Aesthetic aspects for the Mosque of Ibn Tulun and patchwork techniques on contemporary fashion

Lecturer Wedian Talat Madian

Apparel Design Management and Technology Dept., Faculty of App. Arts, Helwan University

Abstract

Islamic art is one of the greatest achievements of the Islamic culture in Egypt. This research concerns the Islamic Geometrical Patterns in the mosque of Ibn Tulun in Cairo, Egypt and summarizes techniques of patchwork in order to demonstrate the significance of patchwork on contemporary fashion.

The design project of this research includes 14 contemporary fashion designs for women of the age group (25-35 years). The statistic analysis shows that the designs express the geometrical patterns in the Mosque of Ibn Tulun and patchwork techniques by 96%. It also shows that the designs are suitable for women of the age group (25-35 years) by 95%. Analysis shows that "Design 4" has the lowest mean while "Design 1" has the highest mean.

Keywords

Islamic Geometrical Patterns, The Mosque of Ibn Tulun, Patchwork and contemporary fashion.

الجوانب الجمالية لمسجد ابن طولون وتقنيات الباتشوورك في الموضة المعاصرة م.د/ وديان طلعت مدين

قسم الملابس الجاهرة- كلية الفنون التطبيقية- جامعة حلوان

الملخص

الفن الإسلامي هو واحد من أعظم إنجازات الثقافة الإسلامية في مصر. يتناول هذا البحث الأنماط الهندسية الإسلامية في مسجد ابن طولون بالقاهرة بمصر وبعض تقنيات الباتشوورك لإظهار مدى أهمية الدمج بينهما في الموضة المعاصرة.

يتضمن البحث 14 تصميم لأزياء معاصرة للسيدات للفئة العمرية (25-35 سنة). ويظهر التحليل الإحصائي أن التصميمات تعبر عن الزخارف الهندسية في مسجد ابن طولون وتقنيات الباتشوورك بنسبة 96٪. ويظهر أيضا أن التصميمات مناسبة للسيدات من الفئة العمرية (25-35 سنة) بنسبة 95٪. ويبين التحليل الاحصائي أن "التصميم 4" له أعلى متوسط في حين أن "التصميم 1" له أعلى متوسط.

الكلمات المفتاحية

الزخارف الهندسية الإسلامية- مسجد ابن طولون- الباتشوورك- الأزياء المعاصرة.

Introduction

The mosques of Cairo are amongst the most beautiful buildings in the world. They are remarkable for the grandeur and simplicity of their general forms, and for the refinement and elegance which the decoration of these forms displays. (Jones, 1868) There is no doubt that the glory, beauty and balance that Islamic architecture is famous for, is based on both mathematical and geometrical sciences, with art and architecture. Geometrical patterns are one of the key ornamental elements in the mosque of Ibn Tulun.

Patchwork is a craft to be inherited by some families in many countries and considered by some as a professional art. It is the use of many different pieces of fabrics that have been prepared before, and added through many ways of technical occupations. Patchwork has economic benefits as it take advantage of excess fabric residue to make new and distinctive products.

This research is based on 14 designs with patchwork techniques used to construct decorative elements on contemporary fashion inspired by the Islamic Geometrical Patterns in the Mosque of Ibn Tulun for women of the age group (25-35 years).

1. Problem statements

This research would like to investigate Islamic Geometrical Patterns in the Mosque of Ibn Tulun and Patchwork techniques to answer questions regarding suitability and appropriate of their use on contemporary fashion. In this regard, questions, which this research tried to answer, are:

- What is the characteristic of Islamic Geometrical Patterns in the Mosque of Ibn Tulun?
- How can we use Patchwork techniques to explore the Islamic Geometrical Patterns in contemporary fashion?

2. Aims

The purposes of this research are to:

- Understand the characteristic of Islamic Geometrical Patterns in the Mosque of Ibn Tulun.
- Use Patchwork to explore the Islamic Geometrical Patterns in contemporary fashion.

3. Methodology

Research follows the descriptive analytical method and an application research.

2. Review of literature

2.1. Abbasids Architecture (750 - 1258 CE)

By first two centuries of Abbasid, the new concept of Islamic art and architecture started to shape and by end of their era, they were almost introduced and recognized by architects and artisans. (Embi et al, December 2012)

2.2. The Mosque of Ibn Tulun

The mosque of Ahmed Ibn Tulun was built by an order of the Abbasid governor of Egypt "Ahmad Ibn Tulun". This Mosque is one of the most important architectural monuments of the Islamic world. (Shaer, 2005)

The builders of the mosque brought some of their construction methods and decoration styles from Iraq. The collection of ornaments from the Mosque is very remarkable, as exhibiting in this early stage of Arabian art. The patterns were either stamped or traced upon the material. (Jones, 1868) Forms and decorative motifs of the mosque are considered amongst the finest examples of 'classical' Abbasid tradition of Islamic architecture. (Shaer, 2005) (Picture no. 1)



(Picture no. 1) The Mosque of Ibn Tulun

2.3. Islamic Geometrical Patterns in The Mosque of Ibn Tulun

One of the defining characteristics of Islamic art is its abundant use of geometric patterns to adorn a wide variety of architectural and decorative surfaces. (www.metmuseum.org, August 2017) In geometric Islamic ornament, many planar surfaces tend to be covered by endlessly repeating patterns, most of which feature highly symmetric, intricate star polygon designs. The most commonly found geometric Islamic patterns are comprised solely of straight line segments. (Bodner, 2015)

The windows and walls in the Mosque of Ibn Tulun are based on geometric compass work typical of the late classical Byzantine tradition. The simple geometrical patterns used in this mosque are among earliest examples of geometrical motifs of Muslim decorative arts. (Embi et al, December 2012) (Picture no. 2)



(Picture no. 2) Islamic Geometrical Patterns in the Mosque of Ibn Tulun

2.4. Patchwork

Patchwork can be defined as:

- "Pieces of cloth, silk or leather of varying color and shape, sewn together to form conventional design". (Wilcox, 1992)
- "A type of sewing in which many different colored pieces of cloth are sewn together". (Longman Dictionary, 2001)
- "A technique, a practice in the history of applied arts, the creation of a unique composite of different fabrics, as well as a trend". (www.vogue.com, 2017)

There are two main preparing methods for patchwork:

- 2.4.1. The English patchwork: involves smaller paper templates for cutting the individual patches which are often hexagonal. Patches are folded around templates and tacked down before they are sewn together.
- 2.4.2. The American: does not require paper templates and the patches are sewn, right sides together, using running stitch with incredible care to create complex designs.

2.5. Patchwork techniques

This research considers four patchwork techniques to decorate suggested contemporary fashion for women of the age group (25-35 years) inspired by the Mosque of Ibn Tulun

2.5.1. Log cabin patchwork

It is one of the most famous traditional techniques in England known since 1830. It is constructed from blocks of narrow rectangular strips that create a range of optical effects. (Picture no. 3)



(Picture no. 3) Log cabin patchwork

2.5.2. Flying geese patchwork

It is an advanced technique; it is constructed from patterns assembled from triangles or lozenges. (Picture no. 4)



(Picture no. 4) Flying geese patchwork

2.5.3. Hexagonal patchwork

It is known in England for more than 100 years ago. It is constructed from several different geometrical hexagonal fabrics. (Picture no. 5)



(Picture no. 5) Hexagonal patchwork

2.5.4. Seminole patchwork

It is one of the most famous traditional techniques from the Seminole Indians in Florida. It is constructed from a variation in colors, shapes and sizes of the inclusion pieces. (Picture no. 6)



(Picture no. 6) Seminole patchwork

2.6. Methods and analysis

The infinitely-repeating geometric ornaments are distinguishing characteristics of Islamic art. The Islamic Geometrical Patterns in the Mosque of Ibn Tulun are highly symmetric

and generated by inscribing regular polygons to divide the space evenly, yielding regular and star-shaped polygons.

Patchwork is a technique originally invented for using scraps of materials; it has long engaged the creative abilities of its creators. (www.vogue.com, 2017)

Therefore, understanding the characteristics of Islamic Geometrical Patterns in the Mosque of Ibn Tulun and patchwork techniques provide a means for creating contemporary fashion for women of the age group (25-35 years).

Aesthetic aspects for the designs

Designs follow the latest fashion trends for FW 18/19 to ensure contemporary look for women in the age group (25-35 years). The inspiration in this research is the Islamic Geometrical Patterns in the Mosque of Ibn Tulun. That is why the researcher considered symmetrical, star polygons, straight line segments and endlessly repeating Islamic Geometrical Patterns to decorate the designs using patchwork techniques. Four patchwork techniques were used to decorate the designs including Flying geese patchwork, Seminole patchwork, Hexagonal patchwork and Log cabin patchwork to achieve individuality for the wearer. (Picture no. 7)



(Picture no. 7), Mood-board

Design (1): Three-button blazer with peak lapel, long sleeves with two buttons and a cut in the front on the high-hip-length with two seam pockets (Picture no. 8).

Fabric: Wool.

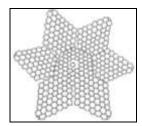
Decorative Motifs: Hexagonal patchwork is used to create six-point lone star on the back with seven colors.

Design Principles for the Decorative Motifs: central radiation is used to construct the decorative motif, which starts in six directions representing the shape of the Islamic sixpoint star. Closed ends are helping the design to be more interconnected. The design

shows a remarkable rhythm and emphasis on the dot combining the default lines to achieve the balance in design. (Picture no. 9)



(Picture no. 8), Design (1)



(Picture no. 9), Hexagonal patchwork used in design (1)

Design (2): Two-button blazer with peak lapel, long sleeves, gathered princes cut and horizontal back-cut at waist level with two patch pockets. (Picture no. 10)

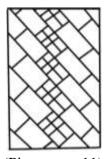
Fabric: Striped velvet.

Decorative Motifs: Seminole patchwork is used to create interlocking colorful strips and diamonds on pockets.

Design Principles for the Decorative Motifs: parallel lines, diamonds and colorful patches are used to achieve the soft rhythm between all design elements. Diagonal strips give the feeling of soft regular movement. (Picture no. 11)



(Picture no. 10), Design (2)



(Picture no. 11), Seminole patchwork used in design (2)

Design (3): Three-button blazer with peak lapel, long sleeves, two welt pockets with flaps and a back-belt. (Picture no. 12)

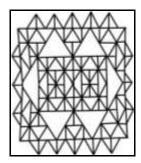
Fabric: Linen.

Decorative Motifs: Flying geese patchwork is used to create interlaced Islamic pattern of a lone-star. Triangles and diamonds are used on the back and triangles on pockets' flaps.

Design Principles for the Decorative Motifs: a smooth and continuous transition is used in the gradient and colors of the triangle. The flow flows by changing the direction, size and color of the triangle to achieve strong feeling of movement in the design. It also achieves a harmonious rhythm and leads to balance. (Picture no. 13)



(Picture no. 12), Design (3)



(Picture no. 13), Flying geese patchwork used in design (3)

Design (4): Three-button blazer with peak lapel and long sleeves. (Picture no. 14)

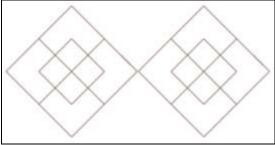
Fabric: Wool.

Decorative Motifs: Seminole patchwork is used to create interlocking diamonds on the peak lapel in the back.

Design Principles for the Decorative Motifs: repetition of diamonds, both in terms of color and size while considering the principles of balance and rhythm. Repeated decorative motifs are supporting the sense of comfort through the relationship between spaces and decorative motifs. (Picture no. 15)



(Picture no. 14), Design (4)



(Picture no. 15), Seminole patchwork used in design (4)

Design (5): Princess-coat with long sleeves, buttons in center front and wide belt at waist-level. (Picture no. 16)

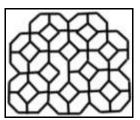
Fabric: Shantung silk.

Decorative Motifs: Hexagonal patchwork is used to create interlocking colorful strips on the belt in the front and the back.

Design Principles for the Decorative Motifs: exchange effect has been achieved by the regular repetition between the colored patches and the executed patches with the same color as the Princess-coat. The motifs are implemented in overlapped rows, thus achieving balance and unity in the design. Several colors were used to draw attention to the aesthetics of the integration of Islamic ornaments and patchwork. (Picture no. 17)



(Picture no. 16), Design (5)



(Picture no. 17), Hexagonal patchwork used in design (5)

Design (6): Four-hock blazer with peak lapel, cuts on shoulders, two patch pockets and three-quarter sleeves with folded cuff. (Picture no. 18)

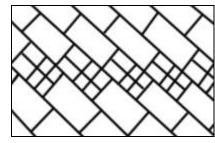
Fabric: Gabardine 100% cotton.

Decorative Motifs: Seminole patchwork is used to create interlaced Islamic pattern of colorful strips and diamonds on cuffs and shoulders.

Design Principles for the Decorative Motifs: parallel lines and colored patches give a sense of rhythm. Strong, regular and regenerative movement effect is achieved by the interaction between diagonal strips and diamonds. (Picture no. 19)



(Picture no. 18), Design (6)



(Picture no. 19), Seminole patchwork used in design (6)

Design (7): Three-button blazer with peak lapel, long sleeves and small belt at the back waist. (Picture no. 20)

Fabric: Cotton.

Decorative Motifs: Seminole patchwork is used to create interlocking colored strips on the collar in the front and on the back-belt.

Design Principles for the Decorative Motifs: rhythm is achieved through parallel lines and colors patches to give a sense of soft, regular and regenerative movement. Interlocking diagonal strips with different colors support the sense of movement in the design. (Picture no. 21)



(Picture no. 20), Design (7)



(Picture no. 21), Seminole patchwork used in design (7)

Design (8): Seven-wooden button blazer with standing collar and long bell sleeves. (Picture no. 22)

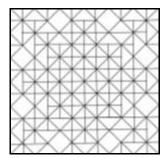
Fabric: Shantung silk.

Decorative Motifs: Flying geese patchwork is used to create interlaced Islamic pattern of triangles and diamonds on princess-cut.

Design Principles for the Decorative Motifs: a smooth and continuous transition is used in the gradient of the triangle. The flow flows by changing the direction, size and

different color shades of the triangle to achieve soft feeling of movement in the design. It also achieves a harmonious rhythm and leads to a sense of balance. (Picture no. 23)





(Picture no. 22), Design (8)

(Picture no. 23),

Flying geese patchwork used in design (8)

Design (9): Four-button blazer with standing collar, long sleeves with gathers on top armhole, tow patch pockets with flaps and buttons and a slit in the center-back. (Picture no. 24)

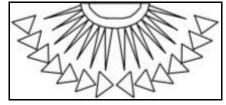
Fabric: Gabardine 100% cotton.

Decorative Motifs: Flying geese patchwork is used to create different sizes of triangles on the front and the back.

Design Principles for the Decorative Motifs: Central radiation achieved by the hypothetical point of the neck, and repeated triangles were used in different sizes to confirm the movement in different directions. The design emphasizes the sense of movement between the lines and the different directions of the triangle, while maintaining the distinctive symmetry of Islamic art by achieving symmetry and balance in the overall shape of the design. (Picture no. 25)



(Picture no. 24), Design (9)



(Picture no. 25), Flying geese patchwork used in design (9)

Design (10): Three-button blazer with peak lapel, long sleeves, two slash pockets and slit in the center-back. (Picture no. 26)

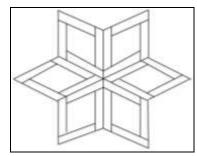
Fabric: Wool.

Decorative Motifs: Log cabin patchwork is used to create a colorful six-point lone star on peak lapel.

Design Principles for the Decorative Motifs: central radiation was used from a specific point represented in the center of the Islamic six-point lone star. The repeated diamonds were used in similar sizes to achieve a smooth sense of movement and to emphasize the center of the Islamic six-point lone star at the same time. (Picture no. 27)



(Picture no. 26), Design (10)



(Picture no. 27), Log cabin patchwork used in design (10)

Design (11): Two-button blazer with peak lapel, long sleeves and a wide belt-like cut at waist-level. (Picture no. 28)

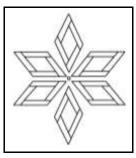
Fabric: Wool.

Decorative Motifs: Log cabin patchwork is used to create interlaced Islamic pattern of colorful six-pointed-stars shape with two- point configuration and diamonds on the belt-like cut.

Design Principles for the Decorative Motifs: central radiation was used from a single point in the center of the Islamic six-pointed-stars. The spaces between the stripes of the star helped to emphasize the center of the Islamic six-pointed-stars. The design emphasizes the sense of movement between lines and spaces while maintaining the distinctive symmetry of Islamic art. (Picture no. 29)



(Picture no. 28), Design (11)



(Picture no. 29), Log cabin patchwork used in design (11)

Design (12): Two-button blazer with peak lapel, long sleeves with buttons and two welt pockets with flaps. (Picture no. 30)

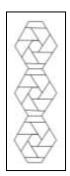
Fabric: Wool.

Decorative Motifs: Log cabin patchwork is used to create six-fold rosettes on collar and pockets' flaps.

Design Principles for the Decorative Motifs: symmetrical repetation in the shape and color of the six-fold rosettes on the collars and pockets' flaps in straight lines emphasizes unity and bonding and increases the sense of harmonious rhythm and balance between all elements used in the design. (Picture no. 31)



(Picture no. 30), Design (12)



(Picture no. 31), Log cabin patchwork used in design (12)

Design (13): Four-button blazer with all around gathered shawl lapel, shoulder cuts in the front and the back and with long sleeves. (Picture no. 31)

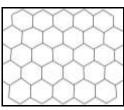
Fabric: Wool.

Decorative Motifs: Hexagonal patchwork is used to create interlaced Islamic Geometrical Patterns of six-fold rosettes on shoulders.

Design Principles for the Decorative Motifs: interchange in the shapes and colors of the six-fold rosettes achieved by repetition and regular interaction between Islamic ornaments. Elements had a fixed size and four fabrics used in the implementation of the patchwork in overlapping cross-sections, thus achieving balance and uniformity in design. (Picture no. 32)



(Picture no. 31), Design (13)



(Picture no. 32), Hexagonal patchwork used in design (13)

Design (14): Double breasted trench with long sleeves, belts for waist and cuffs and two patch pockets with flaps and buttons. (Picture no. 33)

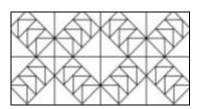
Fabric: Denim 100% cotton.

Decorative Motifs: Flying geese patchwork is used to create interlaced Islamic Geometrical Patterns of triangles on flaps, cuffs' belts and shoulders.

Design Principles for the Decorative Motifs: a smooth and continuous transition was used in the gradient of the triangle. The flow flows by changing the direction, size and color of triangles to achieve strong feeling of movement in the design. It also achieves a harmonious rhythm and leads to a sense of balance. (Picture no. 34)



(Picture no. 33), Design (14)



(Picture no. 34), Flying geese patchwork used in design (14)

Evaluation

For evaluating the designs, the researcher designed and constructed a questionnaire includes 12 Items, each item was assessed on a 5-degree (1 totally disagree, 2 disagree, 3 neutral, 4 agree, 5 totally agree). The questionnaire was filled in by 12 specialists in Helwan University, Egypt.

The questionnaire includes 12 Items as follows:

- 1- The design expresses the geometrical patterns in the Mosque of Ibn Tulun.
- 2- The design achieved the balance between originality and contemporary.
- 3- The patchwork areas correspond to the total area of the design.
- 4- The geometrical patterns of Ibn Tulun added aesthetic values to the design.
- 5- Patchwork techniques are suitable for the design.
- 6- The design is suitable for women of the age group (25-35 years).
- 7- The design succeeded to combine the geometrical patterns of Ibn Tulun and latest fashion trends
- 8- The design lines correspond to each other and with the design as a whole.
- 9- There is harmony between the colors of the design.
- 10- The design keeps up with fashion trends.
- 11- The design confirms the aesthetic value of the patchwork.
- 12-The design achieves individuality for its wearer.

Reliability and validity

To assess internal consistency for the 5-factor, 12-item model, the Cronbach α score was calculated using the whole sample, construct validity was assessed by computing scale scores for each item by calculating the mean score of the items for each respondent. Inter correlations between the scale scores for the 12-item and the 'overall grade' were computed to determine the discriminate validity. Strengths were defined artificially as those positively worded items which $\geq 75\%$ of respondents endorse by answering 'agree/strongly agree', or 'most of the time /always' (or when $\geq 75\%$ of respondents disagreed with negatively worded items). Areas with the potential for improvement were identified as items which $\leq 50\%$ of respondents answered positively. The average positive percentage of each dimension and item with 95% confidence interval was calculated.

Reliability Test

A Cronbach Alpha test was used to ensure the instrument's reliability. The value was = 0.789 for the questionnaire. All values are accepted since they are more than 0.60. (Malhotra, 2004)

The Cronbach's a reliability coefficients for the 12 questions were = 0.976, The Cronbach α score indicated an acceptable level of internal consistency (>0.70)). Cronbach's alpha score was excellent provide the following rules of thumb regarding

levels of internal consistency: >0.9, excellent; >0.8, good; >0.7, acceptable; >0.6, questionable; >0.5, poor and <0.5, unacceptable. (Table no.1)

Question	Pearson Correlation	Sig
The design expresses the geometrical patterns in the Mosque of Ibn Tulun	.848**	.000
2- The design achieved the balance between originality and contemporary.	.676**	.000
3- The patchwork areas correspond to the total area of the design.	.903**	.000
4- The geometrical patterns of Ibn Tulun added aesthetic values to the design.	.922**	.000
5- Patchwork techniques are suitable for the design.	.866**	.000
6- The design is suitable for women of the age group (25-35 years).	.909**	.000
7- The design succeeded to combine the geometrical patterns of Ibn Tulun and latest fashion trends	.946**	.000
8- The design lines correspond to each other and with the design as a whole.	.938**	.000
9- There is harmony between the colors of the design.	.931**	.000
10- The design keeps up with fashion trends.	.948**	.000
11-The design confirms the aesthetic value of the patchwork.	.931**	.000
12- The design achieves individuality for its wearer.	.945**	.000

(Table no.1), Correlation with the total scale and inter-correlations of the 12 questions

** Correlation is significant at the 0.01 level

In the above table, correlation analysis indicates that positively correlated appears that all the variables show strong positive relationships with one another. A positive correlation coefficient (r-value) indicates a strong or positive relationship among the variables. None of the variables showed a negative/reverse relationship. All variables indicated strong

inter-item correlation. The variables with the highest positive r-value (strongest positive relationship) were found.

Descriptive statistics

After gathering the data, it has been entered in SPSS (Statistical Package for the Social Sciences) version 22.0 and analyzed by some of SPSS's tools.

As the first analysis, it described the basic features of the data with the descriptive statistics to provide simple summaries about respondents. After the quantitative data collection process had been completed, data analysis began.

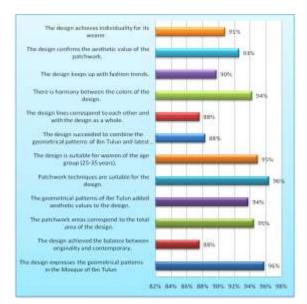
Results

This section contains the descriptive statistics and analyses using Anova. The first section of the questionnaire will provide an overview of the respondents' interaction with 14 designs. (Table no.2), (Graph no. 1)

Question	strongly disagree	2	3	4	strongly agree	Mean	Std. Deviation	%
1	0%	%3.0	0%	%11.9	%85.1	4.79	0.59	95.8%
2	%0.6	0%	%0.6	%58.3	%40.5	4.38	0.57	87.6%
3	0%	0%	%1.2	%25.0	%73.8	4.73	0.47	94.5%
4	0%	%1.2	%8.3	%10.7	%79.8	4.69	0.67	93.8%
5	0%	%0.6	0%	%16.1	%83.3	4.82	0.43	96.4%
6	0%	%1.2	0%	%21.4	%77.4	4.75	0.51	95.0%
7	0%	%4.2	%8.3	%29.2	%58.3	4.42	0.81	88.3%
8	0%	%1.8	%13.7	%29.2	%55.4	4.38	0.79	87.6%
9	0%	%1.2	%1.8	%21.4	%75.6	4.71	0.56	94.3%
10	%0	%1.2	%10.1	%27.4	%61.3	4.49	0.73	89.8%
11	%0	%1.8	%3.0	%25.6	%69.6	4.63	0.63	92.6%
12	%0	%1.2	%7.7	%26.8	%64.3	4.54	0.69	90.8%

Question	strongly disagree	2	3	4	strongly agree	Mean	Std. Deviation	%
Overall					4.61	.62	92.2%	

(Table no.2), Means and percentage of mean, Std. Deviation and responses

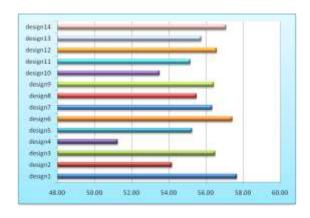


(Graph no. 1), Means and percentage of mean, Std. Deviation and responses Using one-way ANOVA, the F statistic test whether the designs are all equal, that there are differences among the means of the 14 designs. A significant F value indicates that there are differences in the means. (Table no.3), (Graph no. 2)

Design	Mean	Std. Deviation	F	Sig.
design1	57.50	1.78		
design2	54.00	2.45		
design3	56.33	4.23	2.123	.016
design4	51.00	5.51		
design5	55.00	4.90		
design6	57.00	2.22		

Design	Mean	Std. Deviation	F	Sig.
design7	56.17	1.70		
design8	55.25	4.05		
design9	56.00	2.89		
design10	53.42	7.93		
design11	54.75	3.25		
design12	56.17	1.64		
design13	55.33	3.55		
design14	56.75	4.75		
Total	55.33	4.18		

(Table no.3), ANOVA



(Graph no. 2), ANOVA

Conclusion

This paper presented some basic patchwork techniques used for constructing Islamic Geometrical Patterns on contemporary fashion for women of the age group (25-35 years). Patterns were inspired by The Mosque of Ibn Tulun which is one of the earlier examples of Egyptian mosques from the 9th –10th centuries to highlight the suitability and adapting of Islamic Geometrical Patterns using patchwork techniques on contemporary fashion.

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Corresponding author: wedian24@hotmail.com

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