Religious Public Realm: Visual Evaluation Criteria towards Better Religious Urban Open Spaces Performance in Egypt

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Abstract

Public realm is one of the important components within the sustainable urban life nowadays, religious public realm in particular, receive more attention from city inhabitants and activities due to the importance value of religious aspects in Egypt. Notably, in the last two decades, public realm and urban open spaces in general had been absent from urban strategies by the government bodies. This research focused on deriving the basic evaluation criteria for better visual performance of religious public realm such as the British and American urban design bodies, criteria will be derived from international government entities framework of best public realm practices. The research depends on the exploratory factor analysis (EFA) statistical technique as a tool understand visual parameters correlations. The EFA statistical technique is used as the main analysis technique. The research concluded that legibility, identity, determinants, aesthetics consistency, sense of nature, and supplements of religious urban space, have an effective role in enhancing both the visual and physical performance of religious urban spaces.

Keywords: Religious public realm, visual perception analysis, evaluation of visual performance, exploratory factor analysis EFA.

1. Introduction

The public realm is one of the most important parts of our cities where the greatest amount of human contact and interact with each other (Tibbalds, 2004). Public realm is determined as size which is determined by length, width, and height (three dimensions). It is also determined by surrounding elements as (buildings, structure, etc...) or natural elements or both together. Each space is organized to mention its own unique character (Ashihara, 1992). Religious public realm fulfils socio-cultural, economic and aesthetic roles not only for an individual but also for the society. It reflects community identity and increases attractiveness and urban renewal of a city which leads to increase tourism revenue. At the city level, religious public realm may provide an image of city identity (Bal, 2008).

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Designing attractive spaces could be achieved by understanding the visual structure around us. Definitely, we gain information about the space by using our senses, such as sight, smelling, hearing, tasting and some other complex ones. The sight is the most important sense, as it represents 87% of human perception to the surrounding space (Bell, 2005). Visual perception is a major component in the process of developing the image of cities. Accordingly, we can identify cultures, social mores and common values of the built space through visual resources (Radovic, 2003).

2. Religious public realm

The type of activity in urban space defines the character of space. The present study focuses on religious urban open spaces (Public Realm) that are distinctive at the city scale due to their centralized position, large size, and their association with religious buildings. They play a critical symbolic role, and are used for multiple purposes, such as cultural events, local trade, and social interaction. They are the cultural products of the city in which they always present social, cultural and religious meanings to a great variety of people (Stanley, 2012).

3. Previous Studies

There are lots of organizations that have developed some criteria to evaluate urban open spaces. They have put some criteria to create a successful urban open space. These organizations are as the following:

3.1 The ministry of housing, communities and local government (MHCLG)

MHCLG is a British ministerial department, supported by 12 agencies and public bodies. MHCLG provides practical guidance on the steps that can be taken in the development process to improve the quality of a place. MHCLG developed five principles or objectives to create a successful urban open space based on extensive experience and its own review of related literature (Figure 1).

Figure 1. illustrates the practical guidance on the steps that can be taken to improve the quality of a place. (Source, URL: 1)

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3.2 The Commission for Architecture and the Built Environment (CABE)

CABE is the government's advisor on architecture, urban design and public space in England. It encourages planners to create well-designed, welcoming places that work for people and offer expert advice to developers and architects. CABE set out eight space shapers guides to make a place fit for use by everyone as the following (UN-Habitat, 2015):

- *Access***:** finding your way and getting about.
- *Use*: the space has to offer activities and opportunities.
- *Other people*: the space should cater for different needs.
- *Maintenance*: the space should be clean.
- *Environment*: the space should be safe and comfortable.
- *Design and appearance*: what the space looks like.
- *Community*: how important the space is to local people.
- *You*: how the space makes you feel.

3.3 The study of Jahn Gehl and Brigitte Svarre

They have developed 12 criteria for evaluating public space qualities in cities as the following (UN-Habitat, 2015):

- **Protection against traffic accidents.**
- **Protection against crime and violence.**
- **Protection against unpleasant sense experiences.**
- **Possibilities for walking.**
- **Possibilities for standing.**
- **Possibilities for sitting.**
- **Possibilities to see.**
- **Possibilities for hearing/talking.**
- **Possibilities for playing/unwinding.**
- **Small-scale services.**
- **Designing for enjoying positive climate elements.**
- **Designing for positive sense experiences.**

3.4 The American Planning Association (APA)

APA holds an award competition for great places in America- streets, neighbourhoods and public spaces every year. Places are selected annually and represent the gold standard in terms of having a true sense of place, cultural and historical interest, community involvement, and a vision for

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tomorrow. America's Great public spaces are defined by many Guidelines which can be summarized as the following (URL 2):

- Features and Elements
- Activities and Sociability
- Unique Qualities, Traits, and Characteristics

3.5 The Project for Public Spaces (PPS)

PPS is a non-profit American organization that helps people create and sustain public spaces that build strong communities. PPS found that successful public spaces have four key qualities: they are accessible; people are engaged in activities; the space is comfortable and has a good image; and it is a sociable place, one where people meet each other and take people when they come to visit. PPS developed The Place diagram as a tool to help people in judging any place, good or bad (Figure. 2).
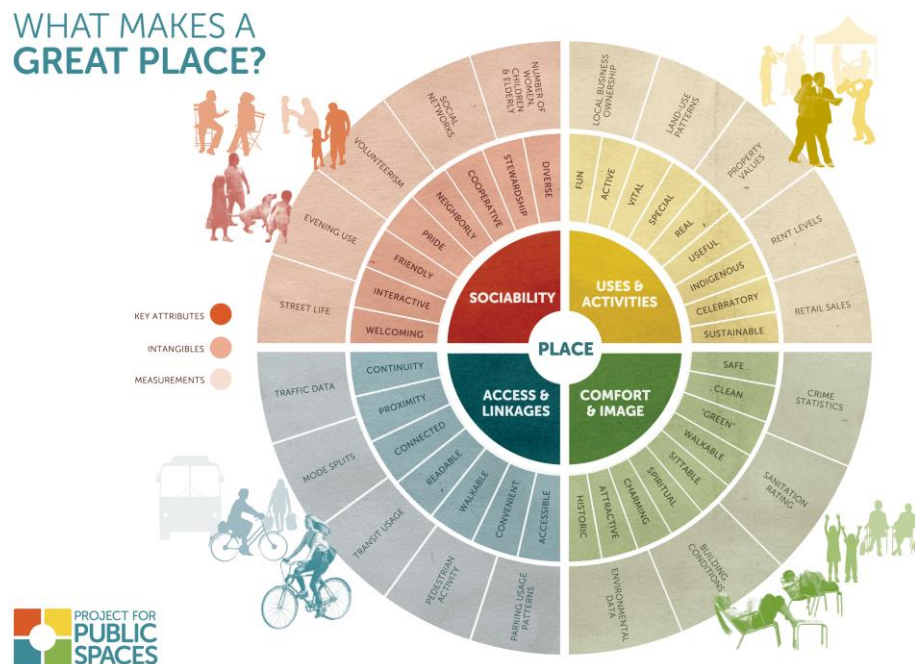

Figure 2. What Makes a Great Place Diagram. (Source, URL: 3)

4. Design considerations affecting the visual performance of the religious public realm

Through the analysis of previous best practice studies, it can be concluded that these organizations have common criteria that evaluate the visual performance of religious public realm. These criteria were summarized as the following (Table. 1):

- Accessibility
- Activities

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- Identity
- Space furniture
- Mental image
- Maintenance
- Separation

Table 1. Best practice studies that have developed some criteria used to evaluate religious public realm. (Developed by Authors, 2018)

	Accessibility	Activities	Identity	Furniture	Mental image	Maintenance	Separation
The Ministry of Housing, Communities and Local Government (MHCLG)		✔				✔	
The Commission for Architecture and the Built Environment (CABE)	✔	✔	✔			✔	
The study of Jahn Gehl and Brigitte Svarre	✔	✔		✔			✔
The American Planning Association (APA)		✔	✔				
The Project for Public Spaces (PPS)	✔	✔			✔		

5. The Research Methodology of Using the Exploratory Factor Analysis (EFA) Technique

The study was conducted in several procedures. In the first procedure, a questionnaire derived from previous studies is included. Furthermore, the questionnaire recorded the participants' evaluation of five religious public realm as the following: ST. Peter's square in Italy, Piazza San Marco in Italy, Taj Mahal square in India, The Red Square in Russia, and Naqsh-e Jahan square in Iran (Table 2). These diverse spaces are selected for the following reasons:

- They have a gathering shape.
- They are distinguished by their huge scale.
- They have religious character and different religious activities.
- Each one has a distinct and different identity from the other.
- Their urban and spatial importance are considered tourism attractions in their cities.

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- Selecting spaces with different nature covered all the urban space details.

Table 2. illustrates five various religious urban spaces (Developed by Authors, 2018)

ST. Peter's square in Italy

Piazza San Marco in Italy

Taj Mahal square in India

The Red square in Russia

Naqsh-e Jahan square in Iran

The participants were 50 Egyptian specialists in urban design, architectural design, and urban planning. They answered the questionnaire five times, one for each space. Moreover, they evaluated the five spaces using a rating scale numbered from zero to four (Table 3). This scoring method was derived from the one had been developed by CABE (2001), but has been modified for the purpose of this study. The scale developed by CABE provided only a qualitative descriptor for the highest and lowest score, and did not provide a descriptor that lent itself to numerical measurements. As some criteria in my checklist lend themselves to a subjective and qualitative responses, while others can be easily measured, and thus, quantified have included descriptors that address both situations.

Table 3. Shows the rating system (Developed by Authors, 2018)

0	1	2	3	4
Not Existence	**Poor**	**Fair**	**Good**	**Excellent**
(Does not satisfy criterion at all)	(Satisfies criterion by less than 25 percent)	(Satisfies criterion by 26 to 50 percent)	(Satisfies criterion by 51 to 75 percent)	(Satisfies criterion by 76 to 100 percent)

In the second procedure, the Exploratory Factor Analysis (EFA) technique is used to analyse the answered questionnaires. The analysis produced five models, one for each space. The quality of the models was measured by the Root Mean Square Error of Approximation (RMSEA), and Confirmatory Fit Index (CFI) techniques. RMSEA is used to measure the error rate between variables' relation, and should not equal more than 0.1. CFI is used to determine the validity of the relationships between variables, and should has a value close to the number one. Each one from the five models had its own latent factors. These factors included some variables related to each other. Moreover, the correlation (R) is a measure of how much a variable is contributed to a factor; thus,

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high factor loading' scores indicate that the dimensions of factors are better accounted by variables. The correlation (R) must be 0.30 or greater, since any value lower, would suggest a weak relationship between variables (Yong, 2013).

In the third procedure, a new proposed evaluation model is suggested, that combines the common factors of the five cases based on the previous statistical techniques. The new proposed evaluation model consisted of six latent factors that combined all the variables. Results indicate that there were relationships between some variables that are frequently repeated in all the cases. These relations were summarized in six latent factors. These factors are labelled as legibility, identity, determinants, aesthetics consistency, sense of nature, and supplements (Figure 3). Furthermore, the validity of the new proposed evaluation model is tested on the five case studies again to make sure that it is suitable for all spaces with different nature. Thus, the new proposed evaluation model can be used to evaluate any other religious urban open spaces.
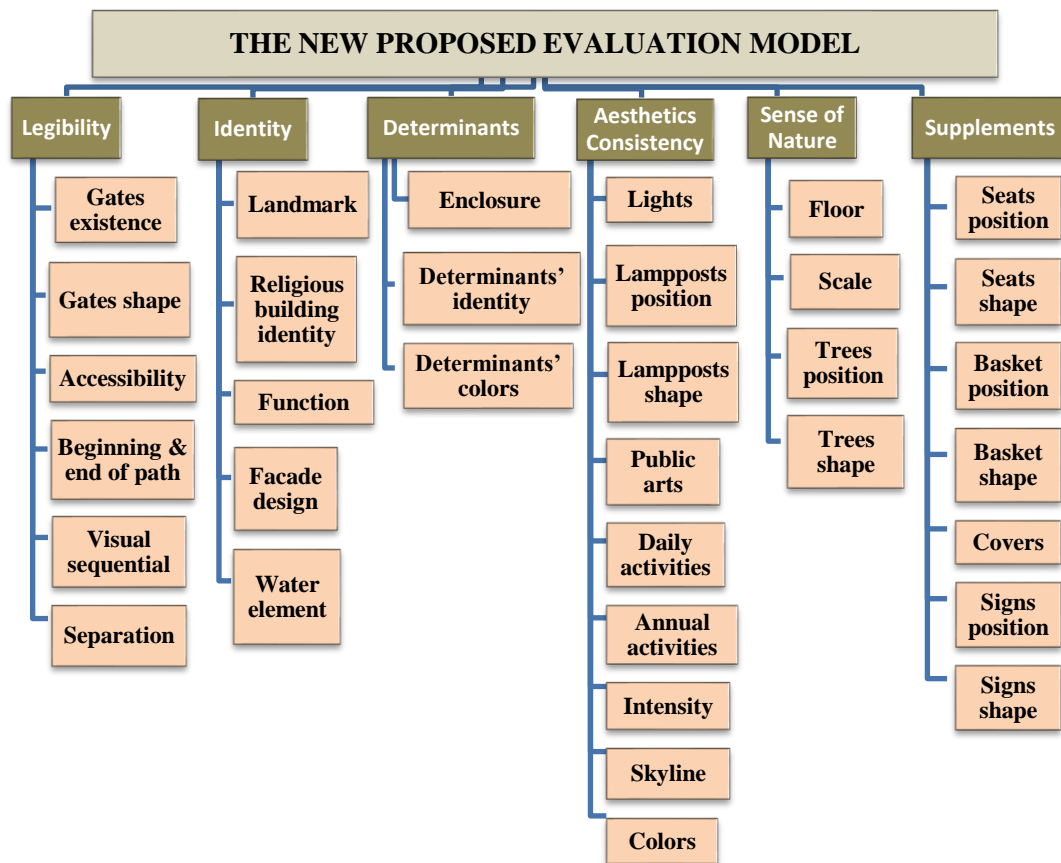

Figure 3. Shows the new proposed evaluation model that consists of six latent factors (Developed by Authors, 2018)

Finally, the new proposed evaluation model is used to evaluate a religious urban open space in Egypt, namely Al-Sayed Al-Badawy Mosque Square in Tanta (Figure 4). In addition, this religious space is

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often criticized by the local population in its city. Therefore, the present study can help in enhancing the visual performance of this space.

Figure 4. Shows Al-Sayed Al-Badawy Mosque Square in Tanta, Egypt (Developed by Authors, 2018)

6. The Results of the Research and Discussion

Al-Sayed Al-Badawy Mosque Square is a rectangular square and has a total area of 1.4 acres. The space is surrounded by the mosque of Al- Sayed Al-Badawy Mosque, residential buildings, and shops. Al-Sayed Al-Badawy Mosque is considered one of the most famous historical landmarks, and is located at the center of Tanta city. The space does not have visual criteria that provide a desirable visual performance. The space is evaluated, and the results showed low scores on criteria achievement. In addition, the reasons behind the low scores are insufficient number of natural elements, as well as the lack of gates, lights, seats, signs, and other supplements in the square. One of the essential problems there is the conflict between pedestrian and traffic movement, which results in hampering pedestrians. The total result was 63/136 (nearly 46.3%). The square more development to increase the efficiency of its visual performance (Table 4) (Figure 5).

Table 4. Shows summary of results (Developed by Authors, 2018)

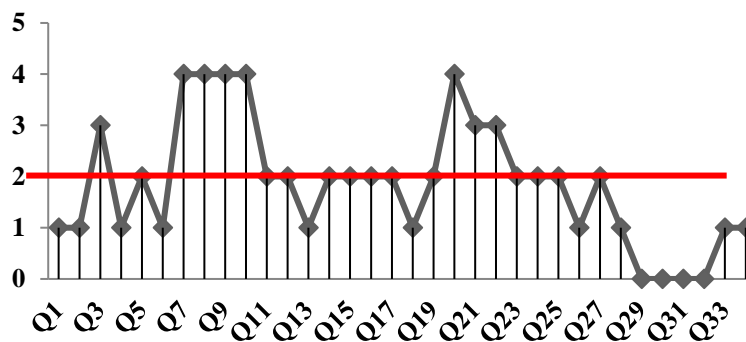| Legibility		Identity		Determinants		Aesthetics Consistency		Sense of Nature		Supplements	
Q1: Gates Existence	1/4	Q7: Landmark	4/4	Q12: Enclosure	2/4	Q15: Lights	2/4	Q24: Floor	2/4	Q28: Seats Position	1/4
Q2: Gates Shape	1/4	Q8: Religious Building Identity	4/4	Q13: Determinants' Identity	1/4	Q16: Lampposts Position	2/4	Q25: Scale	2/4	Q29: Seats Shape	0/4
Q3: Accessibility	3/4	Q9: Function	4/4	Q14: Determinants' Colors	2/4	Q17: Lampposts Shape	2/4	Q26: Trees Position	1/4	Q30: Baskets Position	0/4
Q4: Beginning & End of Paths	1/4	Q10: Facade Design	4/4			Q18: Public Arts	1/4	Q27: Trees Shape	2/4	Q31: Baskets Shape	0/4
Q5: Visual Sequential	2/4	Q11: Water Element	2/4			Q19: Daily Activities	2/4			Q32: Covers	0/4
Q6: Separation	1/4					Q20: Annual Activities	4/4			Q33: Signs Position	1/4
						Q21: Intensity	3/4			Q34: Signs Shape	1/4
						Q22: Skyline	3/4				
						Q23:Colors	2/4				
9/24		**18/20**		**5/12**		**21/36**		**7/16**		**3/28**	
Total result 63/136 = 46.3%											

Figure 5. Diagram shows Al-Sayed Al-Badawy Mosque Square's scores that lower and higher than 50% (Developed by Authors, 2018)

In conclusion, the results showed that the space is suffering from the lack of the visual performance. Accordingly, it needs more development to enhance its visual performance.

7. Conclusion

The visual performance of religious public realm reflects its value. Accordingly, the visual performance of either religious or public spaces should be put in consideration while designing and planning the physical structure of cities. Religious urban open spaces are considered as one of the iconic landmarks of cities. In addition, urban open spaces host several religious activities and other social events. Furthermore, many people visit religious spaces to rest, leisure, and feel the inspiration that direct them to acquisitioning new impressions and experiences. Several studies have investigated

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the visual perception criteria for the design process, aiming for desirable religious urban spaces, with emphasis on the visual-aesthetic dimension.

Five analysed religious urban open spaces by specialists and experts have suggested that legibility, identity, determinants, aesthetics consistency, sense of nature, and supplement furniture of urban space, achieve a desired visual effect on users. Spaces that do not have a clearly defined visual identity and legibility showed low scores in the evaluation process. In addition, spaces with no aesthetic consistency between its components, and lacks natural elements also showed low scores. By analysing the results of Egyptian religious urban open space (Al-Sayed Al-Badawy Mosque Square), the research concluded that there is defiance in its visual performance. Accordingly, this space should be developed to enhance its visual performance.

The contribution of this study is that the overall desirable visual performance of religious urban open space is identified on the basis of six factors (legibility, identity, determinants, aesthetics consistency, sense of nature, supplement furniture), which can serve as guidelines for the rehabilitation of existing religious open spaces, or planning and designing new ones. In addition, the identification and analysis of specific religious urban open spaces independently would achieve the desired visual effects and criteria for them. The research recommends involving the user's premises and needs to achieve more appropriate design for religious urban spaces. The visual performance of urban spaces is a primary factor that should be put in consideration while planning and designing urban spaces to achieve desirable results.

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