International DESIGN JOURNAL
Print ISSN 2090-9632
Online ISSN 2090-9640

Utilizing Elements of Ancient Egyptian Art to Produce Sustainable and Environmental Textile Hangings

Athar Khalid Hassan
Spinning, Weaving and Knitting Department, Faculty of Applied Arts, Helwan University, Giza, Egypt, athar.mostafa93@gmail.com
Prof. Marwa A. Ali
Spinning and Weaving Engineering Department, Textile Research and Technology Institute, National Research Centre, Egypt,
Prof. Suzan Muhammad Hassan Gaafar
Spinning, Weaving and Knitting Department, Faculty of Applied Arts, Helwan University, Giza, Egypt

Abstract

The research aims to creating contemporary designs of textile hangings inspired by ancient Egyptian art with its different colors and units enriches and keeps pace with development to satisfy the different public tastes at the local and regional levels and is marketable and competitive, which suits modern and different decoration styles and is of higher quality than its non-woven counterparts. Also, the mechanical, physical and color properties of textile hangings were investigated that fabricated by the Goblin method to verify from functional performance and sustainable, the concept of green design was applied on textile hangings using natural material. The research methodology follows a descriptive analytical approach in studying textile hangings. Tools used in the study include design and producing ten textile hanging, as well as gathering opinions from 10 specialized experts and 25 consumers with different estimates. The results showed statistically significant differences between the ten textile hangings created on experts' opinions from aesthetic, functional and sustainability perspectives.

Keywords

Textile hangings, Ancient Egyptian Art, Goblin, Sustainable, Green design

Paper received October 28, 2024, Accepted December 19, 2024, Published on line March 1, 2025

Introduction

The art of hangings is one of the tools for expressing the sense of beauty, especially when it includes the arts of ancient Egyptian civilization. The design of the hanging is no different from the works of wall painting, except that it is more difficult as it requires precision and skill in implementation. It is an expressive mirror of civilization and sometimes to narrate events. The living proof of the vitality of its continuous history, and an important source of contemporary creativity and inspiration, and in accordance with the state's efforts and its tireless pursuit to revive and preserve the Egyptian heritage, this study addressed the inspiration from ancient Egyptian murals as the eye that reveals historical and cultural heritage that the nation has passed through reaching contemporary art, which is also an artistic cultural tool abounds with many easy-to-understand symbols that transcend language barriers and are full of many innovative aesthetic values.

Egyptian culture is one of the cultures rich in many different styles and forms of art, such as Pharaonic, Coptic, Islamic, Fatimid, Greek, Roman, etc., due to the different historical eras that Egypt went through [1-4]. However, it strongly influenced the different arts and even added its own character to them. The Egyptian civilization did not arise from nothing, but rather it is the result of hard work and perfect artistic creativity carried out by the ancient Egyptians [5]. Through the exploitation of all available elements and tools, they were able to advance their art and express their society in various images and forms, which contributed greatly to highlighting the ancient Egyptian civilization in a way that made it immortal throughout the ages. The ancient Egyptians expressed their artistic works in several different schools like; the ideal school, (Expression of statues of kings, goddesses and nobles) and Realistic school (Statue of the dwarf Seneb and his family …etc. The art of textile hangings is one of the applied arts that has a high artistic and aesthetic value because it fulfills the requirements of interior

CITATION Athar Hassan et al, (2025), Utilizing Elements of Ancient Egyptian Art to Produce Sustainable and Environmental Textile Hangings, International Design Journal, Vol. 15 No. 2, (March 2025) pp 79-91

architecture [1-7]. The areas and sizes of textile hangings vary and are proportional to their location, and their design also varies according to the interior design and style of the place. To beautify homes, offices, tourist places, etc., there have been many attempts to develop the artistic and applied methods used in the production of textile hangings [8] to add new aesthetic and tactile effects to them. The design and production of textile wall hangings has developed, as artistic and technical effects have been introduced through the great diversity in shape, color, texture, materials, and effects resulting from the multiplicity of techniques used [9-11]. It provides innovative textile pieces, and the possibility of using them to produce textile pendants of any size and shape, using different materials and raw materials, and producing difficult designs with overlapping color gradations, which allows for the production of unique designs far from the factory's mass production. The aim of the research was to transfer the ancient Egyptian mural design related to the real school to produce the textile hanging by the mechanical Goblin technique to obtain textile hanging with high aesthetic, and achieve the sustainability perspective that means; the balance between the consumption of natural resources to achieve production and growth to improve human living standards and well-being, and the application of social justice and the rational management of these natural resources to reduce pollution and decrease the damage in the environment [9-15].

Statement of the Problem

The realistic school in ancient Egyptians art that clearly expresses a reality and conveys a vivid image of their life affairs, was one of the reasons for studying it. The research problem can be formulated in the following questions;

- Does the innovation of recent designs inspired by ancient Egyptian art with its different colors and units to satisfy the differences in public taste at the local and regional levels and is marketable and competitive?
- Can the use of the textile hanging be revived as a contemporary artistic unit that suits modern and different decoration styles and is of higher quality than its non-woven counterparts?
- Can the physical, mechanical and color properties of textile hanging be improved to suit functional performance?
- Can the concept of sustainable product be applied to textile hanging?
- Can the concept of green design be applied to textile hanging?

Objectives

- The research aims to studying ancient Egyptian art and its units.
- Studying textile hanging and their physical, mechanical and color properties and implementation methods.
- Designing and implementing the textile hanging inspired by ancient Egyptian murals and with appropriate functional performance.
- Studying how to use and employ textile hanging as a contemporary artistic and functional unit in interior decoration works.

Hypothesis

- Using the units and colors of ancient Egyptian art to create designs for modern textile hangings that add a spirit of renewal and innovation to the textile hanging.
- Using locally and green available materials, and the Goblin mechanical method that achieve the sustainable durability.
- Improving the physical, mechanical and color properties of the textile hanging.

Delimitations

- Application area: Textile hanging.
- Implementation methods: Mechanical Goblin.
- Performance properties: Physical, mechanical and color properties.

Significance

- Developing the design of textile pendants to keep pace with contemporary taste.
- Borrow the basic units from ancient Egyptian civilization for textile hanging design to produce a textile product with aesthetic and competitive value.
- Implementing textile pieces with available local capabilities with high quality and preserve the heritage and authenticity of ancient Egyptian civilization.
- Producing textile hanging characterized by green design.

Theoretical Framework

1-Textile in the Pharaonic Era

The textile industry in the Pharaonic era was one of the oldest and most important industries. It was held in special places attached to temples, priests and religious men. Housewives who made textiles in temples [16]. By studying the textile pieces that were found, we find that the ornamental elements included mostly plant elements such as: the lotus flower and its buds, in addition to some other ornamental elements as Life eye, Papyrus flower, Straight lines, additionally Hieroglyphic writings [17].

Ancient Egyptians mastered artistic methods for

ornament textiles that including Non-extended wefts, Embroidery with multiple stitches and Direct drawing. The Egyptian people's continued love for weaving made them weave generation after generation, moving between different eras. Hangings are one of the oldest and most famous textile arts that have deep roots. By studying the human harvest in this field, it is clear that the designs of hanging textiles have always been a mirror of their time [18].

1.2. Design and Global Challenges

Design given the challenges that facing the international and local interest in preserving the environment, the primary concern has become to produce aesthetic and/or functional products that are environmentally friendly, whether during their use and benefit or when disposing of them. Therefore, the trend towards the concept of green design has become one of the requirements of this era, which is achieved by using natural materials with health-safe properties during use with the ability to biodegrade safely or recycle without affecting the environment [6,19-21].

1.3. Textile Hanging design and manufacturing

The textile design is a constructive process includes studies and experiments for textile parameters such as the material, the technique, the way of use other elements as lines, dots, space, etc. in the design, linking them to each other with formal relationships based on the foundations of design that depends on items as follows;

- Subject: The design must include a specific subject or idea that is the focus of the design and is clearly expressed through the skillful use of design elements.
- Organic unity: design elements (shapes and colors) must combine together to highlight the main idea of the subject in interaction and harmony.
- Diversity: appear through the diversity of the elements, colors, and different sizes and spaces.
- Rhythm: evident through the repetition of the elements used in the design, which results in harmony and balance.
- Balance: achieved in the distribution of elements with their sizes and colors in the design.

There are many manufacture methods for different design of Textile like manual textile design, computer-aided textile design and textile hanging. The executive method used in producing contemporary of textile hanging reflect the absolute freedom of the designer in choosing materials, implementation method or final application. Today, the textile hanging has become a piece of art that is hung on walls, suspended from ceilings or rests on floors. Textile hangings are known as one of the textile products that are used as an independent artistic unit to add an aesthetic value and sometimes a functional value to the places where they are used. The different materials of threads, whether natural or synthetic, as well as colored fabric scraps used in making aesthetic textile pieces and their mechanical, physical and surface properties have a creative ability to enhance the formative structure of the artwork. Textile hanging design depends on the shape, color, texture and effects resulting from the multiplicity of layers and the diversity of spaces, materials and contemporary and modern trends of drawn textiles. Over the past forty years; Egypt has made many attempts to research and advance this art, but they all relied on producing designs using the traditional drawn woven method (non-extended wefts method) and many attempts have developed the artistic and applied methods of drawn textiles, for attention to the textile and applied methods to obtain aesthetic effects. Textile hanging are considered one of the applied arts that expresses the era, its civilization and cultural trends, and sometimes studies some of its events [22]. Where the study of Gamal and etal. [23] indicates that textile pendants are an essential element in interior architecture that provides utilitarian value through a sense of spaciousness The depth in the void and that it increases the aesthetic value of the place in the interior architecture to complete the interior decoration. Also, the study of Osman and etal. [15] confirms that printed textile hangings have a role in achieving tourism development and aimed to study the aesthetic and formative values of heritage and environmental symbols and benefit from them in creating designs that support tourism by employing them in textile hangings. While the study of Radwan and etal. [24] recommends the necessity of benefiting from the possibility of integrating different executive techniques in obtaining a distinctive textile hanging, which leads to enriching the artistic and aesthetic values of the design. Therefore, the textile hanging, with its different styles and forms, opens the door wide to the development and advancement of the innovative process, styles and methods of artistic creativity to produce integrated knowledge that combines aesthetic and material values to keep pace with modernity and establish thought and methodology.

1.4. Pharaonic Units' Aesthetic

The ancient Egyptians used many symbols to express a different of ideas and concepts related to religion, gods and life. They used them to decorate temples, and make talismans to get rid of difficulties.

Colors also had a special symbol among the ancient

Egyptians e.g. the reddish-brown color used to depict a man's skin, resulting to work and exposed to the sun's rays. While the woman's skin color was yellow. Also, in contrast to the brown color that used to represent the people of the south "Nuba". It also used yellow for the sun and green for nature. Moreover, the King of the South was depicted with a white crown, unlike the King of the North who was depicted a red crown. The ancient Egyptian used two sources of colors: colored materials and dyes.

2. Methodology Research:

2.1. Murals of The Study

The selected murals for study that represent the realistic bearing ancient Egyptians art at the 18th Dynasty of and belong to the modern era as in Figure 1. Also, some murals symbols selected of ancient Egyptian art and their description are referring in Table 1:

First Mural

Second Mural

Figure 1: The Selected Murals

Table 1. Description of murals symbols of ancient Egyptian art

Symbols	Describe
	Life Key indicates gods of eternal life. The ancient Egyptians used to place this symbol on their hands, it was also used as a talisman for wearing.
	Caduceus/ Scepter It symbolizes royal authority, sovereignty and power. Its shape is a staff whose head is a dog or a fox head. Its color changes according to the person or goddess holding it.
	Eye of Ra It symbolizes the same symbol as the Eye of Horus. It also embodies many gods, such as Wadjet and Hathor.
	Lotus Flower There were two types of lotus flower in the Pharaonic civilization. The first; white lotus that symbolized new birth. The second blue lotus that symbolized the unification of the two Egyptian kingdoms.

2.2. Textile Hanging of Research

The researcher transformed two selected murals belonging to the realistic trend of Pharaonic civilization into woven hangings by the Goblin mechanical method, using natural materials with different color groups in the weaves, Table 2 refers to the implementation machine. Table 3 produced textile hangings. The researcher implemented two hangings from each selected mural, total hanging samples four samples with specifications refers in Table 3.

Table 2. Machine specifications used

Machine specifications	
Type of machine	Electronic Jacquard
Machine model	SMIT machine/2008
Building network method	Parcel
Jacquard device strength	3072 shekels
The comb used	comb (9 * 8) (9 cm section and 8 strands/section)
Number of design hooks	2560 hooks
Number of repetitions	4 repetitions
Width of repetition in the grid	355 cm
Fabric width without bracing	142 cm

Table 3. Textile hanging samples specifications used

Textile hanging specifications		
Implementation method		Goblin
Picks /cm		64 /cm
Ends /cm		72 /cm
Warp material	Original	Cotton
	Padding	Cotton
Original and padding warp ratio, respectively.		2:1
Warp yarn count	Original	70/1 Ne
	Padding	40/1 Ne
Weft materials		Cotton & Nylon
Cotton and Nylon weft ratio, respectively.		94:6
Weft yarn count	Nylon (White)	18/1 Ne
	Cotton (Ocher, Yellow and Gray)	11/2 Ne
	Cotton (White, Gold, Blue and Black)	14/2 Ne
The cusps		120 cusps/cm All cusps = 10480

2.3. Textile Hanging Evaluation

2.4.1. Performance Evaluation of Textile Hanging

The mechanical, physical and color evaluation tests for textile hangings were carried out after placing them in the standard condition (Tem. 20±2oC and RH 65±5) for 24 hs. according to ISO 139, as follows;

- Fabric thickness (mm) was measured according to ASTM-D1777-02.
- Fabric weight (g/m2) was determined according to ASTM-D3776-02.
- Tensile strength (kgf) and Elongation (%) of woven fabric were measured according to ASTM-D5035 at 200 Kgf.
- Abrasion resistance (cycles) of woven fabric was measured according to ASTM-D 4158-08, using waterproof abrasive paper sheet no. 400 cc-cw.
- Fabric Shrinkage or dimension stability (%) of woven fabric was carried out according to AATCC 135.
- Pilling resistance was estimated by ICI pill box tester according to JIS L 1076, and the test carried out by 36000 cycles.
- Colour fastness for washing (resistance of a textile materials to change color characteristics) was carried out ISO 105 C10.
- Colour fastness for lightness was performed in accordance with ISO 105 B02, by exposed to an artificial lamp (UV light) that imitates natural light for 40 hours, (interior furnishing fabrics).

2.3.2. Questioner Evaluation of Textile Hanging

Analytical study was performed after design and implementation of the textile hanging samples. Where the evaluation questions for the questionnaire were prepared and evaluated by ten specialized professors as a first step. Then, it was presented the produced ten hangings to get the opinions by evaluated questionnaire previously of twenty-five experts and consumers as a second step, Table 4 refers to the items of first and second questionnaire items.

The items of questionnaire were measured using a three-point rating scale in each of first and second steps, as follows: - Suitable = 3, Somewhat suitable = 2, and Inappropriate = 1. Statistical analysis was carried out by (the Likert scale)[25] for questionnaire data. Then analyze the data statistically using Excel.

Table 4. Questionnaire steps evaluation of textile hanging implemented

Evaluation items of textile hanging by consumer and experts. (Second Step)		Evaluation questions of questionnaire by specialized professors (First Step)
Items	**Axis**	**Evaluation items**
Design Elements	A1-Design elements express the realistic school of Pharaonic civilization.	E1- Appropriateness of the linguistic formulation of the evaluation items. E2-Appropriateness of the scientific formulation and the purpose of selecting these murals. E3- Coverage of the evaluation items for all evaluation elements and judgment on the produced textile hangings
	A2-All design elements are clearly evident in the executed textile pendant.	
	A3-The textile pendant with its elements reflects a cultural and civilizational value that increases the marketing value..	
Selected Murals	A4-The selected mural showed an aesthetic value when executed as a textile pendant.	
	A5- The subject of the mural contributed to enhancing the artistic value of the textile pendant.	
Color Groups	A6-The selected color groups for the pendant express the Pharaonic civilization	
	A7-The selected color groups for the pendant show the aesthetics of the design.	
	A8-The multiplicity of colors highlighted the details of the pendant well.	
Implementation Method (Goblin) and Materials	A9-The use of cotton material in the produced pendants achieves the green product characteristic..	
	A10-The implementation method achieved the functional properties of the textile pendant..	
	A11-The implementation method achieved the aesthetic properties of the textile pendant.	
	A12-The implementation method used reflected the beauty of the original mural on the textile pendant	

3. Results and Discussions:

3.1. Implemented Textile Hanging with Different Colors Marriages

The religious and family aspect represented by the god Amun, family life and wife, and this reflects real life (the New Kingdom). King Akhenaten adopted the doctrine of monotheism and took it as a name for the one God, and symbolized it with the sun disk with its rays, and each ray ends with a human hand, as they considered it a symbol of life, and its flow and succession between sunrise and sunset [26]. Also, ancient Egyptians attached great importance to their family life. They considered their children a blessing from the gods and therefore took great care of them. It was implemented five different color marriages that inspired of the selected two murals, where the total implemented hangings were ten. Table 5 described the different implemented hangings inspired of two murals.

3.1.1. Implemented Designs of First Mural

Mural (1) represent details about Akhenaten and one of his girls, detail of an altarpiece of a shrine, and God Aten with his sun rays and his cartouches as well as Nefertiti's cartouches appear [27], as refers in Figure 2.

Item	Describe
Hanging Size Artwork	(100 × 70) cm
Design Method	Design implemented by Das extension Ned graphic computer program
Implementation Method	Goblin mechanical
Application	Artwork for hotels , tours company, Reception room.
Symbols Used	Mural 1: Sun Flower Lotus & Caduceus. Mural 2: Lotus Flower, Holy Sun, Ankh and Scepter.

3.1.2. Implemented Designs of Second Mural:
Mural (2) represent details about A house altar showing Akhenaten, Nefertiti and three of their daughters adoring the Aten, 18th dynasty. as refers in Figure 3. It was observed that the all textiles hanging have all design elements about the real tend of ancient Egyptian art are clearly evident. Moreover, the textile hangings with their elements reflects a cultural and civilizational value that increases the marketing value. The selected murals showed an aesthetic value when executed as textile hangings, and subject of the murals contributed to enhancing the artistic value of the textile hangings. The selected color groups for hangings express the Pharaonic civilization and show the aesthetics of the design. Additionally, the multiplicity of colors highlighted the details of the pendant well. Finally, the Goblin Method for Implementation with using of cotton material in the produced hangings achieves the green product characteristic and achieved the functional properties of the textile hangings.

Item	Describe
Hanging Size Artwork	(100 × 70) cm
Design Method	Design implemented by das extention Ned graphic computer program
Implementation Method	Goblin mechanical
Application	Artwork for hotels , tours company, Reception room.
Symbols Used	Mural 1: Sun Flower Lotus & Caduceus. Mural 2: Lotus Flower, Holy Sun, Ankh and Scepter.

Table 5. Description of implemented hangings

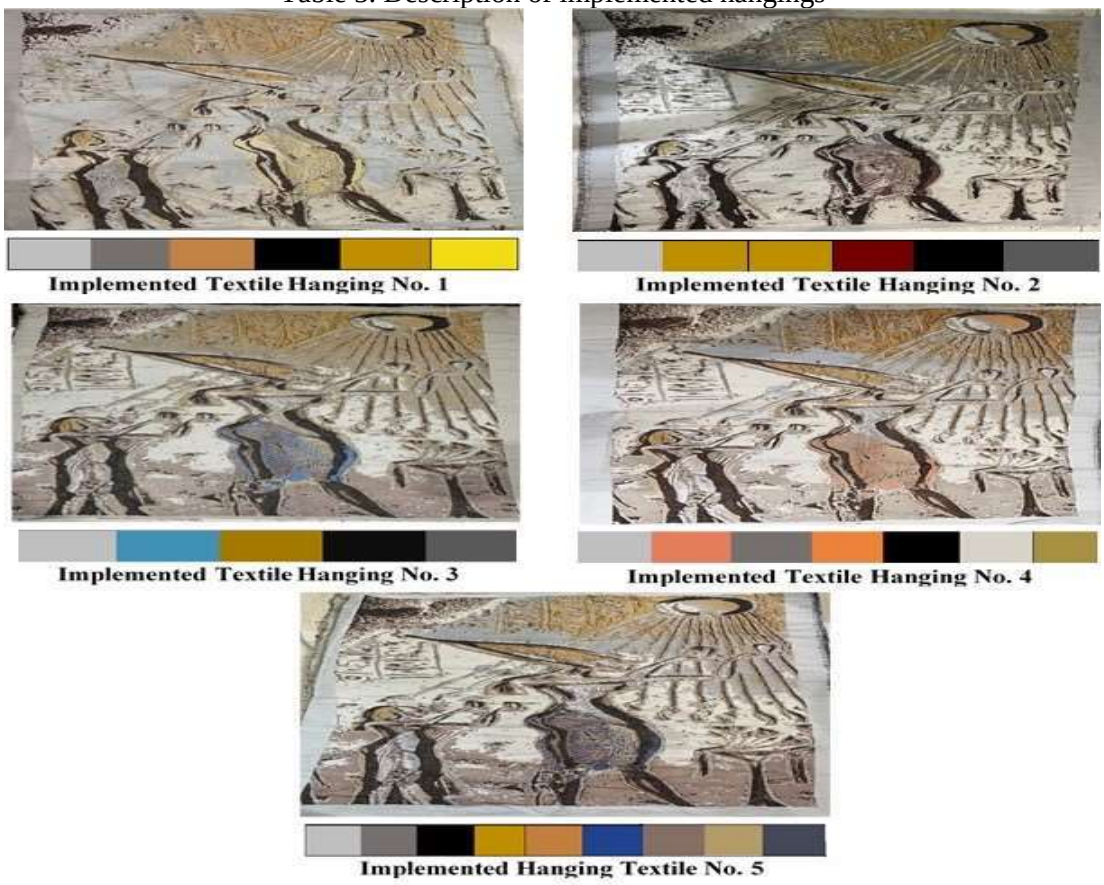

Figure 2: Implemented Textile Hanging from First Mural

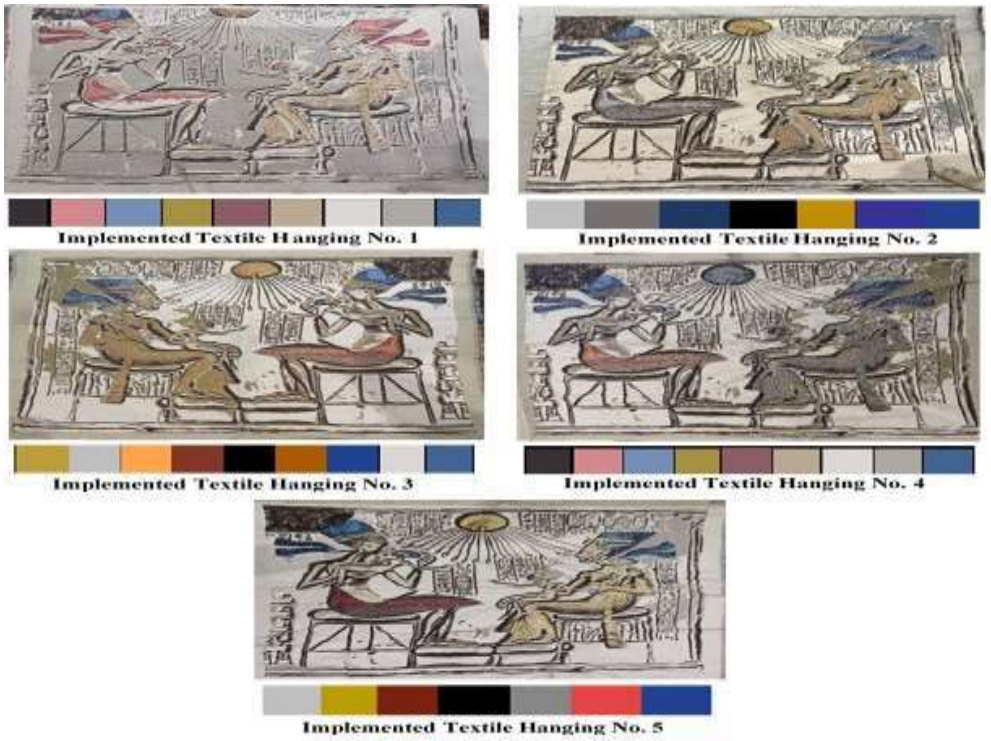

Figure 3: Implemented Textile Hanging from Second Mural

3.2. Performance Properties

3.2.1. Mechanical Test Results[28].

The mechanical properties of the implemented textile hangings were studied, which are an indicator of the lifespan and sustainability of use for textile product. Table 6 shows the average values of the measured mechanical properties.

Table 6. Results of measured mechanical properties

Design	Samples	Tensile strength (Kgf.)		Elongation (%)		Abrasion cycles until break (Cycles)
		Warp	Weft	Warp	Weft	
1	1	320	92	40	40	1120
	2	350	95	35	37	1000
	3	340	97	37	35	1122
	4	350	95	43	37	1080
	5	320	97	40	37	1100
Avarage		336	95.2	39	37.2	1084.4
2	1	350	95	35	37	3700
	2	340	95	37	37	1122
	3	340	93	37	40	2000
	4	330	97	40	35	3000
	5	350	96	35	35	2500
Avarage		342	95.2	36.8	36.8	2464.4

Table 6 shows that the result of measured mechanical proparties where the average of tensile strength is 336 Kgf warp and 95.2 Kgf weft for the first design of produced handings, while 342 Kgf warp and 95.2 Kgf for the second design of produced hangings, this is related to the higher density of warp and weft yarns. Also, the average of elongation is 39% warp and 37.2% weft for the first design of produced handings, while 36.8% for each warp and weft directions, these indicated ability of implemented hanging to withstand different stresses.

3.2.2. Physical Test Results:

The physical properties of the implemented textile hangings were studied, which are an indicator of handling of textile product, in addition to a on of the important parametars fabric properties charactrizing .Table 7 shows the average values of the measured physical properties. Table 7 shows that the result of measured physical proparties where the average of weight is about 554 g/m2 for the first design of produced handings and 556 g/m2 for the second design of produced handings. While the average of thickness is 1.794 mm for the first

design of produced handings and 1.926 mm for the first design of produced handings. The shrinkage (%) pointed to no change in the width direction (weft), whereas there are slitly change in length direction (warp) related to the relaxation state of fabrec after removed from the machine, overeall the shrinkage results of textile hangings apear the maintaining the stability of their dimensions after washing.

Table 7. Results of measured physical properties

Design	Samples	Weight (g/m2)	Thickness (mm)	Shrinkage (%)	
				Length	Width
1	1	553	1.77	+ 0.8	0
	2	555	1.80	+ 0.8	0
	3	554	1.79	+ 0.8	0
	4	553	1.91	+ 0.8	0
	5	555	1.70	+ 0.8	0
Avarage		554	1.794	+ 0.8	0
2	1	558	1.99	+ 0.4	0
	2	555	2.06	+ 0.4	0
	3	554	1.83	+ 0.4	0
	4	558	1.83	+ 0.4	0
	5	555	1.92	+ 0.4	0
Avarage		556	1.926	+ 0.4	+ 0.4

3.2.3. Colour Fastness Propeties:

Colour and aesthetics are as important as its various physical and mechanical properties for textiles, colour is one of the important factor of a design. fastness of colors, especially in textiles that produced from different materials and their blends is very important in many applications. So, the measuring the colour behavior is important of the dying that applied on yarns or fabrics [28-29]. Table 8 the color fastness for washing and lightning of implemented textile hanging.

Table 8: Colour fastness of implemented textile hanging

Color fastness type	Staining fabric	Gray scale evaluation (1-5)	Alt	Final evaluation
For washing	Cotton	4	4	Very good / Excellent
	Wool*	4		
	Polyester**	4-5		
	hangings Colors	Blue scale evaluation (1-8)	Alt	Final evaluation
For lighting	Ocher	6	6	Very good
	Yellow	6		
	White	6		
	Gold	6		
	Gray	6		
	Baby blue	6		
	black	6		

Color fastness to washing is the widespread characteristic parameter. This test determines the change of color in the washing process and the behavior of staining of lighter or other textile hanging that may be washed with it. Table 8 showed that textile hanging samples have the degree 4-5 with different staining matrials according to gray scale evaluation (1-5). So, the result of evaluation is very good/ Excellent means that the textile hanging colors are resisted the washing process. Also, it was found that the light fastness for textile hanging samples gave degree 6 for different colors of yarns according to the blue scale evaluation (1-8) in Table 8, which indicated that the implemented hanging textile samples were able to withstand artificial light (UV light) at a very good level, it mean that the Implemented textile hanging have high color measurement degreed.

3.3. Statistical Analysis of the Questionnaire:

After taking the opinions of the arbitrators who are specialists in the field, tabulated and statistical analysis were conducted for the results of the questionnaire, and the quality coefficient for the produced textile hangings were calculated.

3.3.1. Experts' Evaluation of Questionnaire Items

The results of Experts' opinions about the questionnaire items were refer in Figure 4.

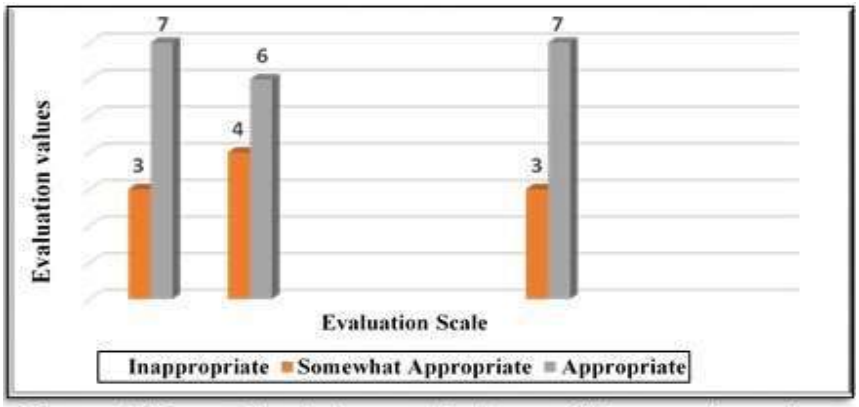

Figure 4. Experts' opinions on the items of the questionnaire.

The evaluation questions for the questionnaire were prepared and evaluated by ten specialized professors as a first step. It was clear that, the percentages of agreement of the experts on the first and third items of the questionnaire (Appropriateness of the linguistic formulation of the evaluation items) and (Coverage of the evaluation items for all evaluation elements and judgment on the produced textile hangings) were 70% for each item, but was 60% for second questionnaire item (Appropriateness of the scientific formulation and the purpose of selecting these murals) see Table 4. While, the evaluation (Somewhat appropriate) for rest of Experts' opinions percentages were 30% for first and third items and 40% for second item. According to the opinions of experts; it was achieved to the best evaluation formulation of textile hanging, which were used by consumer and experts as a second step to evaluate the produced textile hangings.

3.3.2. Questionnaire' results

The results of the statistical analysis for different excerpts and customers were in the questionnaire items and their axis as refer in Figures 5 and 6.

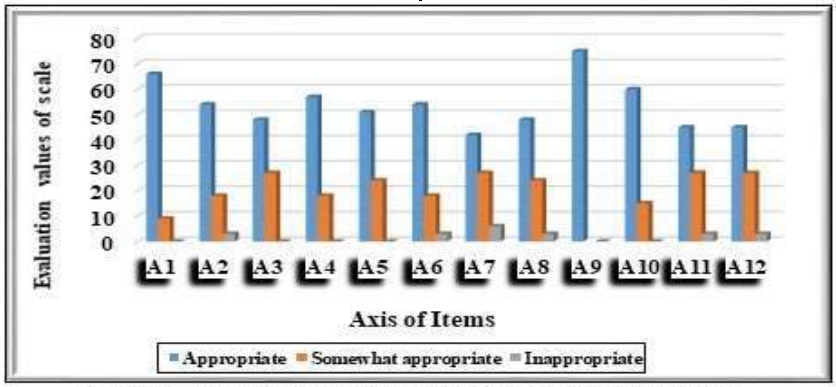

Figure 5. Questionnaire evaluation for implemented textile hangings of first design of the by consumer and experts.

Figures 5 and 6 show the results of questionnaire evaluation of the second and first implemented textile hanging design by consumer and experts, with respect to Design elements item and Implementation method (Goblin) and materials item achieved the optimum and very good percentage, respectively. While it was showed an acceptable result with respect to selected murals item and Color groups item. Also, it was clear that the second implemented hanging design achieved the highest percentage of the evaluation scale for the items in terms of express the realistic school of Pharaonic civilization, the textile hanging with its elements reflects a cultural and civilizational value that increases the marketing impact. The use of cotton material as weft yarns in the produced textile hangings achieves the green product characteristic. The production method achieved the functional and aesthetic properties of the textile hanging and reflected the beauty of the original mural on it. Moreover, the selected color groups for the textile hanging express the Pharaonic civilization, show the aesthetics of the design and the multiplicity of colors highlighted the details of the textile hanging well.

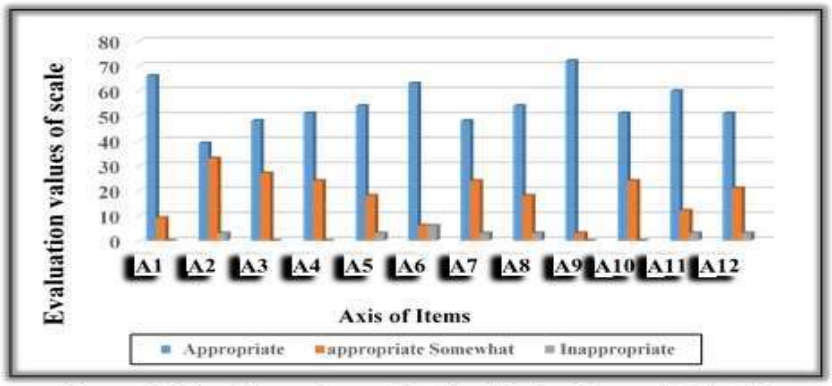

Figure 6. Questionnaire evaluation for implemented textile hangings of second design of the by consumer and experts.

3.4. Discussing of results

It was clear from results of the mechanical, physical, performance evaluation tests and statistical analysis for textile hanging that produced from inspired of first and second murals have the relationship between these results and questionnaire evaluation, where the color value cleared in the textile hangings wall work. Also, the technique production and materials used of textile hangings were compatible with the subject and the philosophy of the selected mural. Additionally, the material used raised the resistant to weathering factors and increased the durability of produced textile hangings. Colors played a symbolic role in ancient arts, painted/carved mural among the ancient Egyptians played an important role in conveying the idea of religion and bringing it closer to people's minds and creating a spiritual atmosphere that helped in performing worship [29]. The colors known to the ancient Egyptian artist are black from carbon, white from lime, red and yellow from iron oxides, and crushed faience for blue and green as shown in first murals which reflected on the chosen of the implemented hangings color groups, Figure 2. He also used colors with special specifications for sacred beings, and typical and traditional colors for human creatures. The ancient Egyptian artist depicted men in a reddish-brown color and women in a lighter color, and used artificial colors to simulate the colors of stones and wood as shown in second mural [30]. It was noted that the Figure 1 of second mural transformed into textile hangings and Pharaonic colors were introduced into it to show the beauty of the textile hanging, the prominence and the shadow Figure 3, but each color carried a specific meaning that developed with the development of art throughout the ages e.g. blue with various shades means cheerful and symbolizes of the sky, the gold and yellow were referenced to the sun and red indicating the forces of good and evil, which means that the colors also carried religious symbols [31].

Conclusion

The implemented textile hangings were inspired of selected murals that belonging to the realistic school of Pharaonic civilization. They were produced by Goblin method using natural materials with different color groups of the weft yarns. From the previous results; it is clear that the implemented first design achieved the highest (Design elements item and Implementation method (Goblin) and materials item) whereas the appearance and durability and highlighting design elements.

Using Goblin method with natural material helped produce contemporary pendants in terms of shape and design, and obtaining woven textile hanging with special features in terms of economics and sustainability, as they can withstand usage, stresses, washing and lighting factors, which allows their use in the lobby of hotels and tourism companies as a type of marketing for urban and cultural tourism.

Recommendation

1- Conduct specialized studies that focus on the artistic and technical development of textile hangings.
2- Attention to use various computer technology in designing textile hangings.
3- Moving towards different cultures and civilizations as an artistic.
4- Hold art exhibitions that depend on innovation and renewal to enrich the art of textile hangings.

Acknowledgement

Authors gratefully acknowledge Mardini company to manufacture textile hanging samples, and National Research Centre for testing the samples of this study in the Spinning and Weaving Engineering Department and Dyeing, printing and intermediate materials Department laboratories.

References

1- Alfred, L. (1991). Materials and Industries of the Ancient Egyptians - Madbouly Library – AD.
2- Mohamed, G. A. G. (1999). Hanging Textiles

Biography and Development - The Sixth International Conference on Applied Arts - Applied Arts and Challenges of the Twenty-First Century - Faculty of Applied Arts - Helwan University - March 1999 AD.

3- Mounir, F. S. & Lobna, A. A. R. (2011). - Design Foundations - Doroob for Publishing and Distribution - Amman - Jordan -2011 AD.

4- Yasmine, A. M. F.(2016). - Creating Textile Hangings Using Arabic Calligraphic Decoration Using the Hand-Knitting Technique - Master's Thesis - Faculty of Applied Arts - Damietta University - 2016 AD.

5- Sayed, M. K. (1982). - Contemporary Egyptian wall hangings and the innovation of a new method for their implementation - PhD thesis - Faculty of Applied Arts - Helwan University - 1982 AD.

6- Haitham, A. D. (2014). Innovating innovative methods for designing fabrics using the mechanisms of textile structures - PhD thesis - Faculty of Applied Arts - Helwan University - 2014 AD.

7- Ahmed, M. Z. El-D. El-S.(2003)- Artistic treatments of selected Islamic arts and the use of them in producing contemporary textile hangings - PhD thesis - Faculty of Applied Arts- Helwan University - 2003 AD.

8- Stauffer A. M., (1995).Textiles of Late Antiquity, Metropolitan Museum of Art, New York.

9- Portisch A. O. (2009). Techniques as a window onto learning: Kazakh women's domestic textile production in Western Mongolia," Journal of Material Culture, vol. 14, no. 4, pp. 471-493.

10-Maruyama, N. U., Yen, T.-H., Stronza, A. (2008). Perception of Authenticity of Tourist Art among Native American Artists in Santa Fe, New Mexico. International Journal of Tourism Research, vol. 10, no. 5, pp. 453-466, p. 461.

11-Micheli, P. & Gemser G., (2016).Signaling Strategies for Innovative Design: A study on Design Tradition and Expert Attention. The Journal of Product Innovation Management, vol. 33, no. 5, , pp. 613-627, p. 617.

12-Amer, M. M., (2007). Cotemporary view for upholstery and curtain jacquard fabrics with woven hanging design. Textile Journal. pp80-89.

13-Barber, E. J. W., (1982). New Kingdom Egyptian Textiles: Embroidery vs. Weaving', American Journal of Archaeology., vol. 86, no. 3, p. 443.

14-Riefstahl, E., (1944). Patterned Textiles in Pharaonic Egypt, Brooklyn Institute of Arts and sciences, New York, p.1.

15-Marwa, O. & Azza, Al B., (2019).Utilizing the Aesthetic Values of the Heritage Symbols in Siwa in Printed Hangings Design for Tourism Development Textile. Journal of Architecture, Arts and Humanities. Volume 4, Issue 14, P. 431-457. DOI: 01801.01 /mjaf.2019.25794.

16-Gamal, M. A. H. R., Adel, A. M. A. Kh, Ahmed, M. S. A. (2022). Innovative designs for Gobelin fabrics inspired by contemporary Egyptian art", Heritage and Design Magazine - Volume 2 - Issue 7.

17-Mohamed, G. A. Gh.. (1999). Hanging Textiles Biography and Development - The Sixth International Conference on Applied Arts - Applied Arts and Challenges of the Twenty-First Century - Faculty of Applied Arts - Helwan University - March 1999 AD.

18-Yasmine, A. El F. (2016). Creating Textile Hangings Using Arabic Calligraphic Decoration in the Hand-Knitting Style - Master's Thesis - Faculty of Applied Arts - Damietta University.

19-Aida, R. A. H., (2008). Study of the techniques of producing textile pendants and determining the best restoration methods - Master's thesis - Faculty of Applied Arts - Helwan University - 2008 AD.

20-Gamal, M. A. H. R., Amira, M. R., Heba, Kh. A. T. (2020). Design and Production Innovative Textile Wall Hangings through Integrating Different Production Techniques, International Design Journal, Volume 10, Issue 2,

21-Geoffery, C. (2002). Carpet Manufacture –New Zeland .

22-Ibrahim, Ghalia El-Shennawy and Mahmoud, Iman Ramad (2018). The role of textile hangings in achieving aesthetic and functional values in interior architecture. Journal of Architecture, Arts and Humanities, Arab Society for Islamic Arts and Civilization. 476 – 492.

23-Mohamed, G.l, Ghada, E., Rania, R., (2016).Optical art and its role in designing pile wall hangings that used in the limited area of interior architecture. Journal of Architecture, Arts and Humanistic Science. PP. 180-198, Volume 1, Issue 3, July.

24-Radwan, G.A. H. and Abdel, T., Heba Kh. and Ragab, A. M. (2020) Design and production of innovative textile pendants by combining different implementation techniques. International Design Magazine. Vol. 10, No. 2,.

25-Rensis, L. (1981), developing the Likert scale.

26-Atef, Kh. Al-M. Al-D., Hussein, M. H., Hani, A. Q. (2014). The concept of symbolic art, its connection to symbols in ancient Egyptian art, and its impact on graphic artists. Journal of Qualitative Education Research, Article 28,

Volume 2014, Issue 36, P. 831-875.

27-Osama, S. M. A. FRCP(Glasg) (2019).Akhenaten and one of his girls, detail of an altarpiece of a shrine. The God Aten with his sun rays and his cartouches as well as Nefertiti's cartouches appear. New Kingdom, 18th Dynasty, c. 1345 BCE.. Neues Museum, Berlin, Germany. ÄM14145, 2019, 22 July.

28-Suzan, M. H. J., Nahla, M., Reem, M. El-M. (2021)Taking Advantage of Indian Art in the Design of Innovative Woven Wall Hangings for Optimum Functional Performance. International Design Journal, 11(1), 34, 105-114.

29-Mahda, F., & Shohreh, J. (2017). Examining the Symbolic Meaning of Colors in Ancient Egyptian Painting Art and Their Origin in Environment, The Scientific Journal of NAZAR research center (Nrc) for Art, Architecture & Urbanism, 14 (52), 69-80.

30-Bassam Al-Shamaa(Archaeological researcher), (2021). Colors of the Pharaohs, Essay (Sky News Arabia.

31-Ghalia, S. I. S. & Iman, R. M.(2016). The possibility of achieving new aesthetic values in the design of textile pendants using the semi-mechanical carpet method. Scientific Journal of the Faculty of Specific Education, 6, (Part One).