Perceptions and Preferences in Architectural Façades: Insights from Tehran's Designers and Users

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ABSTRACT

Evaluating Tehran's architectural façades for aesthetics means comprehending the minute distinctions in how consumers and designers see the same thing. Studies show that a variety of elements, including education, have an impact on how architects and non-architects perceive beauty. Recognizing and comprehending these distinctions is crucial to creating designs that work for both groups. In this study, we conducted a quantitative analysis of the aesthetic preferences of one hundred non-architects and one hundred holders of advanced degrees while examining twelve façades in Tehran. Our results demonstrate significant variances, particularly with regard to the traditional architectural style. Different perspectives emerged, despite the fact that architects and non-architects collaborate frequently to choose a façade, with non-architects favoring conventional aesthetics, particularly when it came to the exterior of their buildings. Conversely, architects expressed worries, particularly regarding Tehran's residential structures. With a mean score of 3.3 for architects and 3.2 for non-architects, it was the ugliest façade according to both groups. Non-architects chose photographs 3 (M=5.2), 4 (M=5.2), 6 (M=5.1), 8 (M=6.2), 9 (M=5.5), 10 (M=6.03), and 11 (M=5.6) as the top façades; picture 8 was thought to be the most beautiful. These findings demonstrate how important it is to bridge the gap between professional expertise and user preferences in architectural design. Through understanding and incorporating the many perspectives of architects and users, we can encourage the development of aesthetically pleasing and inclusive urban environments.

Keywords: aesthetics, environmental perception, building façade, psychology of environment, sustainable social architecture

INTRODUCTION

According to the Dehkhoda Dictionary [1], appropriateness and suitability define beauty. Perception is referred to by the word "aesthetics". A work of art's aesthetic quality is determined by its capacity to elicit unique sensations from its audience [2]. The sciences of environmental psychology and architecture place a high importance on environmental aesthetics; in fact, a building's aesthetics are evaluated before its functionality and financial viability. Environmental aesthetics is a distinct field of study that focuses on the qualities of the environment and how pleasant feelings are generated, according to [3,4]. Combining experimental aesthetics and environmental psychology, environmental aesthetics represents the symbolic implications of building design, spatial layout, materials, shadow, and color [5]. Architectural façades play a crucial role in shaping the visual and cultural identity of urban landscapes. In Tehran, a city marked by its rich history and rapid modernization, the façades of buildings serve as both a canvas for artistic expression and a reflection of societal values. Understanding the aesthetic preferences and perceptions of these façades is essential for creating environments that resonate with the city's inhabitants and visitors alike [6]. According to Ilbeigi and Ghomeishi [7], motivating qualities and the environment have a direct impact on idea. It has been demonstrated by Ghomeishi and Jusan [8] that an architect must be aware of the design principles and preferences of non-architects in order to present a design that will satisfy both architects and non-architects. This is because knowledge of these factors is very helpful to architects. According to Mehaffy and Salingaros [9], the viewers' reaction to the buildings is the most significant component among the numerous contextual and personal factors that affect the overall evaluation and particularly the architectural aesthetics. For a clearer understanding, Kuller [10] found that architectural shapes with circular edges produce more enjoyment.

Experience and education are two of the variables that contribute to the visual distinctions between an architect and a non-architect when describing a building's aesthetics, according to Hershberger [11]. Comprehending these distinctions and incorporating them into an architect's designs will result in more aesthetically pleasing façades and lessen the perceived gap between the architect and the non-architect. To demonstrate these distinctions, we have evaluated the façade's complexity, which is one of the primary emotional components of the façade according to Ghomeishi and Jusan [8] as well as reviewed the previous studies.

Since a building's façade is of a high significance, and one of the main pillars of any design is its façade, façade studies are essential in every respect. One of the perspectives from which façades can be assessed is the aesthetics of the façade design. A better understanding of its aesthetics helps create designs that are better, more useful and more adaptable to the society and the urban body. A close study of the elements influencing the façade, such as the materials and complexity, leads to the aesthetic understanding of it from the perspective of architects and non-architects and to find new variables influencing it. According to Mehrabian and Russell [12], a building's façade stimulates the emotions of the viewer, and these emotions influence his aesthetic perception; so, the emotions can be considered an important factor in identifying the aesthetics of a façade. In their research, Gifford et al [13] assessed 59 main factors from 42 large office buildings from the perspective of architects and non-architects, and proved that the stimulation of the pleasant or dissatisfaction are not necessarily related, and that this factor is not different from the architect and the non-architect. Both groups were satisfied by the building when it had adequate quality. Architects are more often excited by buildings with circular edges that have corners, triangular elements and especially strange structures and metal tent structure. But it was different in non-architects. An architect has to design according to the will and preferences of the non-architects if he wants his design everybody, not just the architects; so, the studies by Ilbeigi and Ghomeishi, (2017)[7] showed that architects and laymen sometimes had different opinions regarding the properties of the chosen buildings. Though judgments about assessing an environment can be made consciously or unconsciously, this recognition usually involves the visual perception of an environment and the emotional recollection of the same environment [14,15]. This study aims to explore the aesthetic preferences and perceptions of architectural façades in Tehran from the perspectives of both designers and users. Designers, including architects and urban planners, bring professional insights and creative visions that shape the city's skyline. Users, encompassing residents, workers, and visitors, interact with these façades daily, forming opinions based on their experiences and cultural backgrounds.

The interplay between designers' intentions and users' perceptions can reveal significant insights into the effectiveness of architectural designs. Are the aesthetic choices made by designers appreciated and understood by the general public? How do cultural, social, and environmental factors influence these preferences? By addressing these questions, this research seeks to bridge the gap between professional design practices and public reception. To achieve this, the study employs a mixed-methods approach, combining quantitative surveys and qualitative interviews with both designers and users. This methodology allows for a comprehensive analysis of the factors that contribute to aesthetic appreciation and discontent. The findings aim to inform future architectural practices and urban policies, ensuring that the built environment of Tehran aligns with the aspirations and expectations of its diverse population.

METHODOLOGY

This research focuses on the differences between architects and non-architects and the beauty and complexity of the façades given to them. Based on Iranian National Building Regulations (2016), buildings are divided into:

Type 1) 1-2 stories

Type 2) 2-4 stories

Type 3) 4-12 stories

Type 4) more than 12 stories

To this purpose, initially 30 pictures of the buildings' façades from the city of Tehran selected from prestigious architectural magazines were shown to 5 architectural aesthetics experts, and they rated them to determine their aesthetic value. Then 12 façades were selected according to the average scores given. Next, these 12 façades were given to two groups (100 architects and 100 non-architects) in the form of questionnaires. The research by Imamoglu [17] identified and made use of the 6 factors of complexity, decoration, beauty, pleasantness, repetition, and liking. These 6 factors were taken into account in the questionnaire and given to the two groups of architects and non-architects, so that they would rate the 12 façades of 4-12 stories residential buildings.

In order to assess the data, SPSS 22 was used to analyze the data.

The non-architects (N=100) were people with degrees higher than diploma, who were selected randomly from the city of Tehran. The architects (N=100) were also selected from Tehran. The selected number is taken and selected from the Morgan Table (1970). The purpose of distributing this questionnaire was to understand the aesthetic differences between architects and non-architects in Iran, and the relation of this element with complexity, which was included in the questionnaire, and according to Likert scale, its lowest number was 1 and its highest one 8.
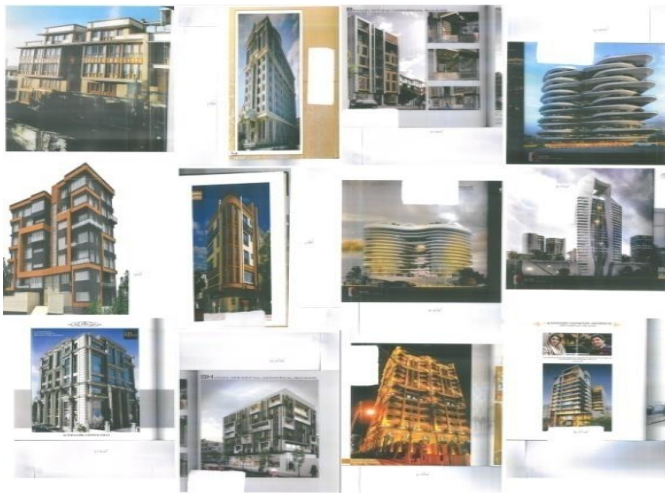

Fig 1. 12 building façades

Independent Variables

As seen in Table 1, the independent variables age and gender as well as their mean are shown for both architects and non-architects.

Table 1. Respondents' details

	Number of Respondents	Gender		Age means
		Male	Female	
Designer	100	37	63	26.7
Layperson	101	45	56	29.25

RESULT AND DISCUSSION

Reliability

As shown in Table 2, according to the law of George and Mallery (2013), the reliability statistics must be higher than 0.8; and 0.84 is higher than that. Therefore, the answer has good reliability.

Table 2. internal consistency reliability

Cronbach's Alpha	N of Item
0.847	72

Mean and Standard Deviation

The mean and the standard deviation of the architects and non-architects in the category of beauty are shown in Table 3. Considering the Table **3**, the means equaling 5 or higher are acceptable. The architects chose pictures 6 (M=5.8), 8 (M=5.3), 10 (M=5.5), and 11 (M=5.4) as the most beautiful pictures. Among these four, picture no. 6 was chosen by the architects as the best façade with the highest mean. As can be seen in Table 3, non-architects chose pictures 3 (M=5.2), 4 (M=5.2), 6 (M=5.1), 8 (M=6.2), 9 (M=5.5), 10 (M=6.03), and 11 (M=5.6) as the best façades, among which picture 8 was chosen as the most beautiful. Also, the lowest score among these 12 façades was given to façade no. 1 by both architects and non-architects. Its mean was 3.3 for architects and 3.2 for non-architects, making it the ugliest façade for both architects and non-architects.

Table 3. Beauty means in 12 pictures

	arch	N	Mean	Std. Deviation	Std. Error Mean
beautiful1	architect	100	3.3200	1.55622	.15562
	Non architect	101	3.2871	1.77953	.17707
beautiful2	architect	100	3.6800	1.62605	.16261
	Non architect	101	4.5941	1.70398	.16955
beautiful3	architect	100	3.9800	1.63904	.16390
	Non architect	101	5.2970	1.84686	.18377
beautiful4	architect	100	4.1200	1.83281	.18328
	Non architect	100	5.2500	1.94560	.19456
beautiful5	architect	98	4.4286	1.45020	.14649
	Non architect	100	4.3900	1.72267	.17227
beautiful6	architect	99	5.8586	1.74385	.17526
	Non architect	101	5.1089	2.06350	.20533
beautiful7	architect	99	4.8990	1.76413	.17730
	Non architect	100	4.6200	1.67441	.16744
beautiful8	architect	98	5.3673	1.70135	.17186
	Non architect	101	6.2673	1.87025	.18610
beautiful9	architect	98	3.7551	1.99516	.20154

	Non architect	101	5.5149	1.99306	.19832
beautiful10	architect	99	5.5152	1.64976	.16581
	Non architect	101	6.0396	2.06359	.20534
beautiful11	architect	98	5.4592	1.78867	.18068
	Non architect	101	5.6634	1.81812	.18091
beautiful12	architect	98	4.7245	1.69158	.17088
	Non architect	101	4.2277	1.90726	.18978

Given the above means of beauty for architects and non-architects, it was shown that non-architects liked not only the façades considered beautiful by the architects, but also 3 other façades, i.e., façades 4, 3 and 9. In Table 4, the independent sample T test is taken for these three pictures. Since Levene's test shows the equality of the two variances, we use the first line of results. As shown in this table, the beauty of façade no. 3 is (SD=1.63, and M=3.98) for architects and (SD=1.84, and M=5.29) for non-architects, t (199) = -5.34, and p=0.0.

Given the fact that p is lower than 0.05, we can conclude that there is a huge aesthetic difference between the architect and the non-architect, which confirms the results of the mean.

Beauty of the façade no. 4:

(M=4.12, and SD=1.83) for architects, and (SD=1.94, and M=5.25) for non-architects, t(198)= -4.22, and p=0

Table 4. Independent sample T test for pictures 4, 3, and 9

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
beautiful3	Equal variances assumed	2.471	.118	-5.345	199	.000	-1.31703	.24639	-1.80290	-.83116
	Equal variances not assumed			-5.348	196.669	.000	-1.31703	.24624	-1.80265	-.83141
beautiful4	Equal variances assumed	.669	.414	-4.228	198	.000	-1.13000	.26729	-1.65711	-.60289
	Equal			-	197.298	.000	-1.13000	.26729	-	-.60288

	variances not assumed			4.228					1.65712	
beautiful9	Equal variances assumed	.048	.827	-6.224	197	.000	-1.75975	.28275	-2.31735	-1.20215
	Equal variances not assumed			-6.224	196.806	.000	-1.75975	.28275	-2.31736	-1.20214

Beauty of the façade no. 9:

(SD=1.99, and M=3.7) for architects, and (SD=1.99, and M=5.5) for non-architects, t(197)= -6.22, and p=0.0

As shown in the Figure 2, architects and non-architects had different opinions regarding these 3 façades. But the item with the highest difference is beauty of the façade no. 9, which has the lowest score among architects and the highest score among non-architects.
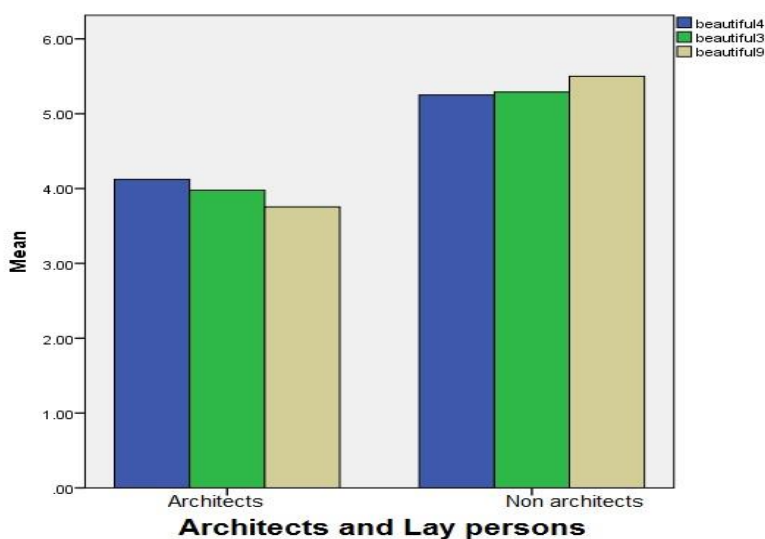

Fig 2. Beauty means for façades 4, 3, and 9 among architects and non-architects

As shown in Figure 1, all the three façades creating the difference between architects and non-architects are of the classic façade style. The data reveals clear differences in how architects and non-architects evaluate the aesthetics of façades. While both groups identified façade #8 as the most beautiful (architects: M = 5.37, non-architects: M = 6.27), façade #1 received the lowest scores (architects: M = 3.32, non-architects: M = 3.29). This indicates that, despite their differing aesthetic inclinations, both groups have some shared perceptions of beauty and unattractiveness.

However, significant divergence appears in the evaluation of specific façades. Non-architects rated façades #3, #4, and #9 notably higher than architects, as shown in Table 4. These façades, which feature more traditional and classic architectural elements, resonated more with non-architects. Conversely, architects gravitated toward modernist styles, valuing minimalism and innovation, as reflected in their higher ratings for façades #6, #10, and #11.

In another research in which architects and non-architects were interviewed, the classic style (n=11) was considered by non-architects as one of their factors for liking a façade, whereas the architects in no way liked

the classic façade style for Tehran (n=0). As is clear, the collected data are in full accordance with the interview data.

Aesthetic Ratings and Statistical Findings

The study revealed notable differences between the aesthetic preferences of architects and non-architects. Both groups identified façade #8 as the most beautiful, while façade #1 received the lowest scores, indicating unanimous disfavor. Table 5 presents the beauty ratings across the twelve façades.

Table 5. beauty ratings

Façade	Architects (M)	Non-Architects (M)	Architects (SD)	Non-Architects (SD)
1	3.32	3.29	1.56	1.78
6	5.86	5.11	1.74	2.06
8	5.37	6.27	1.70	1.87

Interestingly, non-architects rated three additional façades (#3, #4, and #9) highly, diverging from the architects' evaluations. Table 6 shows the results of the independent sample t-tests for these façades, confirming significant differences in aesthetic appreciation.

Table 6. independent sample t-tests for façades (#3, #4, and #9

Façade	t-value	p-value	Mean Difference
3	-5.34	0.000	-1.32
4	-4.22	0.000	-1.13
9	-6.22	0.000	-1.76

The classic façade style emerged as a significant point of divergence. Non-architects consistently favored these styles, while architects viewed them unfavorably, especially for Tehran's urban landscape. This study highlights the aesthetic divide between architects and non-architects, particularly concerning traditional architectural styles. While architects prioritize modernist aesthetics, non-architects gravitate toward classical forms, reflecting broader cultural preferences. These findings emphasize the importance of aligning professional design practices with public expectations to foster inclusive urban environments.

Understanding these perceptual differences can guide architects in developing façades that resonate more effectively with users, contributing to more harmonious urban landscapes. Future studies could explore additional variables, such as socio-economic factors, to further refine architectural practices in Tehran.

Independent sample t-tests were performed to analyze the differences in mean scores between architects and non-architects for specific façades (Table 4). The results highlight statistically significant differences in aesthetic evaluation:

- **Façade #3**: $t(199) = -5.34$, $p < 0.001$
  Mean Difference: -1.32
  Non-architects (M = 5.29) rated this façade significantly higher than architects (M = 3.98), showcasing their preference for its traditional elements.

- **Façade #4**: $t(198) = -4.22$, $p < 0.001$
  Mean Difference: -1.13

The classic design of façade #4 appeals more to non-architects (M = 5.25) than to architects (M = 4.12).

- **Façade #9**: t(197) = -6.22, p < 0.001
  Mean Difference: -1.76
  Façade #9, which incorporates ornate elements, received the highest divergence in scores, with architects rating it the lowest (M = 3.7) and non-architects the highest (M = 5.5).

These findings confirm that non-architects are drawn to traditional styles, favoring familiar elements such as symmetry, ornamentation, and decorative façades. In contrast, architects tend to reject these styles, perceiving them as outdated or inconsistent with modern design principles.

Shared Aesthetic Preferences and Notable Differences

Despite their differences, architects and non-architects demonstrated some alignment in aesthetic judgments. Façade #8, which combines classical symmetry with modern elements, emerged as the most beautiful across both groups. This suggests that designs blending traditional and contemporary features may provide a middle ground, satisfying both professional and lay audiences.

However, the significant divergence in the evaluation of other façades highlights the need to reconcile these differences. Architects may need to reconsider their aversion to traditional styles, particularly when designing for residential or public spaces where user satisfaction plays a critical role. Conversely, public education on modern aesthetics could foster greater appreciation among non-architects for contemporary designs.

Insights from the Classic Style Debate

The data suggests that the classic architectural style is a critical point of divergence. While non-architects consistently favor traditional designs, architects express a clear preference for modernism. This divide reflects deeper cultural and professional influences. Architects, trained to value innovation and minimalism, often dismiss traditional forms as outdated. Non-architects, however, associate these styles with cultural heritage and aesthetic comfort, particularly in a city like Tehran where historical identity remains significant.

CONCLUSION

As demonstrated by this research, architects and non-architects exhibit distinct perceptions regarding the aesthetics of façade design, reflecting their differing backgrounds, experiences, and professional priorities. While some areas of agreement exist, significant divergences emerge in how the two groups evaluate aesthetic elements, particularly concerning architectural styles. Notably, the classic architectural style, characterized by symmetry, ornamentation, and historical references, was highly appreciated by non-architects but viewed unfavorably by architects. This contrast suggests that architects, driven by modernist design principles and innovation, often overlook or underappreciate the value that traditional aesthetics hold for the general public. This insight holds important practical implications for architectural practice. Acknowledging these aesthetic preferences can help architects bridge the gap between professional design standards and public expectations. In urban planning and façade design, aligning architectural choices with user preferences contributes not only to greater visual harmony but also to user satisfaction and community acceptance. This approach is especially relevant for cities like Tehran, where the rapid pace of urbanization and modernization often creates tensions between preserving cultural identity and embracing contemporary design trends.

Moreover, understanding non-architects' inclination toward traditional styles can inspire architects to reframe their design strategies by integrating elements of classical architecture with modern forms. This hybrid approach, which combines the familiarity and warmth of traditional aesthetics with the functionality and innovation of modern design, can foster more inclusive urban environments. It can also encourage architects to explore new ways of incorporating cultural and historical references into their work, creating façades that resonate more deeply with the community while maintaining contemporary relevance. In addition to enhancing user satisfaction, this study's findings can inform urban policies aimed at improving the built environment.

Decision-makers and urban planners can leverage these insights to promote design frameworks that accommodate both professional expertise and public sentiment. This may involve involving local residents in the design process through participatory planning initiatives, ensuring that their preferences are reflected in the urban fabric. In conclusion, recognizing the divergent aesthetic preferences between architects and non-architects serves as a reminder of the importance of inclusive design practices. By addressing these differences thoughtfully, architects can create façades that not only meet professional standards but also resonate with the cultural and emotional needs of the public. Future research could explore additional dimensions, such as socio-economic factors and environmental sustainability, to further refine our understanding of the relationship between architectural design and public preferences. Ultimately, fostering collaboration between architects and users will lead to more meaningful, aesthetically pleasing, and socially inclusive urban landscapes.

Author contributions

Study conception and design: Marjan Ilbeigi, Neshat Shabani.

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All authors reviewed and approved the final manuscript.

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Conflict of Interest

"The authors declare no potential conflict of interest regarding the publication of this work. In addition, the ethical issues including plagiarism, informed consent, misconduct, data fabrication and, or falsification, double publication and, or submission, and redundancy have been completely witnessed by the authors".

Ethical Approval

There is no human or animal medical test in this research.

Data Availability

Data id available per request

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