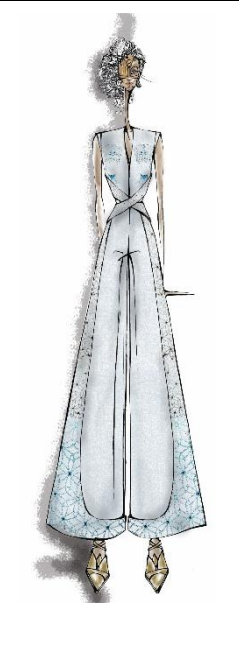



2- Then, coloring the suggested designs using procreate-app.

3- A questionnaire was done on the suggested designs through a sample of 45 specialists and experts in the fashion field.

4- Based on the questionnaire results, 12 (twelve) designs were applied according to the four categories that were explained above, as they took the highest percentage in the Statistical results.

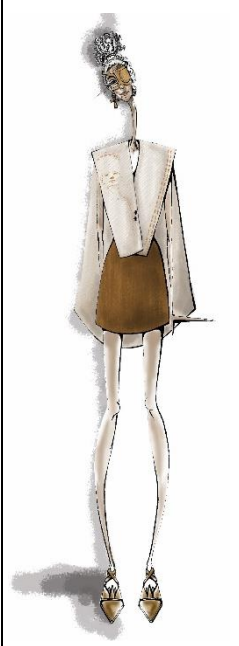
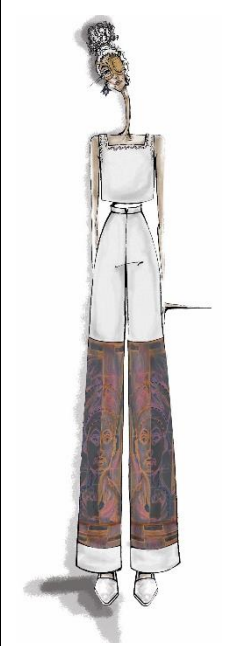
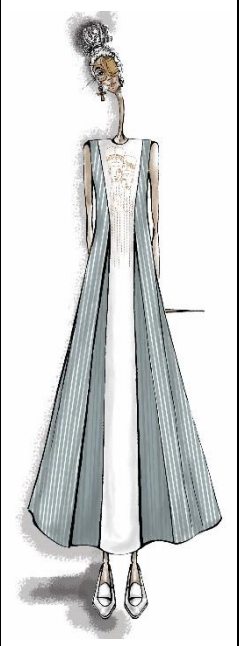
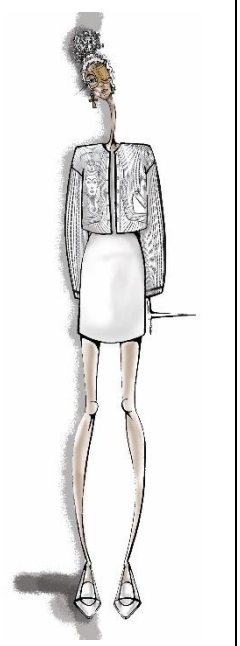

5- The applied designs photographed at "step pyramid of Djoser (Zoser)" in saqqara - Giza - Egypt.

#### - The twenty suggested designs

				
<b>Figure (3): 1<sup>st</sup> Suggested Design "Category A"</b>	<b>Figure (4): 2<sup>nd</sup> Suggested Design "Category A"</b>	<b>Figure (5): 3<sup>rd</sup> Suggested Design "Category A"</b>	<b>Figure (6): 4<sup>th</sup> Suggested Design "Category A"</b>	<b>Figure (7): 5<sup>th</sup> Suggested Design "Category A"</b>

				
<b>Figure (8): 6<sup>th</sup> Suggested Design “Category B”</b>	<b>Figure (9): 7<sup>th</sup> Suggested Design “Category B”</b>	<b>Figure (10): 8<sup>th</sup> Suggested Design “Category B”</b>	<b>Figure (11): 9<sup>th</sup> Suggested Design “Category B”</b>	<b>Figure (12): 10<sup>th</sup> Suggested Design “Category B”</b>
				
<b>Figure (13): 11<sup>th</sup> Suggested Design “Category C”</b>	<b>Figure (14): 12<sup>th</sup> Suggested Design “Category C”</b>	<b>Figure (15): 13<sup>th</sup> Suggested Design “Category C”</b>	<b>Figure (16): 14<sup>th</sup> Suggested Design “Category C”</b>	<b>Figure (17): 15<sup>th</sup> Suggested Design “Category C”</b>



				
<b>Figure (18):</b> 16 <sup>th</sup> Suggested Design “Category D”	<b>Figure (19):</b> 17 <sup>th</sup> Suggested Design “Category D”	<b>Figure (20):</b> 18 <sup>th</sup> Suggested Design “Category D”	<b>Figure (21):</b> 19 <sup>th</sup> Suggested Design “Category D”	<b>Figure (22):</b> 20 <sup>th</sup> Suggested Design “Category D”

### Statistical results:

For a questionnaire about:

“Merging Sashiko Technique and Ancient Egyptian Civilization Arts Using Digital Technology as an Innovative Fashion Design Source”

The opinions of a sample of specialists were analyzed using a three-Likert scale as follows: Scale "(Agree, Maybe, Dis-agree)" with weights (1, 2, 3) respectively, and the range was calculated by subtracting the smallest weight from the highest weight in the scale ( $2 - 1 = 2$ ), then dividing the range (2) on (3) in order to determine the actual length of each level, and it was ( $2 \div 3 = 0.67$  approximately), and this means that the “Dis-agree” level is between the value (1) and less than ( $1 + 0.67$ ), and that the level “Maybe is between ( $1.67$ ) and less than ( $1.67 + 0.67$ ), and the “Agree” level is between (2.40) to (5).

Thus, the average weighted mean of the answers for each of the statements is as follows: (Dis-agree)  $1.67 - 1$ , (Maybe)  $2.3 - 1.67$ , (Agree)  $3 - 2.34$ .

**Notes:** All means, standard deviations and percentages are rounded to two decimal places.

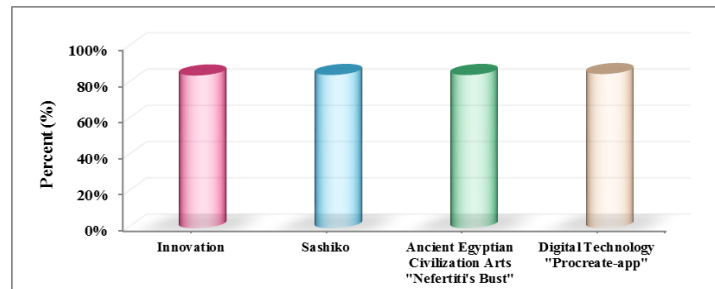
- Comparison between the proposed designs in the case of equality of the arithmetic means is the lowest standard deviation.

### Ensuring the axes of the questionnaire in the suggested designs:

In order to ensure that the axes of the questionnaire were achieved in the proposed designs in general, the researcher calculated the general arithmetic mean, standard deviation, and the percentage for each axis of the questionnaire for the proposed designs as a whole, according to a three-Likert scale. The results were as shown in Table (1):

**Table 1: The arithmetic means, standard deviations, and percentages of specialists' opinions towards achieving the questionnaire axes in the proposed designs as a whole.**

Axes	Mean	SD	Percent (%)	Agreement
Innovation	2.53	0.09	84.29%	Agree
Sashiko	2.54	0.08	84.57%	Agree
Ancient Egyptian Civilization Arts "Nefertiti's Bust"	2.54	0.09	84.56%	Agree
Digital Technology "Procreate-app"	2.55	0.08	85.10%	Agree

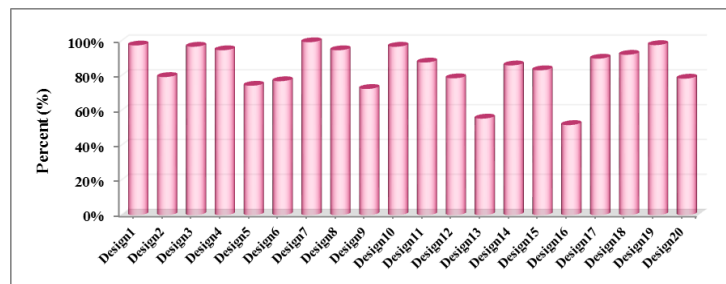


**Chart 1: Shows the axes of the questionnaire according to the percentage of each**

It is evident from Table (1) and Chart (1) the agreement of the specialists towards achieving the axes of the resolution in the proposed designs in general, where the opinions were high and fell at the level of "Agree" for the axes based on the triple gradient of weight, and the percentages ranged between (84.29% - 85.10%), which indicates the verification of the axes of the resolution in the proposed designs in general.

#### **Statistical results to evaluate the proposed designs:**

The researcher used the One-way-ANOVA to compare the arithmetic averages of the suggested designs according to the opinions of specialists at the level of the axes and the questionnaire as a whole, and the results were as follows:



**Chart 2: Shows the suggested designs in terms of "Innovation" according to the percentage of each.**

Chart (2) shows the suggested designs number (1, 2, 3, 4, 7, 8, 10, 11, 12, 14, 15, 17, 18, 19, 20), where the percentages ranged between (78.52% - 99.44%), while the opinions fell at the "Maybe" level for the suggested designs number (5, 6, 9), where the percentages ranged between (72.59%-77.04%), while the opinions fell at the level of "Dis-agree" for the suggested designs number (13,16), with a percentage of (55.56%, 51.85%), respectively, and graph (5) illustrates that.

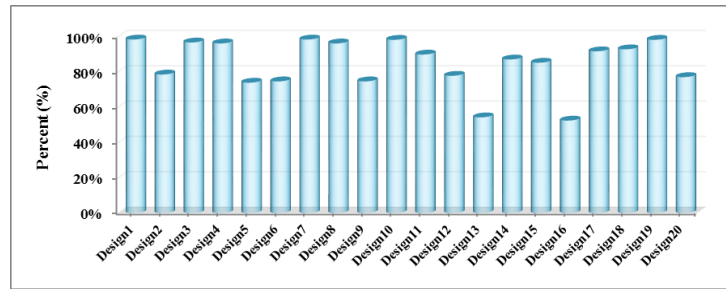


Chart 3: Shows the suggested designs in terms of applying "Sashiko", according to the percentage of each.

Shows that the suggested designs number (1, 2, 3, 4, 7, 8, 10, 11, 14, 15, 17, 18, 19), where the percentages ranged between (78.52% - 98.33%), while the opinions fell at the "Maybe" level for the suggested designs number (5, 6, 9, 12, 20), where the percentages ranged between (73.89% - 77.78%). While the opinions fell at the level of "Dis-agree" for the designs, numbers (13, 16), with a percentage of (54.26%, 52.41%), respectively, and graph (6) illustrates this.

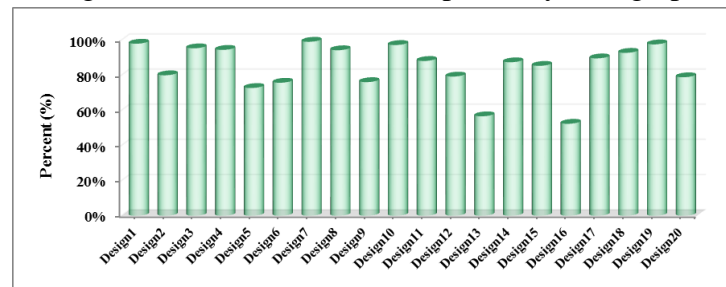


Chart 4: Shows the suggested designs in terms of applying "Ancient Egyptian Civilization Arts "Nefertiti's Bust", according to the percentage of each.

Shows that the suggested designs numbers (1, 2, 3, 4, 7, 8, 10, 11, 12, 14, 15, 17, 18, 19, 20), where the percentages ranged between (78.89% - 99.07%), while the opinions fell at the "Maybe" level for the suggested designs number (5, 6, 9, 13), where the percentages ranged between (56.67% - 76.11%), while the opinions fell at the level of "Dis-agree" for the suggested design no. (16), with a percentage of (52.41%), and graph (7) illustrates this.

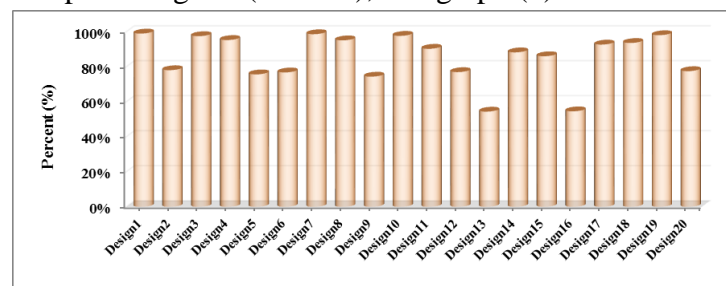


Chart 5: Shows the suggested designs in terms of Digital Technology "Procreate-app", according to the percentage of each.

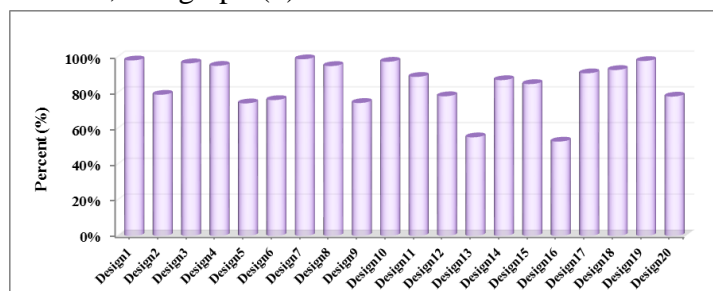
Shows that the suggested designs number (1, 2, 3, 4, 7, 8, 10, 11, 14, 15, 17, 18, 19), where the percentages ranged between (78.15% - 99.07%), while the opinions fell at the "Maybe" level for the suggested designs number (5, 6, 9, 12, 16), where the percentages ranged between (74.44% - 77.59%), while the opinions fell at the level of "Dis-agree" for the suggested designs number (13, 16) with a percentage (54.44%, 54.63%), respectively, and graph (8) illustrates that.

**Table 2: Arithmetic means, standard deviations, and percentages for the suggested designs from the overall evaluation.**

Designs	Mean	SD	Percent (%)	Agreement	Ranked
Design1	2.95	0.06	98.24%	Agree	2
Design2	2.37	0.12	79.03%	Agree	13
Design3	2.90	0.07	96.62%	Agree	5
Design4	2.86	0.08	95.19%	Agree	6
Design5	2.23	0.22	74.21%	Maybe	18
Design6	2.28	0.20	76.06%	Maybe	16
Design7	2.967	0.06	98.89%	Agree	1
Design8	2.85	0.10	95.09%	Agree	7
Design9	2.23	0.22	74.44%	Maybe	17
Design10	2.93	0.08	97.50%	Agree	4
Design11	2.67	0.13	89.03%	Agree	10
Design12	2.35	0.12	78.19%	Agree	14
Design13	1.66	0.19	55.23%	Dis-agree	19
Design14	2.62	0.14	87.22%	Agree	11
Design15	2.55	0.14	85.00%	Agree	12
Design16	1.58	0.17	52.82%	Dis-agree	20
Design17	2.73	0.11	91.02%	Agree	9
Design18	2.79	0.11	92.87%	Agree	8
Design19	2.94	0.08	97.92%	Agree	3
Design20	2.34	0.13	78.01%	Agree	15

**Table (2)** shows that the suggested designs number (1, 2, 3, 4, 7, 8, 10, 11, 12, 14, 15, 17, 18, 19, 20), where the arithmetic mean values for these designs ranged between (2.34 - 2.967), and the percentages ranged between (78.0189% - 98.89%), while the opinions fell at the "Maybe" level for the suggested designs number (5, 6, 9), where the values of the arithmetic mean for these designs ranged between (2.23 - 2.28), and the percentages ranged between (74.21% - 76.06%), while the opinions fell at the level of "Dis-agree" for the suggested designs number (13, 16) with an arithmetic mean of (1.66 - 1.58) and percentages (55.23% and 52.82%), respectively.



Design No. (7) ranked the first with an arithmetic average of (2.967) and a percentage of (98.89%), followed by design No. (1) in the second place with an arithmetic average of (2.95) and a percentage of (98.24%), then design No. (19) ranked third. With an arithmetic average of (2.94) and a percentage of (97.92%), then the rest of the designs come according to the percentage of each of them, and graph (9) illustrates this.

**Chart 6: Shows the suggested designs in terms of the overall evaluation according to the percentage of each.**

-Based on the questionnaire results, 12 (twelve) designs were applied as they took the highest percentage in the Statistical results.

-The Twelve applied designs and a description table for each design (The designs illustrated and colored using procreate-app)



### 1- Applied Design No.1

	<b>Design 1</b>	
	From the designs that were suggested for category “A”	
	<b>Design Decorative Unit</b>	
		<b>Ancient Egyptian Civilization Arts</b>
		“Nefertiti’s Bust”
		<b>Sashiko Pattern</b>
		<b>HITOMEZASHI</b>
	Urokozashi (fish scale stitch) Sorobanzashi (abacus stitch)	
<b>Design description:</b> Knee-length full skirt dress with a V-neckline		
<b>Fabrics:</b> Linen		
<b>Proposed Implementation method:</b> Hand embroidery		
<b>Colors:</b> Beige		
<b>Figure (23): 1<sup>st</sup> Design “Category A”</b>	Table (3): Description of the 1 <sup>st</sup> Design	




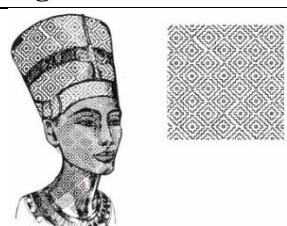
**Pic.2: 1<sup>st</sup> applied Design “Category A”**

## 2- Applied Design No.2

	<b>Design 2</b>	
	From the designs that were suggested for category “A”	
	<b>Design Decorative Unit</b>	
		<b>Ancient Egyptian Civilization Arts</b>
		“Nefertiti’s Bust”
		<b>Sashiko Pattern</b>
<b>MOYŌZASHI</b> Shippo tsunagi (linked seven treasures) Hishi seigaiha (diamond blue waves)		
<b>Design description:</b> Kimono made by gathering leftover denim pants		
<b>Fabrics:</b> Denim		
<b>Proposed Implementation method:</b> Hand embroidery and patchwork		
<b>Colors:</b> Denim blue		
<b>Figure (24): 2<sup>nd</sup> Design “Category A”</b>	<b>Table (4): Description of the 2<sup>nd</sup> Design</b>	



Pic.3: 2<sup>nd</sup> applied Design “Category A”

## 3- Applied Design No.3

	<b>Design 3</b>	
	From the designs that were suggested for category “A”	
	<b>Design Decorative Unit</b>	
		<b>Ancient Egyptian Civilization Arts</b>
		“Nefertiti’s Bust”
		<b>Sashiko Pattern</b>
	<b>HITOMEZASHI</b>	
Sanjū kakinohanazashi (triple persimmon flower stitch)		
<b>Design description:</b> A-line dress, above knee length with sleeves		
<b>Fabrics:</b> Plain-woven linen		
<b>Proposed Implementation method:</b> Hand embroidery		
<b>Colors:</b> Light gray		
<b>Figure (25): 3<sup>rd</sup> Design “Category A”</b>	<b>Table (5): Description of the 3<sup>rd</sup> Design</b>	

Pic.4: 3<sup>rd</sup> applied Design “Category A”



## 4- Applied Design No. 4

	<b>Design 4</b>	
	From the designs that were suggested for category “B”	
	<b>Design Decorative Unit</b>	
		<b>Ancient Egyptian Civilization Arts</b>
		“Nefertiti’s Bust”
		<b>Sashiko Pattern</b>
	<b>MOYŌZASHI</b>	
Asanoha (hemp leaf) (Without applying these patterns by the original sashiko technique)		
<b>Design description:</b> A-line strapless dress and an organza half-sleeved dress over it		
<b>Fabrics:</b> Rosaline – organza		
<b>Proposed Implementation method:</b> Sublimation digital printing		
<b>Colors:</b> Indigo blue – Navy blue – Red – White – Yellow – Green		
<b>Figure (26): 4<sup>th</sup> Design “Category B”</b>	<b>Table (6): Description of the 4<sup>th</sup> Design</b>	

Pic.5: 4<sup>th</sup> applied Design “Category B”





## 5- Applied Design No. 5

	<b>Design 5</b>	
	From the designs that were suggested for category “B”	
	<b>Design Decorative Unit</b>	
		<b>Ancient Egyptian Civilization Arts</b>
		“Nefertiti’s Bust”
		<b>Sashiko Pattern</b>
		<b>MOYŌZASHI</b>
	Sayagata (saya brocade pattern) (Without applying these patterns by the original sashiko technique)	
<b>Design description:</b> A round-neck blouse with long puffed-sleeves and a pencil skirt		
<b>Fabrics:</b> Organza		
<b>Proposed Implementation method:</b> Sublimation digital printing		
<b>Colors:</b> Dark red – sky blue – orange – black – lemon yellow		
<b>Figure (27): 5<sup>th</sup> Design “Category B”</b>	<b>Table (7): Description of the 5<sup>th</sup> Design</b>	



Pic.6: 5<sup>th</sup> applied Design “Category B”

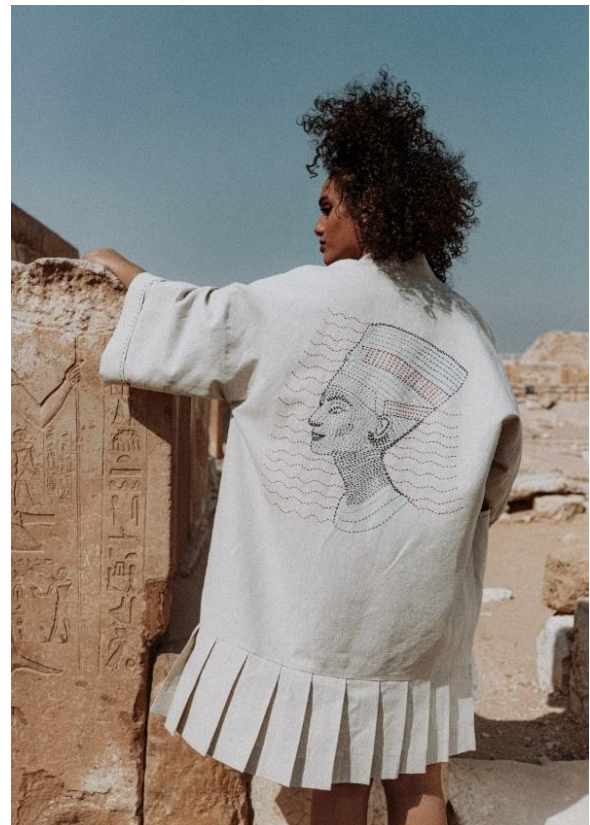
## 6- Applied Design No. 6

	<b>Design 6</b>	
	From the designs that were suggested for category “B”	
	<b>Design Decorative Unit</b>	
		<b>Ancient Egyptian Civilization Arts</b>
		“Nefertiti’s Bust”
		<b>Sashiko Pattern</b>
		<b>MOYŌZASHI</b>
	Kumiko (lattice)	
	<b>HITOMEZASHI</b>	
	Komenohanazashi (rice flower stitch)	
	Jijūhishikaha (woven cross diamond)	
	(Without applying these patterns by the original sashiko technique)	
<b>Design description:</b> Sleeveless vest, its length reaches waist line		
<b>Fabrics:</b> Genuine leather		
<b>Proposed Implementation method:</b> Laser-cut		
<b>Colors:</b> Blue- dark red- light beige- yellow- brown- camel beige		
<b>Figure (28): 6<sup>th</sup> Design “Category B”</b>	Table (8): Description of the 6 <sup>th</sup> Design	



Pic.7: 6<sup>th</sup> applied Design “Category B”

## 7- Applied Design No. 7

	<b>Design 7</b>	
	From the designs that were suggested for category “C”	
	<b>Design Decorative Unit</b>	
		<b>Ancient Egyptian Civilization Arts</b>
		“Nefertiti’s Bust”
		<b>Sashiko Technique</b>
		Sashiko running stitch
<b>Design description:</b> Kimono with wide sleeves, over knee length		
<b>Fabrics:</b> Linen		
<b>Proposed Implementation method:</b> Hand embroidery		
<b>Colors:</b> Cream-beige		
<b>Figure (29): 7<sup>th</sup> Design “Category C”</b>	<b>Table (9): Description of the 7<sup>th</sup> Design</b>	



Pic.8: 7<sup>th</sup> applied Design “Category C”

## 8- Applied Design No. 8

	<b>Design 8</b>	
	From the designs that were suggested for category “C”	
	<b>Design Decorative Unit</b>	
		<b>Ancient Egyptian Civilization Arts</b>
		“Nefertiti’s Bust”
		<b>Sashiko Technique</b>
	Sashiko running stitch	
<b>Design description:</b> Gabardine jacket, its length reaches waist line with long sleeves and a white -Denim short over knee-length		
<b>Fabrics:</b> Gabardine – denim		
<b>Proposed Implementation method:</b> Hand embroidery		
<b>Colors:</b> Light beige – White - Army dark green		
<b>Figure (30): 8<sup>th</sup> Design “Category C”</b>	<b>Table (10): Description of the 8<sup>th</sup> Design</b>	



Pic.9: 8<sup>th</sup> applied Design “Category C”

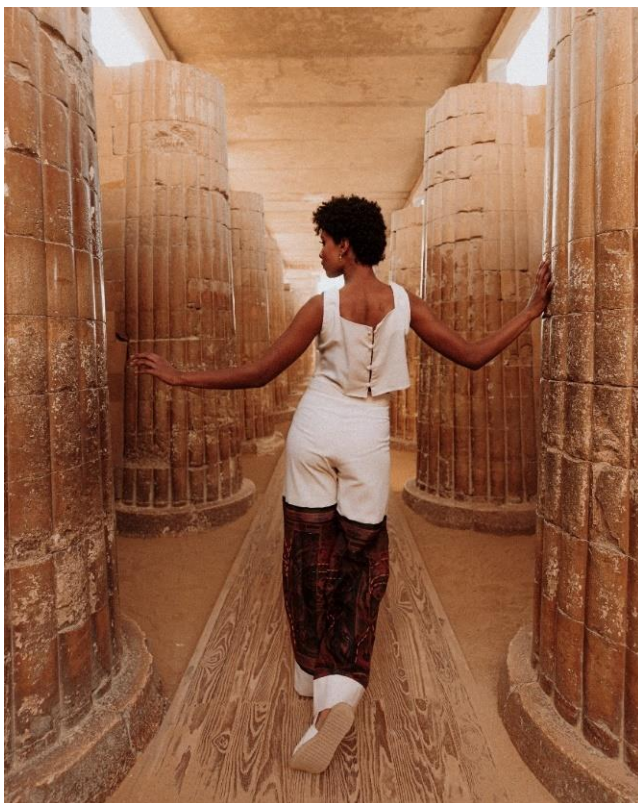
## 9- Applied Design No. 9

	<b>Design 9</b>	
	From the designs that were suggested for category “C”	
	<b>Design Decorative Unit</b>	
		<b>Ancient Egyptian Civilization Arts</b>
		“Nefertiti’s Bust”
		<b>Sashiko Technique</b>
Sashiko running stitch		
<b>Design description:</b> Long sleeveless vest, its length reaches over knee length and a velvet black dress under it		
<b>Fabrics:</b> Linen – velvet		
<b>Proposed Implementation method:</b> Hand embroidery		
<b>Colors:</b> Light creamy beige – black		
<b>Figure (31): 9<sup>th</sup> Design “Category C”</b>	Table (11): Description of the 9 <sup>th</sup> Design	

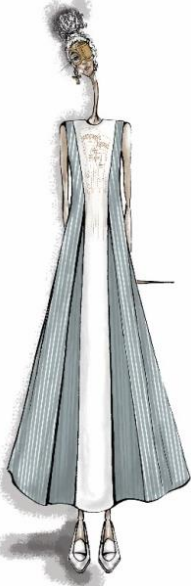

Pic.10: 9<sup>th</sup> applied Design “Category C”

## 10- Applied Design No. 10

	<b>Design 10</b>	
	From the designs that were suggested for category “D”	
	<b>Design Decorative Unit</b>	
		<b>Ancient Egyptian Civilization Arts</b>
		“Nefertiti’s Bust”
		<b>Sashiko Technique</b>
It appears as Sashiko running stitch but without stitching by the original technique		
<b>Design description:</b> Sleeveless full-circle long wide dress with round neckline		
<b>Fabrics:</b> Cotton poplin		
<b>Proposed Implementation method:</b> Digitizing machine embroidery		
<b>Colors:</b> Pistachio mint green – white		
<b>Figure (32): 10<sup>th</sup> Design “Category D”</b>	<b>Table (12): Description of the 10<sup>th</sup> Design</b>	



Pic.11: 10<sup>th</sup> applied Design “Category D”

## 11- Applied Design No. 11

	<b>Design 11</b>	
	From the designs that were suggested for category “D”	
	<b>Design Decorative Unit</b>	
		<b>Ancient Egyptian Civilization Arts</b>
		“Nefertiti’s Bust”
		<b>Sashiko Technique</b>
It appears as Sashiko running stitch but without stitching by the original technique		
<b>Design description:</b> A Crop-top with wide square neckline and a wide-leg high waisted pants		
<b>Fabrics:</b> Linen – organza		
<b>Proposed Implementation method:</b> Beads embroidery (tube glass crackle beads)		
<b>Colors:</b> White - Dark indigo – Magenta – Rusty orange		
<b>Figure (33): 11<sup>th</sup> Design “Category D”</b>	<b>Table (13): Description of the 11<sup>th</sup> Design</b>	

Pic.12: 11<sup>th</sup> applied Design “Category D”

## 12- Applied Design No. 12

	<b>Design 12</b>	
	From the designs that were suggested for category “D”	
	<b>Design Decorative Unit</b>	
		<b>Ancient Egyptian Civilization Arts</b>
		“Nefertiti’s Bust”
		<b>Sashiko Technique</b>
	It appears as Sashiko running stitch but without stitching by the original technique	
<b>Design description:</b> Waist-length kimono with long sleeves and a white dress under it		
<b>Fabrics:</b> Silk French-satin		
<b>Proposed Implementation method:</b> Sublimation digital printing		
<b>Colors:</b> Black – white		
<b>Figure (34): 12<sup>th</sup> Design “Category D”</b>	Table (14): Description of the 12 <sup>th</sup> Design	

Pic.13: 12<sup>th</sup> applied Design “Category D”



## Conclusion

The study work was based on merging Sashiko with Ancient Egyptian Civilization Arts "Nefertiti's Bust" using various methods and technologies.

Based on the results obtained the following can be concluded:

- The study shed light on the cultural knowledge of traditional handicrafts from different cultures and the greatness of the Ancient Egyptian Civilization Arts.
- The "Bust of Nefertiti" is not only recognized as an Egyptian history but also as a representation of objective beauty.
- Merging Sashiko with Ancient Egyptian Civilization Arts "Nefertiti's Bust " added to the aesthetic and functional value of the applied designs.
- Shedding light on a new trend in fashion design by merging handicrafts techniques and patterns with different technologies.
- Identifying historical handicrafts by presenting them through an innovative vision.
- Using digital technology applications as procreate-app, enhances the illustration of fashion design as it made the design process faster, more accurate and can be done anywhere.

## Recommendations

- Use the Ancient Egyptian Civilization Arts as a source of inspiration in fashion design.
- Conduct more researches and studies that shed light on the aesthetic of Sashiko technique and the possibility of applying it to enrich the aesthetic and functional value of fashion design.

## References:

- 1- Aidan Dodson 2009 "AMARNA SUNSET Nefertiti, Tutankhamun, Ay, Horemheb and the Egyptian Counter-Reformation" The American University in Cairo Press Cairo-New York Dar el Kutub No. 4198/09 ISBN 978 977 416 304 3.
- 2- Briscoe, S. (2005), The Ultimate Sashiko Sourcebook, Lola, WI: I F & W Publications, Inc. p. 11 ISBN 0-89689-186-0.
- 3- Dollinger, A. (2000). An introduction to the history and culture of Pharaonic Egypt.
- 4- JESSICA MARQUEZ, 2018 "MAKE + MEND sashiko- inspired embroidery projects to customize and repair textiles and decorate your home".
- 5- JILL CLAY, 2019 "sashiko 20 projects using traditional Japanese stitching".
- 6- Jordan Taliha McDonald 2019 "How Nefertiti Became a Powerful Symbol in Contemporary Art" .
- 7- Merriam, W. (2016), Technology | Definition of Technology by Merriam Webster.
- 8- Michael, A. (2017), What is Technology? Retrieved, Edited.
- 9- NIHON VOGUE, 2019 "Simply Sashiko Classic Japanese Embroidery Made Easy, with 36 Actual-Size Templates".
- 10- Smith, W. Stevenson, and Simpson, W. Kelly (1998), The Art and Architecture of Ancient Egypt, 3rd edn, Yale University Press (Penguin/Yale History of Art) .
- 11- Staff J. (2007), Sashiko Style: Traditional Japanese Patterns for Contemporary Design Paperback (The Classic Quilting of Sashiko Paperback) - Mariko Akizuki (Translator).
- 12- Yongyeon Cho 2020, Tutorials of Visual Graphic Communication Programs for Interior Design 2 book, Part Two. Hybrid Digital Drawing, Chapter8. iPad & Procreate.