

Stigmatizing Housing Facade Based on the Socio-Economic Status of Residents; Experts' View; Case Study: Municipality District 4 of Tehran

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ABSTRACT

Housing facade is represented by some social, economic, and cultural characteristics of its residents through a complex system of "signs", constituting a stereotypical image in the minds of the users. On the other hand, people with relatively lower socio-economic status are constantly stigmatized and distinguished, thus aggravating inequality in the community. Because the outside evaluation of a house is linked with its objective characteristics, the research goal is to find the inter-relatedness of factors affecting residential facade design which change users' understanding of an area or building. In this regard, the present study aimed to investigate the residential views of Tehran's Municipality District 4 using a mixed research method¹. The study population included architectural experts who were selected via snowball sampling. First, the documentary method was used to investigate the concepts related with understanding the environment, semiotics and the phenomenon of stigma followed by developing a conceptual framework of the research. Then, an inventory containing objective factors of residential view was provided to 22 experts to rate their effect on residents' understanding. In the next step, 40 residential housing facades were assessed by experts through descriptive method. Exploratory factor analysis of the data revealed four factors affecting the housing facade, which included facade materials and design, facade entrances and annexations (attachments), balcony and facade proportions, greenery and facade dimensions. The images were also explored using scores given by the experts. Finally, by analyzing both visual and inventory tests, solutions were provided to remove stigmatization of the weaker group's housing facade.

Keywords: Housing, Facade, Sign, Labeling, Stigma.

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1. INTRODUCTION

The visual environment and the urban landscape serve to link humans and cities, laying the ground for understanding and evaluation of the environment. Positive and negative evaluations are represented using intangible dimensions through a system of "signs" (Golkar, 2008). In this regard, Moles (1966) argues that urban landscapes constitute components, each of which conveying a message. A house facade represents a public image of an individual presented to the community (Lang, 1987). On the other hand, we are today living in an unfair society. The group with a lower socio-economic status than its surroundings are constantly stigmatized and differentiated (Price, 2017). It is thus critical to understand the outcomes of social inequality to address this phenomenon (e.g., reduced health and vitality) (De Maio, 2014; Lahdenperä, 2012; Nieuwenhuis, Van Ham, Yu, Branje, Meeus, & Hooimeijer, 2017; Wen, Browning, & Cagney, 2003; Pickett & Wilkinson, 2007) and abuses and offenses (Gale, Magzamen, Radke, & Tager, 2011; Eckenrode, Smith, McCarthy & Dineen, 2014; Hipp, 2007; Burraston, McCutcheon & Watts, 2018)). The structural environment, including housing, reflects the social prestige of users of which they are aware, but since they are less affluent economically, they exhibit less tendency to change the environment and its meanings; however, the role of the facade as a symbol of the constructed environment is key to understand the need for a sense of belonging and respect (Lang, 1987). One of the factors affecting the creation a fair and sustainable city is social diversity (Khosroshahi, 2015; Fainstein, 2010). In an urban environment, for different socio-economic groups of society to coexist, the unfolding problems must be eliminated. One of the most notorious threats against the low socioeconomic status people is the opposition from affluent groups and the emergence of a phenomenon known as stigmatization (negative labeling) (Price, 2017). Some building signs reveal some particular groups of people or events (Galster, Tatian, Santiago, Pettit, & Smith, 2003; Goetz, 2008; Nguyen, Basolo, & Tiwari, 2013). Prestige and stigma are highly focused attention for their different uses (illness, disability, etc.) and revealing neighborhood characteristics (Ruiz-Tagle, 2017; Permentier, Van Ham, & Bolt, 2009; Tunstall,

Green, Lupton, Watmough, & Bates, 2014; Sakizlioglu & Uitermark, 2014; Sampson & Raudenbush, 2004; Permentier, Bolt, & Van Ham, 2011; Arthurson, 2012). Researchers maintain that the perceived prestige of a neighborhood by outsiders affects the health, well-being and ultimately the satisfaction of the residents of that neighborhood. This may even cause residents to leave a low-income neighborhood (Permentier, Bolt, & Van Ham, 2011; 2009). Social and structural disorders in a neighborhood greatly contributes to stigmatization (Sampson & Raudenbush, 2004). Gentrification in neighborhoods with poor reputation is not welcomed by residents and causes more displacement of people in the community. In other words, displacement cannot be considered as a solution (Sakizlioglu & Uitermark, 2014). Ruiz-tagle (2017) investigated the stigmas experienced by residents living in heterogeneous socio-economic buildings. Here, separation occurs due to identity differences and symbolic differences, rendering in dissatisfaction among people. Price (2017) also conducted another research on the scale of urban design and architecture which concerned the effect of affordable housing facade design on the phenomenon of stigmatization, generally providing a few factors affecting the facade. Because stigmatization has not been generally investigated in Iran nor at the level of housing architecture in urban neighborhoods, this study was aimed at finding the relationship between housing facade design factors and stigma. To achieve this goal, the following questions were raised:

- How do distinguishing facade properties cause socio-economic class residents to be stigmatized?
- How can facade design reduce stigmatization in low-income housing areas?

2. PERCEPTION OF THE ENVIRONMENT AND URBAN LANDSCAPE

Various researches have been done on perception of environment and mental image, a summary of which is provided in Table 1. Most researches have concerned semiotics and understanding urban landscape, while only signs have been discussed when evaluating architectural scales. The present study aimed to investigate the use of signs in understanding the socio-economic class of residents.

Table1: Summary of Researches on Understanding City and Architectural Levels

Researchers	Goal, Problem, Question	Studied Area	Research Methodology	Outcomes
1 (Barati & Kakavand, 2013)	What are the criteria and dimensions of quality in an urban living environment, as derived from the mental image of citizens and their satisfaction? How is the quality level of the residential environment in various parts of the city appraised?	Qazvin - selecting several neighborhoods of old, middle and modern design architecture in the three districts	Descriptive-analytical	People in Qazvin's district 2 are more satisfied with the quality of their living environment than other regions. Faced with their residential environment, people are more sensitive to all environmental aspects and their senses get activated when communicating with the environment.

Researchers	Goal, Problem, Question	Studied Area	Research Methodology	Outcomes
2 (Piri, Azizi, Roshanaei, & Rezaeian, 2015)	Finding a significant correlation between the quality of the mental map and the social security of families	Tabriz - Formal spaces of Manzaryeh and Roshdiye which enjoy appropriate landscape design and growth versus informal spaces with irregular physical appearance like Koy Manba and Yousefabad	Survey-questionnaire	The presence of families in urban public spaces depends on the spatial selectivity and mental map. The mental map of the residents at formal neighborhoods is characterized by informal settlements and their residents called "other spaces" or "other violent and marginalized spaces" causing families to avoid these neighborhoods.
3 (Ranasadat, 2008)	Understanding the terms and concept of place from a classical and contemporary perspective and the relationship between place, memory and collective memory and a mental image derived from place - factors forming place identity	Tehran- Niavaran St.	Documentary-library, case study	Place is materially characterized by the physical structure and activities that takes place in it, then finding meaning via images and the memory formed in the human mind over time
4 (Kakavand, Barati, & Gohar rizi; 2013)	Improving the quality of the environment in urban decay areas using the mental image of citizens and officials and experts' view	Qazvin, urban decay	Descriptive-analytical	Citizens were found to be more satisfied with the environmental and socio-cultural components of urban decay areas, while considering the problems to originate from the low economic status of residents and economic and managerial criteria. Urban planners were more satisfied with the economic and social components of urban decay, seeing major problems arising from the management and physical issues
5 (Khakzand, Mohammadi, Jam, & Aghabozorgi, 2014)	Attention to the special characteristics of Qeshm city, emphasizing on aesthetic and environmental dimensions and identification of factors affecting the urban landscape design on Vali-e-Asr street	Qesh, Vali-e-Asr st.	Analytical-applied, observation and questionnaire	Such indices as proportionality, neatness, regularity and balance and order from the objective dimension while attachment to the place, meaningfulness, comfort, readability and attractiveness from the mental dimension takes precedence in aesthetic evaluation. Also, from the point of view of experts, such indices as resistance of materials, greenery for comfort, temperature-resistant materials and green spaces in the environmental dimension took precedence in design.
6 (Chalup, Hong, & Ostwald, 2008)	An architecture analysis of house facade based on face recognition and facial expression classifications. Hypothesis: Abstract facial expressions can embody in designing buildings' facade and stir emotional reactions from observers.	Australia	Quantitative - using computers and complex visual data from people's faces	This research suggested how facial patterns, as linked with emotional states, such as surprise, fear, happiness, sadness, anger, hatred, contempt, or neutrality, are recognized in both sets of images (person and house).
7 (Chalup, Hong, & Ostwald, 2010)	Hypothesis: Characteristics of abstract facial patterns can be perceived architectural facade design and stimulate observers' emotions.	U.S.	Pareidolia software ² was used to recognize the face and evaluate house facade	This study demonstrated how facial expressions as linked with emotional states such as surprise, fear, happiness, etc. can be recognized in both images (person and house).

	Researchers	Goal, Problem, Question	Studied Area	Research Methodology	Outcomes
8	(Tucker, Ostwald, Chalup, & Marshall, 2005)	Using computer imaging architecture knowledge to create an analytical tool to describe the physical properties of a street view	England	Algorithmic analysis-digital image	The relationship between the elements, or, as Hillier suggests, the way they are matched, may provide insights on how a street is perceived empirically. The length of street edges also matters
9	(Crawford, Lee, & Beatty, 2015)	How do business code applications affect users' aesthetic perceptions of street views?	Michigan, U.S.	Qualitative; understanding street business signs and scoring them (based on beauty, interest and order)	People have different perceptions of three issues regarding street body alternatives based on form-based codes, traditional-area codes, and no codes. Form-based street views were perceived as the most beautiful. Perception of order differed considering the type of perspective, revealing lower sense of order in corporate areas and greater sense of order in business areas.
10	(Salesses, Schechtner, & Hidalgo, 2013)	Hypothesis: Inequality does not help quantitatively measuring city differences. Determining inequality in different cities by quantitatively measuring the way they are understood.	USA and Australia - Boston and New York in the US, Linz and Salzburg in Australia	Descriptive - 1000 photos to measure perception of security, class and specificity	Image perception in New York and Boston is greater than that in the other two cities. The street views of Boston and New York are inconsistent or unequal with those of Linz and Salzburg. The research was validated by examining the relationship between the cities and murder. Findings demonstrated a strong relationship between perceptions of security and class and the rate of murders in New York.
11	(AlHalawani, Yang, Liu, & Mitra, 2013)	Investigating the changing repetitive elements of the facade (such as windows in open and closed positions)	London, England	Descriptive-analytical; 10 photos of the facade	Introducing an algorithm for facade image analysis to extract a regular pattern between repetitive window elements, as well as identifying changes to windows (e.g., displacement parameters for sliding windows and angle parameters for rotating windows)
12	(Choo, Nikrahei, Nasar, & Walther, 2015)	Investigating the neurological effects of architectural designs on the human brain	Ohio, U.S. 23 senior students	Qualitative - Neurological examination	Precise decoding of architectural styles is negatively associated with specialization in architecture, as it shifts from completely visual cues to using knowledge domain. Neural representations of architectural styles in the human brain are not only directed by perceptual features but also by semantic and cultural elements, such as specialty in architectural styles..
13	(Choo, Nasar, Nikrahei, & Walther, 2017)	Investigating the neurological effects of architectural designs on the human brain. How the human visual system decodes visual architectural aspects	Ohio, U.S. 23 senior students	Qualitative - Neurological examination	Neural correlates of visual perception of architectural styles have roots in the style-specific complex visual structures. The brain network representing the architectural styles includes Fusiform Face Area. We concluded that FFA contributed to the neural image coding (architectural styles of buildings).

Researchers	Goal, Problem, Question	Studied Area	Research Methodology	Outcomes
14 (Abbasi, 2017)	Urban facade is examined by functional, identity and aesthetic aspects	Qom - Investigation of Motahhari Square to Hojjat intersection	Both quantitative and qualitative methods	Despite its remarkable buildings, this route lacks suitable urban view and design features. Urban view is not only linked with the city structure and its components, but also with citizen's perception of the city.

3. THEORETICAL BASICS

Considering the background and objective of the research, the theoretical basics section includes signs and stigmatization; here, the theories and views of researchers are also investigated.

3.1. Signs

Sign is an observable phenomenon which replaces and implies an absent phenomenon by means of a relation it has with (Iran Industrial Design, 2010 Quoted from Bagheri & Einifar, 2017). Pierce introduced a "three-dimensional" pattern of signs: A. Representation: the form a sign takes on (not being necessarily material); B. Interpretation: a meaning derived from a sign; J. Theme: refers the sign to it (Short, 2007). Similar criteria such as building views may convey different meanings to different people. An environment is constructed of materials, colors, and various levels of light. The pattern of these elements is the signified. The images and meanings along the pattern called the signifiers which differ from one person to another and group from group because the reference is different (Lang, 1987). By living in a building, a person displays himself, his culture, his socio-economic status, etc. to the society (Quoted from Lowson, 2001; Damyar, 2014).

3.2. Stigma and Labelling

Goffman (1963) was first to introduce stigmatization inside or outside the society (Pescosolido & Martin, 2015; Goffman, 2009). He argues that "stigma" is a notion of damaged identity and a way to express the social mundane affairs; this notion entails demotion, destruction and discrimination while being directly related to the process of social inequality (Link, Phelan, & Hatzenbuehler, 2014); it depends on four general components: A. Distinguishing differences and labeling; B. linking individuals' differences to negative characteristics and stereotypes; C. Separating "us" from "them" and D. The experience of losing position, and discrimination (Link & Phelan, 2001). One would say that "label" is a particular term that refers to situations,

individuals, groups, places, organizations, institutions or other social entities not necessarily conveying a negative implication; however, "stigma" is a mark of disgracing and discrediting people and a "mark of shame" (Pescosolido & Martin, 2015). Stigma presuppositions include: 1) It is dependent on major sociological concerns; e.g., power and ability to classify concrete and non-concrete resources; 2) It occurs through social relations; 3) It forms and transforms within specific cultural structures originating from a social context, such as time and place and 4) All its components are integrated often seen as part of a continuum (Link & Phelan, 2001); Coleman, 1986; Scambler, 2009). In recent decades, the term stigma and its application in neighborhoods (Skogan, 2012; Keene & Padilla, 2010) and social and public housing (Nelson, 2014; Carnegie, Byrne, & Norris, 2017) has been investigated.

4. INTRODUCING THE CASE STUDY

In this section, the research methodology, consistent with the objective and type of the research, includes the studied area, population and sample, and measurement tools.

4.1. Research Methodology

A conceptual model of the research is introduced using the perceived environment as well as the signs affecting the perceived stigma. According to this model, independent variables, i.e., 20 objective factors relating to residential views, fell in nine groups: materials (material, color and properties), facade decorations, annexed artificial and natural elements, window (shape, material, color, dimensions and number), entrance form, balcony (existence, dimensions, shape and design), width of the plot, width and height of the facade, neatness or dirtiness of the facade (maintenance), designed facade and facade lighting, proportions and symmetry. In the meantime, stigma was also considered a dependent variable (Fig.1).

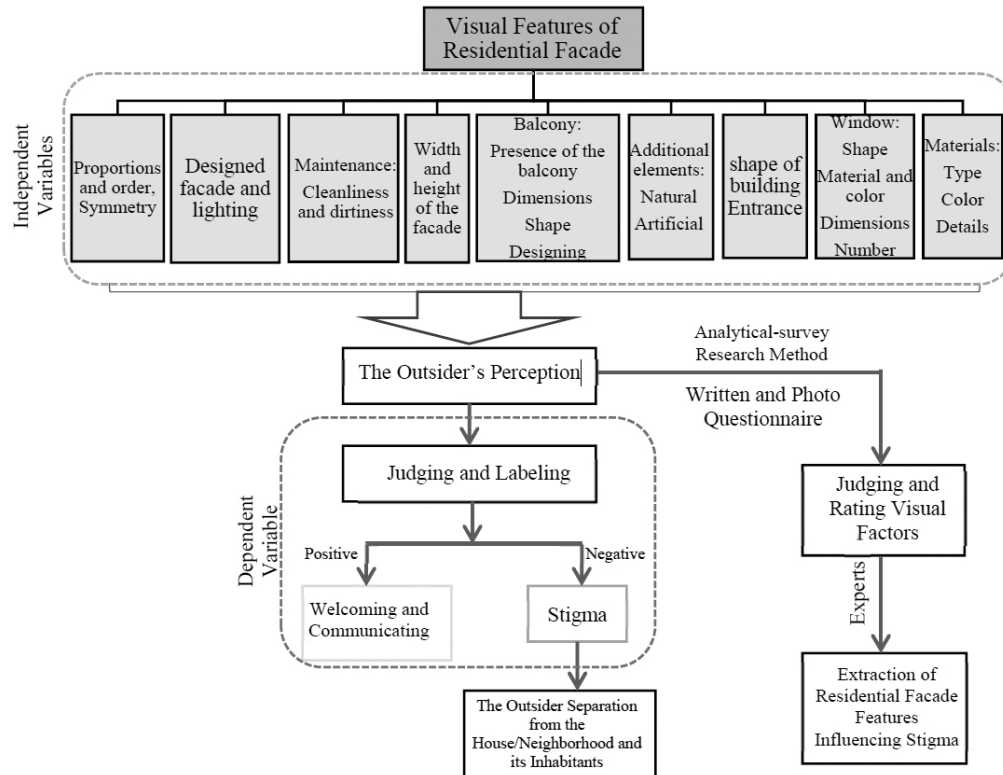


Fig. 1. Conceptual Model of Research

This research was fundamental from an objective point of view and descriptive methodologically. Quantitative and qualitative methods were used since the research was exploratory. First, the documentary and library methods as well as Delphi method were used to gather data on mental images, semiotics and the phenomenon of stigma. When gathering data, 15 specialists in architecture and urban planning were interviewed. Components were extracted from interviews and confirmed by experts. Having done so, the goal-content table was arranged and an inventory was developed accordingly. For the nature of the research, another inventory in form of images was provided to the statistical population. Therefore, the facade labeling was investigated through A. Developing an inventory

on the effect of facade factors on perceiving prestige of a house; B. Assignment of images of residential facades to socio-economic groups living by the statistical community. Factor analysis method was used for the validity of the inventory while internal consistency method including Cronbach's alpha was used for its reliability.

4.2. Study Area

The case study is District 4 of Tehran (Fig. 2). The reason why this district was chosen was the expanse of this area and the presence of heterogeneously social and economic neighborhoods, which meets the research objective. This area is also structurally unbalanced.

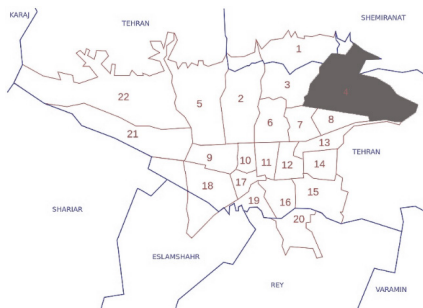


Fig. 2. Location of District 4 in Tehran (Municipality of District 4 of Tehran, 2018)

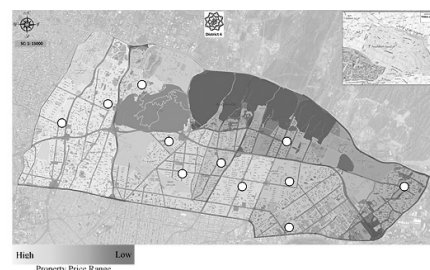


Fig. 3. Surrounding Areas of District 4 in Terms of Property Value and Images of Areas

Parts of District 4 that were photographed for analysis are illustrated in Figure 3. Since it was imperative to

cover all the area and that a variety of images was required, the studied area was divided into four parts in

terms of property value (Iran Tax Organization, 2017); in the meantime, different parts of residential views with different economic levels were photographed.

4.3. Statistical Population, Sampling and Sample Size

The statistical population of this study consisted of architecture and urban planning experts selected via snowball sampling method. As many as 15 people were interviewed to reach theoretical saturation. After developing final inventory extracted from the interview, 22 architects and urban planners were randomly selected to respond to it. The sample size was confirmed by the KMO test³.

4.4. Measurement Tools

To measure the extent to which each objective factor of housing facade affects the perception of socio-economic status of its residents, the items were distributed among 22 experts on a 10-option Likert scale. Also, a visual inventory containing 40 different images of medium-height residential view was developed, with experts judging the socio-economic level of its residents by looking at the images, while also placing them into five income groups. Considering the name of the area in the evaluation process, the images were provided to experts without their location being mentioned. The views of different features in the images were included in images to get some reliable findings (Fig. 4).

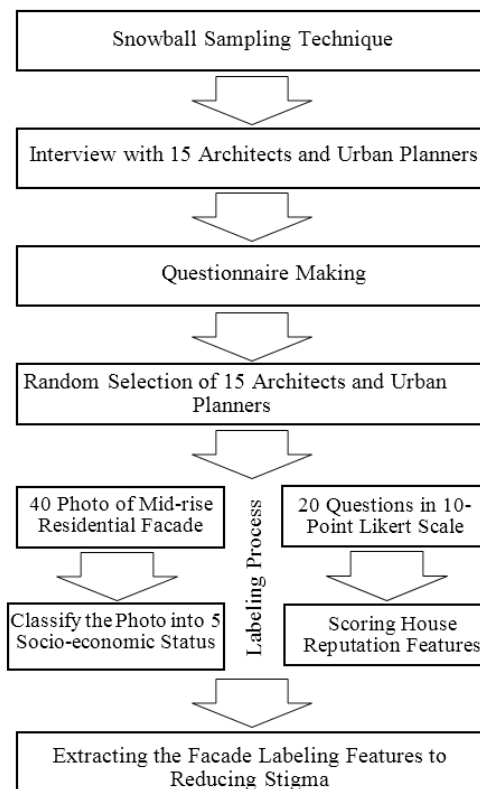


Fig. 4. Survey Process

Different researches determined income groups based on a percentage of the area median income of the area (Subramanian, 2005; Pendall, Hendey, Greenberg, Pettit, Levy, Khare, Gallagher, Joseph, Curley, Rasheed, Latham, Brecher, & Hailey, 2015). Since the average income of the citizens in district 4 accounts for 90% of the average income of Tehran province and also considering the monthly income of an urban family in Tehran in 2016 and the inflation rate of about

10% leading to 2017, one can estimate the average income of residents of the district to be 350 dollars on March 2017 (Statistical Center of Iran, 2016; Arseh Consulting Engineers, 2005; Central Bank of Iran, 2018) (Table 2). "Low-income group" is a relative term. It refers to a group of people who have a lower income level in a given area compared to other people in the same area.

Table 2: Income Group of Residents of the Tehran's District 4

Income Group	1	2	3	4	5
	High Income	Medium to High Income	Medium Income	Medium to Low Income	Low Income
	Over 120%	100-120%	100%	80-100%	50-8%
Average Monthly Income of the Citizens in District 4 March 2017 (Toman)	>44000000	36600000-44000000	36600000	29200000-23600000	18300000-29200000

The extent to which the items were matched with the goal-content table was confirmed by five experts. The reliability coefficient for the whole test was considered to be 0.772 and the final inventory was administered

(20 items). The KMO value of above 0.8 for each inventory indicates the adequacy of the sample size (Table 3).

Table 3: KMO Test and Bartlett's Test of Sphericity

	KMO Size	0.898
Bartlett's Test of Sphericity	Chi-Square	1095.985
	Freedom Degree	231
	Sig.	p<0.001

According to Table 3, in Bartlett test, the null hypothesis is rejected at the confidence level of 99.9% ($P<0.001$) considering the "chi-square" and the freedom degree; thus, factor analysis method can be used.

the housing prestige from the view of outsiders are extracted.

5.1. Closed Questionnaire

Post-rotation inventory data analysis demonstrates that out of 22 people, six factors could be extracted (Table 4). The cumulative percentage of all these 6 factors is 82.9%, i.e., about 83% of the respondents shared thinking with about 17% having individual thinking.

5. RESEARCH FINDINGS

The findings section includes closed and a visual inventory.

Using exploratory factor analysis, the factors affecting

Table 4: Total Variance Explained Before and After Rotation

Factors	Pre-rotation			Post-rotation		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.380	38.091	38.091	5.406	24.573	24.573
2	2.990	13.591	51.681	3.928	17.853	42.426
3	2.410	10.956	62.637	2.484	11.291	53.717
4	1.810	8.229	70.866	2.406	10.936	64.653
5	1.355	6.158	77.024	2.154	9.792	74.445
6	1.302	5.920	82.944	1.870	8.499	82.944

The four factors are listed in Table 5.

Table 5: The Most Important Factors Affecting Housing Prestige According to the Objective Facade Factors

Peoples' Number	Defining Factors	Factor Name
11, 2, 19, 1, 7, 18, 13	Type of materials, Details of materials and facade decor, Materials color, Designed facade by engineer, Facade lightings	Materials and facade design
12, 22, 4, 20, 8	Facade cleanliness (maintenance), Additional artificial elements, Window dimensions, Window shapes, Window materials and colors, Entrance shape, Window number	Openings and facade Adjoining artificial elements
6, 3, 16	Building street width, Proportions and order, Balcony shape and design, Balcony dimensions, Balcony presence	Balcony and facade proportions and harmony
21, 14, 5	Number of floors (façade height), Adjoining natural elements, Symmetry	Greenery and façade dimension

According to Table 5, the housing prestige based on visual factors and according to experts is as follows:

- Factor of materials and facade design (variance of 0.245) is the first factor determining the perceived prestige of the residential facade. This factor combines aspects of materials, materials details and facade decorations, the color of the materials, the designed facade as well as engineering and lighting of the facade, as they strengthen the prestige of a residential facade.
- The entrance factor and facade attachments (variance

of 0.178) is the second factor affecting the housing prestige through its facade. This factor is met by such aspects as the neatness of the facade (maintenance), annexed artificial elements, window dimensions, window shape, window material and color, number of windows and entrance shape.

- The factor of balcony and facade proportions (variance of 0.112) is met through the plot width, proportions and order, the shape and balcony design, balcony dimensions and the presence of the balcony. Therefore,

the characteristics of the balcony and the proportions greatly contribute to shaping the perceptual value of a house.

- The greenery factor and facade dimensions (variance of 0.109) is met by factors such as natural annexed elements, number of floors (facade height) and symmetry. Therefore, attention should be paid to the greenery and facade dimensions when giving prestige to the housing facade.

5.2. Visual Inventory

The number of forty images was provided to 22 experts to categorize the way residents perceived the socio-economic status. They all saw the images uniformly (one single factor was extracted) (Table 6). According to Table 6, the cumulative percentage of this factor is 75.9%.

Table 6: Total Variance Explained Before and After Rotation

Factors	Pre-rotation			Post-rotation		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	16.699	75.904	75.904	16.699	75.904	75.904

To analyze the type of image categorization in some income groups, the similar views of the first 11 experts

with a larger factor load (compared to the other 11 experts) was investigated (Table 7).
























Table 7: Factor Load of the First 11 Experts after Rotation











Expert Number	1	6	14	4	9	21	22	5	15	17	2
Factor Load	0.962	0.953	0.948	0.943	0.905	0.904	0.876	0.873	0.873	0.873	0.870
Unity with the General View (%)	%92.5	%90.8	%89.8	%88.9	%81.9	%81.7	%76.7	%76.2	%76.2	%76.2	%75.6

Table 8 illustrates the images pertaining to the scores given by the first 11 experts. The visual factors affecting

the housing prestige can be investigated via analyzing the images of each group.

Table 8: Images Pertaining To Each Score Given By the First 11 Experts

Score	Images of Housing Facade						
Score 5							
Percentage of Number of Experts	81%	72%	63%	63%	63%	54%	54%
Average Score	4.40	4.68	4.45	4.45	4.59	4.45	3.90
Score 4							
Percentage of Number of Experts	72%	63%	63%	54%	54%	54%	
Average Score	3.90	3.63	3.54	3.36	3.50	4.18	
Score 3							
Percentage of Number of Experts	72%	72%	63%	63%	54%		
Average Score	3.27	3.22	2.86	3.22	2.86		
Score 2							
Percentage of Number of Experts	81%	72%	72%	72%	63%	63%	63%
Average Score	2.04	1.95	1.75	2.31	2.27	2.36	2.04

Score	Images of Housing Facade					
Score 2						
Percentage of Number of Experts	63%	63%	54%	54%		
Average Ccore	2	2.22	2.31	2.04		
Score 1						
Percentage of Number of Experts	90%	90%	81%	63%	63%	54%
Average Ccore	1.22	1.22	1.36	1.63	1.45	1.77

(Scores Range from 1: Low-income to 5: High-income)

According to Table 8, each group of images can be defined as follows:

- Score 5: These houses were selected for high-income group, which characterized by: bright materials color, Roman facade design, materials detail and protruding facade, wide windows and a combination of rectangular and crescent shapes. These characteristics can add to the prestige of a residential building from the perspective of outside viewers.
- Score 4: These houses are perceived for the upper middle-income group. They are commonly characterized by "designed facade". Thus, the facade design, along with proportions, details and the correct integration of materials can increase the perception of the building.
- Score 3: These houses were selected for the middle-income group, which includes two types of buildings: buildings with expensive materials and narrower plot, and buildings with cheaper materials and wider plot. These two factors have impinged the housing reputation.
- Score 2: These houses were selected for the low-middle income group, which can be called large or voluminous buildings. Large size of the building evokes higher density of residents. Another characteristic of such buildings is the flat facade surface. Thus, if the larger surface is characterized by dirtiness and seemingly cheap materials, it is recognized as less prestigious. A number of other buildings fall into this category for their narrower plot width, colored glass, and annexed elements.
- Score 1: These buildings were perceived for the low-income groups. This group is characterized by flat and uniform surface, dirtiness and damage to poorly maintained materials. In two similar brick buildings, the window dimensions and the color and details of the glass, along with the existing artificial ancillaries, were found to affect the scoring.

5.3. Descriptive Analysis of Visual Characteristics Affecting the Prestige and Validity of a Residential Building

As Table 8 suggests, each of the characteristics

expressed in the questionnaire is examined as follows: Type, color and details of materials: Materials include stone, brick and composite. Experts distinguish between their type, color, and details. The stone and brick used with more complicated details scored higher. Details such as window frames, protrusions, and half-columns also help improve a building's prestige. The materials color had no significant effect on the classification; one would say a brighter color helps improve the building perception. Damaged and unfinished materials can also devalue the house.

Adjoining artificial and natural elements: According to the inventory, attached elements help promote in the perception of prestige, which was confirmed by examining the images. Experts viewed houses with attached artificial elements to have lower incomes than residents of houses with annexed natural elements. Such elements as air conditioners, electrical wires, clothes hangers, turning of balconies into warehouses can devalue the perception of socio-economic value of a house; conversely, natural elements such as flowers and plants on balconies or windowsills, as well as trees planted in the residential areas could help increase the prestige of the home.

Window and entrance: Buildings with larger windows create a greater sense of prestige from the view of users. Buildings with one type of material fall into different groups due to the dimensions and details of their entrances. Crescent-shaped windows also scored higher. Because in the inventory, glass color on housing prestige was not confirmed to have a significant effect, it helped value the houses when analyzing the photographs; houses with colored glass were found to be occupied by lower-income residents. Based on questions analysis and pictures taken on the effect of the number of windows, no difference was seen in the classification. The shape of the entrance also affects the housing prestige. According to experts, designed, larger and inviting entrances can help improve the perceived value of a house. Thus, it is concluded these buildings scored higher.

Balcony: Dimensions and design of the balcony have a greater impact on the prestige of a residential building

from the outsiders.

This was also confirmed by the inventories. Experts stated that it did not mean that low-income groups do not have balconies, rather they have smaller balconies with simpler details. Buildings with a flat surface (without protrusions and depressions) were found to have lower income residents.

Overall facade dimensions: Plot width is one of the most important factors affecting the perception of prestige in a residential building. Experts considered the wide facade to belong to more affluent groups. Conversely, the facade height index had very little effect on the recognition and determination of housing prestige through images. Thus, the height of the residential units and the general building facade from outside the building was found to be a discrete factor for the users. The inventory analysis also signified the significance of low facade height. The two-cornered building, taking into account other facade factors, is perceived high prestigious.

Facade neatness: This factor affects the prestige of the residential building. Buildings with the same material, producing more pollution (poor maintenance) scored lower. This is especially evident in buildings with brighter materials.

Design: This component includes such components as design and engineering, lighting, proportions and symmetry. Designed facade and lighting have a more profound effect on the external perception of a house prestige than the other two components, also confirmed by the inventory. Flat surface facades (such as a window frame, half-columns, or even decorative railings) have less perceptual value relative to designed facades. Proportions and mismatch in the facade can change its prestige. Houses with regular facade components are perceived prestigious. The inventory and pictures demonstrated that symmetry is a neutral factor and has no significant effect on the evaluation.

6. DISCUSSION AND CONCLUSION

A residential facade involves signs that constitute value judgments as it conveys messages to outsiders. When perceiving low-prestigious images of the facade, outsiders' tendency to communicate with residents of that house and neighborhood declines. This process leads to segregation and social and spatial isolation (Price, 2017). This study aimed to discover what factors in the facade affect the external perception of the socio-economic level of residents. As the results suggested, experts considered visual facade factors

such as materials and design, entrances, balcony and proportions, greenery and facade dimensions to affect the perception of housing prestige. To eliminate the stigma on the low-income housing scene, the following should be borne in mind:

Using materials that look more expensive (not necessarily expensive),

Having a brighter color and details;

Making the facade surface look flat and unbroken; e.g., designing the balcony to look larger in terms of dimensions (such as more length and less width);

Wider entrances as they increase the prestige of the house; for this, the number of windows in low-income housing can be reduced and their dimensions be increased;

In urban design, small plots can be so designed not to reduce the prestige (such as less length and wider width).

Residents should be aware that they can increase their housing prestige if they regularly maintain them and keep them clean.

Design and lighting: despite the additional cost they incur on the building, they greatly contribute to increasing its perceived value; this is while low-income people can use such designs to promote their house prestige. These factors can create balance in labeling, eliminate the facade stigma, thereby leaving a positive effect on peoples' perception of the socio-economic class of residents. This positive thinking and perception can, in the long run, help create social interactions between different income groups in heterogeneous areas. This study demonstrated that the overall facade form and details design can change people's perception of a building or even an area.

As the research findings suggested, considering the effect of objective factors on outsiders' judgment of a house and neighborhood and its effects on residents' behavior, it is necessary to study the attitude of the residents and to have a consistent design before constructing a house or residential complex. Recommendations for future research: because it is people who make judgements, citizens of an area can be considered statistical population. Moreover, since other factors can play a role in the stigma process (Kelaher, Warr, Feldman, & Tacticos, 2010; Ruiz-Tagle, 2017; Park & Park, 2014), it is necessary to measure the impact of urban and environmental factors on peoples' judgment and evaluation about the prestige of a "house" and even "neighborhood" in future researches.

END NOTE

1. Quantitative and qualitative
2. A Software System for Pattern/Image Recognition Based on Statistical Learning
3. The sample adequacy index has been innovated by Kaiser-Mayer-Olkin and should be above 0.7.

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