

**Investigation of Consumers' Emotional Response towards
Islamic Design Patterns**

**Islam Gharib
Lecturer in Faculty of Applied Arts-
Helwan University**

Abstract

When it comes to buy a product, emotion plays a key role in making decision. Designers tend to stimulate desired emotions through design to push consumers to buy specific products more than others. Emotional responses of individuals are related to their culture. Therefore, many companies apply cultural features into their products to attract customers. Cultural features are elements that represents a specific culture. They can be divided into two kinds of features: visual and non-visual. Design patterns are considered one of visual cultural features. In this paper, we concentrate on studying Islamic design patterns and exploring consumers' emotional responses towards different kinds of Islamic design patterns. This paper fill the gap in the area of emotional measurement of cultural elements. This can help designers to develop designs that use the more emotional patterns. It also can help companies in marketing products in a more competing world.

Keywords: Emotional Design, Emotion Measurement, Islamic Patterns

Introduction:

In less than 100 years from the arise of Islam, Arab expanded through different geographical directions, from Iran east to morocco west, and from Yamen south to turkey north. This expansion helped in forming Islamic civilization through embedding old civilization such as Egyptian and Persian civilizations. Arab also began a wide translation movement to transfer old civilizations' science and art. Skilled craftsmen were emerged in the new civilization as new rulers interested in building a lot of beautiful and luxury buildings such as mosques, schools, and palaces to reflect the new civilization.

Through the previous circumstances, Islamic art developed through the first three centuries of Islam. Craftsmen used to adorn the wall of building and other objects with designed patterns which opened the door for looking for new and adaptable pattern that suitable the new religion. They used geometric pattern and plant motifs to fill spaces in architectural objects. Arabic calligraphy was used heavily as it represented verses of the Quran. With the arise of pictured books that tells stories, they used figural motifs of human and animal to represent the story.

Islamic design patterns and motifs are still used till now in adorning mosques and objects. They are still very popular among people. This paper aims to investigate people's emotional preferences of them. This will help designers to use Islamic patterns in an aware way in products. To achieve this, different Islamic design patterns were collected and classified, and then an emotion response measurement towards them was conducted. The Two-dimensional emotion-space (2DES) method (Schubert, 1999) was used to measure emotional reaction because it is a verbal tool that help in avoiding any confliction resulted from a picture-based method such as PrEmo (Desmet, 2007).

Related works:

Islamic patterns

Islamic patterns worked as a representation of Islamic civilization through centuries. It is considered one of the most important traditional designs in the world (Abas & Salman, 1994). Muslim Artists attempts through patterns to represent the soul of Islam. Therefore, it is noticeable that Islamic patterns directed into abstraction and filling spaces. It also kept away from drawing human features in early centuries but this situation was changed with in late Islamic history.

Islamic patterns include four categories: geometric patterns (Bourgoin, 1973; Castera, 1999; Kaplan, 2005), plant motifs (Kahera et al., 2009), Arabic calligraphy (Blair, 2007), and figural motifs of humans and animals (Baer, 1999).

Islamic geometric patterns (IGPs) were applied to various products (Abdullahi & Embi, 2013) such as buildings, ceramic, and metal products. IGPs took around three centuries from the arising of Islam to be developed. IGPs can be divided into two kinds of patterns: circle-based, and straight-edged patterns. Figure (1) shows these two kinds. These two patterns took a long time to be involuted to more complex patterns using polygons. Some studies suggested that the use of circle was an attempt to express about the unity of Islam (Bausani & Critchlow, 1979; George, 2007).

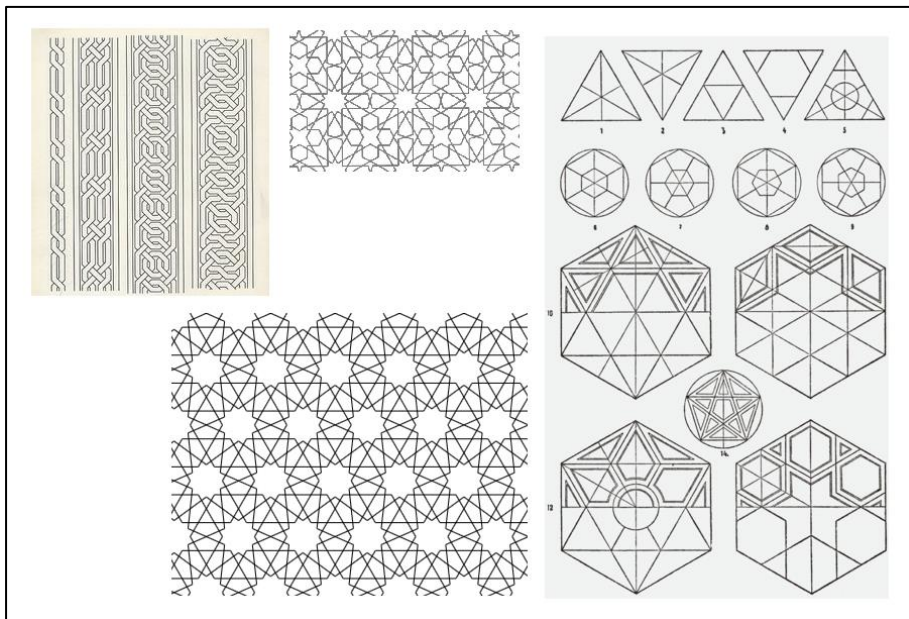


Figure (1) shows Islamic geometric patterns

Plant was used in Islamic design as a source of inspiration to decorate architecture and objects. Plants were used as a single motif or an entire pattern. Plant motifs were extracted from different natural resources and most of them were used in the pre-Islam period. They were moved to the Islam civilization through artists and workers from other backgrounds when Islam empire stretched. Figure (2) shows some of these motifs.



Figure (2) shows Islamic plant motifs

Early Arabic letters back to Phoenician's alphabet which was evolved into Latin alphabet in Europe and to Arabic alphabet in middle east. This early Arabic alphabet developed through centuries to the current alphabet. Arabic calligraphy was used as a design pattern with the arising of Islamic civilization to adorn architecture's elements such as doors and walls. With time, it converted to be an independent kind of art.

Artists began to develop various kinds of fonts such as Kufi, Thuluth, and Diwani. Figure (3) shows the evolution of early Arabic alphabet from Phoenician's one and figure (4) shows samples of different Arabic calligraphy fonts.

Modern Latin	A	B	C	D	E	F	Z	H	I	K	L	M	N	O	P	Q	R	S	T
Early Latin	A	B	C	D	E	F	Z	H	z	k	l	m	n	o	p	q	r	s	t
Early Greek	Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ	Λ	Μ	Ν	Ξ	Ο	Π	Ρ	Σ	Τ
Phoenician	𐤀	𐤁	𐤂	𐤃	𐤄	𐤅	𐤆	𐤇	𐤈	𐤉	𐤊	𐤋	𐤌	𐤍	𐤎	𐤏	𐤐	𐤑	𐤒
Early Aramaic	ܐ	܂	܃	܄	܅	܆	܇	܈	܉	܊	܋	܌	܍	܎	܏	ܐ	ܒ	ܓ	ܕ
Nabataean	Ⲁ	Ⲃ	ⲃ	Ⲅ	ⲅ	Ⲇ	ⲇ	Ⲉ	ⲉ	Ⲋ	ⲋ	Ⲍ	ⲍ	Ⲏ	ⲏ	Ⲑ	ⲑ	Ⲓ	ⲓ
Early Arabic	ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش	ص	ض	ط	ظ	ع	ف

Figure (3) shows the evolution of early Arabic alphabet from Phoenician's one

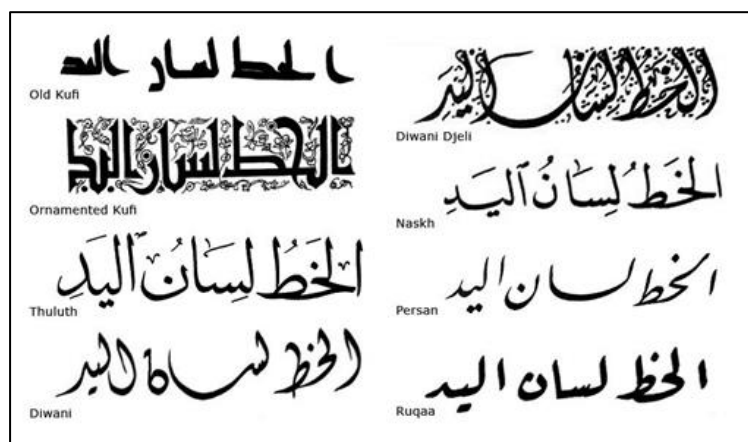


Figure (4) shows samples of different Arabic calligraphy fonts

Figural motifs of humans and animals were known in the medieval Islamic world. It also was encouraged but they were applied on objects and books rather than building walls as other design patterns. This made it infamous in the Islamic art history. It was used to record various life situations on objects. In books, it was used to express about a story to translate the writing into a picture. Figure (5) shows figural motifs of humans.



Figure (5) shows figural motifs of humans

Emotion Measurement

Many methods and tools were developed to measure the emotional reaction of users towards products such as PrEmo (Desmet, 2007), and 2DES (Schubert, 1999). The aim of these methods is to help designers to understand the emotional reaction of users to make their designs more emotional.

Two-dimensional emotion-space (2DES) is a self-report method that measure the emotional reaction. It firstly used with music, then it becomes popular in different domains such as design. 2DES was presented to overcome the limitations of other emotion measurement methods as emotional response can be affected by social and personal experiences or context (Schubert, 1999). This method was used to evaluate products emotionally in many studies such as Desmet (Desmet, 2007), and McDonagh et al. (McDonagh et al., 2002).

PrEmo is a non-verbal method that contains 12 pictures represent 12 different emotions, sex positive and sex negative. This variety of emotions' pictures enable the method to measure distinct emotions. It also can be used in different cultural context because of its non-verbal nature. Many studies used it in measuring the user emotional reaction such as Kjellerup et al. (Kjellerup et al., 2014), Smith (Smith, 2008), and Dalenberg (Dalenberg, 2014). Figure (6) shows the methods of 2DES and PrEmo.

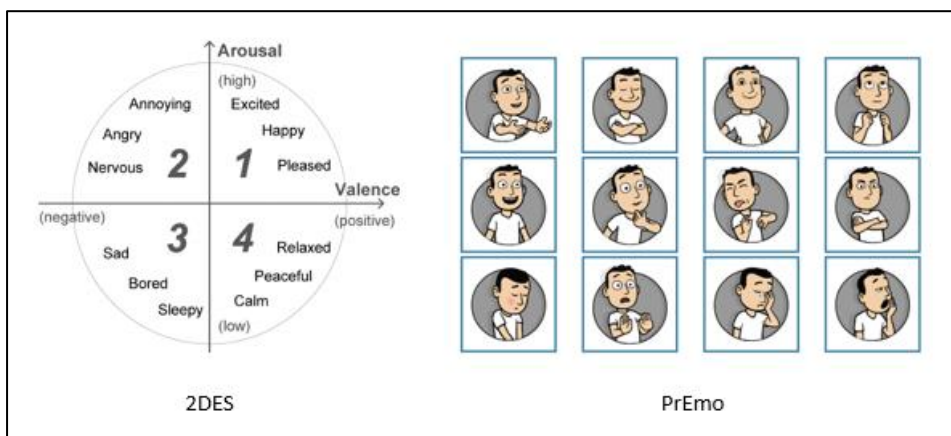


Figure (6) shows the methods of 2DES and PrEmo

Self-Assessment Manikin (SAM) was presented by Bradley & Lng (Bradley & Lng, 1994). It is a non-verbal technique that represents the emotional response to stimuli. It measures the pleasure, arousal, and dominance of the individual reaction. SAM was firstly used in the field of computer programming and then used in various domains such as advertising (Morris, 1995), product design (Desmet, 2003) and automotive design (Desmet et al., 2000).

Differential Emotions Scale (DES) (Izard et al., 1993) is a method that measures the individual's emotional response towards a product based on his experience. DES used 10 fundamental emotions to measure the emotional reaction of an individual (Izard, 1992). As other emotion measurement methods, it wasn't designed for design domains but it was used in many studies to measure emotional reaction to products such as Richins (Richins, 1997), and Kim & Moon (Kim & Moon, 1998).

Geneva Emotion Wheel (Scherer, 2005) divided emotion into 20 groups that participant can choose from them to describe his emotion. It is used to measure emotion towards products, events, and situations. Emotion groups are arranged in a wheel with axes and 5 degrees of intensity (Sacharin et al., 2012).

Previous tools are used manually by participants who report their feelings. Others such as Emo (Fabes et al., 1994; Dillard & Peck; 2000; Prinz, 2009) and FaceReader (Zaman & Shrimpton-Smith, 2006; Harley et al., 2015) use video recording to capture participant's emotions. In Emo, the participant is filmed while interacting with a product, and then watch the video and report his emotion. In FaceReader, the participant is filmed then a computer modeled the face reaction from the video and analyses the participant's emotion. In the field of emotion measurement, there are many other tools and methods that were developed for different kinds of use such as FeelTrace (Cowie, 2000; Savvidou, 2011), PAD emotion scale (Valdez & Mehrabian, 1994; Li et al., 2005), and Emoscope (Papiéska & Laevers, 2014; Lasa, 2015).

Methodology

To measure emotional reaction towards Islamic patterns, 12 Islamic patterns were chosen according to the following criteria:

- Pattern types:

Chosen Islamic patterns were divided into 4 groups: geometrical patterns, plant motifs, Arabic calligraphy, and figural motifs of human and animals.

- Variety of ages:

Each groups patterns and motifs were chosen from different Islamic ages to reflect the development of Islamic art and the variety of features used in patterns according to time differences.

- Geographical regions:

Chosen Islamic patterns represent different geographical regions such as Egypt, Iraq, and Iran.

2DES tool was selected to be used in emotional responses according to its verbal nature. In a previous study (Gharib, 2016) using PrEmo, the non-verbal tool, it was noticed that participants struggled in understanding pictures expressions according to cultural diversity.

A questionnaire was designed using the 2DES tool embedded with the selected Islamic patterns. 30 participants were asked to report their emotional reaction towards each Islamic pattern. It took around 10 minutes for each participant to fill the questionnaire. Results were collected and analyzed.

Results

The questionnaire was distributed among customers within an interview. 24 participants were asked to give their emotional reaction towards 12 Islamic patterns from different categories. Pattern were ordered randomly to find out how a participant's emotional reaction can be changed from one category to another. Figure (7) shows how customers reacted emotional to different kinds of Islamic patterns.

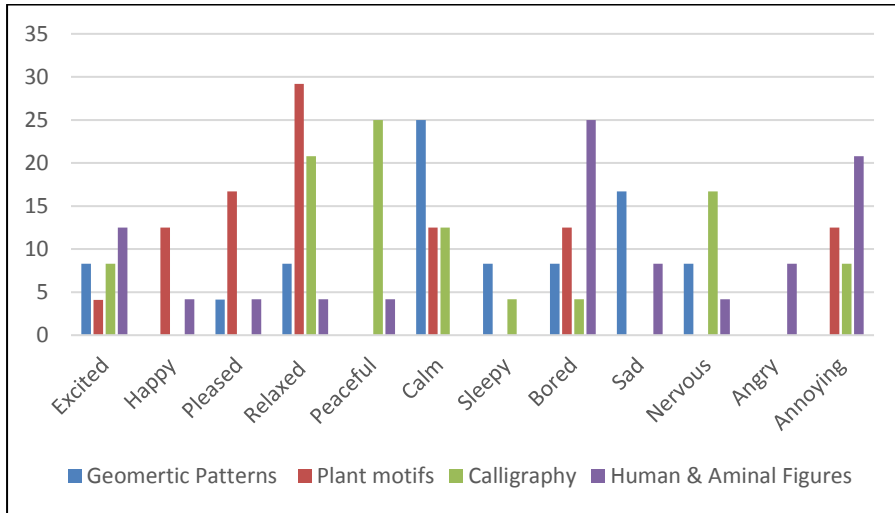


Figure (7) shows how customers reacted emotional to different kinds of Islamic patterns

Results showed that plant motifs and Arabic calligraphy patterns stimulated positive reactions more than geometric patterns and human and animal figures. Geometric patterns came next in simulating positive emotions by less than 50%. Participants reacted negatively to human and animal figures. They seemed to be unfamiliar with them although these figures spread through the history of Islam. This may be related their religious point of view for representation of human and animal figures.

In more details, for the geometric patterns, it is noticeable that they caused feeling with sadness, nervousness, sleepiness, boredom, and annoying to more than 50% of participants. Around 45% of participants felt positive emotions according to their report.

For plant motifs, most participants felt calm and relaxed. Negative emotions were concentrated in boredom. It is the same for Arabic calligraphy but negative feelings were concentrated in nervousness. For human and animal figures, few participants found them exciting but the majority of them felt annoyed and angry.

Conclusion and Future Works

Emotions play a key role in making buying decision for the customer. Most of cultural products that use patterns just apply them to the surface of products without thinking about their meanings of their affecting on customer's feelings. In this paper, we attempted to find out the emotional reaction of customers towards Islamic patterns. To find out that, questionnaire was used with 2DES method for measuring emotional reaction.

From results, it was clear that the type of the pattern affects the emotional reaction. Also, it was noticeable that colors played an important role in stimulating particular emotions than others. This can be a future research work to reveal the relation between colors and emotional reaction in product design.

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