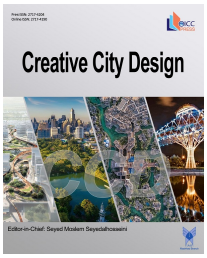

Volume 8, Issue 2, 082508 (1-14)

Creative City Design (CCD)

https://doi.org/10.57647/j.ccd.2025.0802.08

Explaining the desirability patterns of the residential environment based on the indicators satisfaction of residents (case study: District 2 of Tabriz City)

Yaser Narimanpour Maleki[1], Mohsen Tabassi[1,*], Azita Belali Oskoyi[2], Morteza Mirgholami[2]

[1]*Department of Architecture, Mashhad Branch, Islamic Azad University, Mashhad, Iran.*
[2]*Faculty of Architecture and Urbanism, University of Islamic Art, Tabriz, Iran.*

[*]**Corresponding author:** mohsentabasi@mshdiau.ac.ir

Original Research

Received:
30 November 2023
Revised:
14 January 2024
Accepted:
20 April 2024
Published online:
1 June 2025

Abstract:

Aims: User satisfaction is an inevitable factor determining and stabilizing the housing desirability. Satisfaction studies are types of user-oriented studies, that have become popular to improve the value level of users' opinions and expectations. These studies are the most important patterns used to examine residential environment desirability. These patterns change in line with geographical area and culture. The studies even indicate that individuals living in a house do not have the same level of satisfaction with conditions, and this satisfaction can be changed depending on various indicators. Hence, this study aims to explain desirability patterns of the current situation of the residential environment based on the citizens' satisfaction indicators in Tabriz City, which necessarily must be considered due to the historical background, geographical, social, and political situation of this city.

Methodology: This study is applied in terms of objective with practical type and mixed qualitative-quantitative method. To attain its findings, the researchers use statistical and quantitative analysis in consort with qualitative, descriptive, and analytical techniques. To do so, two SPSS'23 and smart PLS'3.1.1 software were used.

Findings: The obtained results showed a model of patterns affecting the desirability of the current status of the residential environment in the research context, which has been discussed based on the satisfaction indicators from the view of citizens.

Conclusion: In this case, physical and functional components with a path coefficient of 0.468 have the most powerful positive and significant effect on housing desirability.

Keywords: Residential environment; Desirable housing; Housing satisfaction; Residents; Tabriz

1. Introduction

The sum of the motivations in meeting residential needs is followed by judgments from the people's point of view based on their "ideals" "norms" and "expectations" which gradually form the theoretical rules of optimal housing [1]. Also, Housing is an institution that has been created for a series of complex purposes and is not merely a physical structure [2]. In this regard, satisfaction studies are a type of user-oriented research that has flourished today to improve the value level of users' opinion and is one of the important types of realization in the field of housing desirability. Satisfaction with housing is one of the indicators for measuring the quality of housing, which examines the level of satisfaction of its residents with the current situation [3]. Satisfaction with housing is particularly important as an environmental measure of the quality of life, and its desirability, and also as an effective factor in moving people [4]. Therefore, knowing the indicators of satisfaction and their impact in the context under study creates an effective role in explaining its desirable housing plan. So far, many theories have been proposed about what and how satisfaction is its patterns, and its effective variables on the desirability of the residential environment. As Rappaport 2 mentions, these patterns change according to the geographical area and culture. Even research indicates that people living in the same house do not have the same understanding of satisfaction from the same situation, and this may change depending

on several factors. The basic "problem" in front of this research is redefining the desirability patterns of the existing residential environment based on the satisfaction ideals of the residents of Tabriz city. From this point of view, "explaining the effective patterns on the improvement of the satisfactory components of the residential environment to realize the desirability of its existing condition, with Relying on the indicators considered by the residents of Tabriz municipality region 2 is the aim of the present study, from this point of view, the most basic step is to explain a codified program to fulfill the research objective, to identify the variables of satisfaction that influence the degree of desirability of the current situation from the perspective of the residents and redefine the patterns It is effective based on it. Therefore, firstly, checking the satisfaction level of the existing situation, then evaluating and identifying the effective variables with high factor load for explaining the patterns of the desirability of the residential environment based on the ideals of residents' satisfaction is on the agenda of this research. From this point of view, this article seeks to answer these questions. 2-Which of the variables of satisfaction have a high factor load and to what extent do they affect the improvement of the desirability of the residential environment in the region?" In the field of housing in the region, there is an effective relationship with a positive and meaningful influence between the factors affecting satisfaction with a high factor load and the desirability of the residential environment based on the ideals of the residents, which can redefine the patterns of the desirability of the residential environment based on the ideals of the satisfaction of the people of Tabriz. come From this point of view, The obtained results showed a model of patterns affecting the desirability of the current status of the residential environment in the research context, which has been discussed based on the satisfaction indicators from the view of citizens.

2. Theoretical foundations of research

2.1 Satisfaction with housing and factors affecting it

In general, the definition of the level of satisfaction with the residential environment and its desirability depends on many variables for which researchers have listed many parameters. which consists of three main areas home, neighborhood, and neighborhood [18]. For example, Bonaiuto et al. [3, 19] in several studies they have done regarding the satisfaction of the neighborhood environment of Roma citizens, introduce satisfaction depending on physical aspects, social aspects, functional aspects, and contextual aspects [3, 19]. In the physical dimension, Poll [20] in evaluating and compiling the satisfaction variables, classifies it into two parts: dwelling and neighborhood, each of which has many components as micro-variables. Gifford also considers environmental, social, physical and functional, cultural factors as the main factors affecting satisfaction with the residential environment and its desirability [7]. There are many other cases after studying the patterns of each of the researchers and their successors, to evaluate the desirability of the existing residential environment based on the ideals of residents' satisfaction and receiving the level of residents' demands from their ideal housing, the variables were classified into several sections. To address all the main effective aspects mentioned, social, physical functional, and cultural factors are selected as the main components found from the documentary data, each of which has many components as variables. Next, the components that can be tested, referring to specialized writings related to satisfactory topics in terms of the realization of desirable housing are presented by Table 1.

3. Research background

The basic and main components that explain desirable housing have been the focus of various researchers. Approaches that speak from the perspective of ontology, anthropology, sociology, psychology, cinematography, economics, social approach, integrated approach, etc., some of which will be discussed below. With a philosophical approach and from a phenomenological perspective, Heidegger mentions the two concepts of "residence" and "dwelling". He emphasizes that settling does not happen in every housing. In this context, Nürburg Schultz, relying on the opinions of Heidegger and Piaget, explains and interprets the "spirit of place" as the main component that explains the quality of residential spaces. "The nameless central quality" is a category defined by Christopher Alexander in determining the theoretical framework of the ideal housing. In this framework, with a social approach and from an anthropological point of view, Rappaport considers high-quality housing to be a multi-dimensional space, which is the result of the action of various factors and a phenomenon related to the "culture" of societies. From this point of view, Yan Gol, as an urban anthropologist, proposes components for a "people's city" that can be generalized to the issue of housing. Purdihemi et al. [21] also examined this phenomenon in a phenomenological approach and considered good housing to be equivalent to the concept of "safe" and it is an entity. In another research, Naghizadeh [22] searched for the main characteristic of the ideal housing in the epistemological layers and the inner aspects of the human being and called "a sense of presence" the best and highest quality for the ideal housing. Mulder and Hoimjer have a direct relationship have explained between residential satisfaction and the priorities of housing desirability and housing selection. McCree also measures residential satisfaction in two "objective" and "subjective" dimensions and proposes the study of "satisfaction" in three areas: housing satisfaction, neighborhood unit satisfaction, and neighborhood satisfaction. Ghazizadeh and Behzadfar [23] in the article "Sense of Satisfaction with the open residential space of the study sample: residential complexes of Tehran" examine the factors influencing "satisfaction". Rafiyan et al. [24] in an article titled Measuring Residents' Satisfaction with Residential Quality of Mehr Housing: A Case Study of Mehr in Zahedan City, investigated the "residential satisfaction" of Mehr housing units. Mumtaz et al. [25] also discuss satisfaction with low-income housing in the article "Investigation of Factors Affecting Residential Satisfaction of Low-Income Housing Projects". Aslanian et al. [26] in the article "Structural analysis of the concept of housing satisfaction with the approach of phenomenological philosophy, a case example: the Qajar house of Shaykh

Table 1. The effective components of satisfaction and their variables in terms of the realization of desirable housing found from documentary data.

Effective components	Variables
Environmental factors	"Different aspects of the region including" regional pollution factors (high congestion, high density, etc.), racial interactions [5]. Security, accessibility, surrounding facilities in terms of functionality, visual (play and recreation spaces, shopping centers, parks and green spaces, public services, etc.), and urban infrastructure [6].
Social factors	Neighbors: appropriate communication, privacy, participation, cooperation and cooperation, homogeneous social fabric. Characteristic 4 and the percentage of recognition, similarities, and social values and similarities [7]. Type of behavior, group socializing, compliance with crowds and noise, compliance with the norms of private privacy and harassment [8].
Physical and functional factors	including the body of the building, its facilities and services, connection with the outside environment, the substrate [7], external characteristics (such as facade, openings, etc.), the area of land allocated to the residential unit, the number of units, the area of architectural spaces. living spaces, living spaces, common spaces, etc.), floor density (number, height, etc.), number of rooms in a residential unit, durability of materials, structural durability, building maintenance condition, building life, occupancy ratio, area Substructure, area of the unit, density of people in residential unit, density of households in residential unit, number of rooms in residential unit, density of people in room, density of households in interior layout, ratio of household to residential unit, life of building, resistance to natural damage and Environmental disturbances, construction condition, facility condition, used equipment, degree of wear and tear, facilities and facilities (parking, storage, various life protection systems, emergency water and electricity, fire fighting, heating, cooling, etc.), spatial characteristics of rooms and Other areas related to the architecture of the building, the hierarchy of access to the areas and its suitability for family members, energy aspects, types of disturbances and abnormalities, suitable communal spaces, the presence of shared spaces, optimal lighting, suitable reception spaces, suitable spaces for guests, spaces natural and green, functional balance of spaces, flexibility inside the building, spatial boundaries, appropriate areas inside the building [1, 9–14].
cultural factors	Identity, belonging and attachment, familiarity (in short, the deep feeling of dwelling) [15]. Secrecy, aristocracy, arenas, interactions, and norms [16]. The suitability of the house with the lifestyle and cultural desires of the residents [17].

al-Islam and several residential complexes in Zanjan", try to identify and prioritize the logical process of multi-sensory experimental elements in improving housing satisfaction. In the continuation of the mentioned research, there are many other cases in which the void of studies in the field of explaining the desirability patterns of the residential environment based on the satisfaction ideals of the residents of the metropolis of Tabriz is felt, which is due to the historical background, geographical, social and political situation of this city. And considering that this city has been the origin of many social, cultural, and political developments in the country in the last two centuries and has played a key role in developments such as the Constitutional Revolution of 1985, the Islamic Revolution of Iran in 1998, and the modernization of Iran, It must be quite noticeable that it is addressed in the present research. Also, by studying specialized texts related to the discussion, strategies such as "interpretive, historical, qualitative, correlational, simulation, logical reasoning, case example, quantitative, comparative, and hybrid" can be listed as the most common research methods in this field of architecture.

4. Research methodology

This research is of an applied-developmental type and the method of doing it is a combination of qualitative and quantitative methods, to achieve the results both qualitative, descriptive, and analytical methods as well as statistical reading and quantitative analysis methods were used. The review of thematic literature and its theoretical foundations was determined by using the library method and a review of specialized writings related to the topics of satisfaction in terms of the realization of desirable housing. Since this research should be based on the "ideals", "norms" and "expectations" of the residents, in this regard, the findings extracted from the documentary data are discussed in two steps from the perspective of the people living in the 2nd urban area of Tabriz. The first step 3 was to get a general understanding of the thoughts, opinions, and intentions of the residents, to identify their mental and perceptual framework, and to explain the indicators under consideration of the research, which was assisted by qualitative research through a vocabulary drawn from documentary data and words that are in the people's perceptive container. It was understood

in the language of the people by the researcher with a logical analysis. This level of research was collected in the form of oral interviews and conversations with a limited statistical population in a simple random manner, the estimation of the sample size at this stage was done by the personal estimation method by observing the quorum. The findings of the first step are used in the second step as evaluation measures by resampling the statistical population, in line with measuring the existing housing situation in the region and identifying the effective variables with high factor load in explaining the patterns of the desirability of the residential environment based on the ideals of residents' satisfaction. The second step of my test was done in terms of hypothesis testing in terms of explaining the patterns that are effective in improving people's satisfaction in terms of achieving residential desirability based on the ideals of the residents. This step was carried out through a questionnaire in a simple random form with the statistical population adopted from Cochran's statistical technique and the measured variables were evaluated quantitatively. In this stage, SPSS'23 and Smart PLS'3.1.1 software are used to analyze the research data. In the first stage, descriptive statistics and data normality analysis are performed in SPSS software between the research variables to determine the normality. or the lack of data should be ensured and appropriate software and methods should be used based on that. In the next step, after converting the data into the PLS software format, the validity and reliability of the structure of the research variables and their resulting indicators are investigated using the confirmatory factor analysis test, and finally, the purpose of the research, using the method of equations A structure is used so that its findings are used to explain the results of the research. One of the reasons for choosing 'Smart PLS' is to carry out detailed analyzes according to the sample size, the presence of abnormal data and the appropriate predictive power. Therefore, it will increase the validity of the results and the level of generalizability of the findings to the real world.

5. Statistical society

Considering the subject of the research, to evaluate the variables of a selected case sample, residents of villas and low-rise buildings (up to 5 floors) with an average income level were selected in the 2nd district of Tabriz municipality, Tabriz city, considering the spatial value of this historical city and its location in The northwestern plateau of Iran has been chosen, also Tabriz is one of the most influential and immigrating cities of the country, and due to its political, economic and social situation, a wide range of people with different subcultures and different goals have always migrated to this city. In terms of the lack of research with a short case sample, the spread of the statistical population in many areas the placement of the maximum urban population at this level, and the decline in the design qualities of these apartments were among the reasons for choosing this statistical category in the research (figure 1).
Among the 10 urban districts of Tabriz, District 2 has started to expand after large-scale migrations to the city, thus it has an extensive range of people and was chosen as the research area regarding its definite placement in the wide socio-cultural spectrum, suitable for evaluating facilities. This area is located along the west and southeast of Tabriz. This area is one of the areas that have the highest growth in population, occupation level, and body and is considered one of the most populated urban areas of Tabriz. This region with an approximate area of 2091 hectares has 3 urban districts and 32 neighborhoods, it is one of the regions with the largest number of neighborhoods in the urban area of Tabriz (Tabriz Region 2 Municipality, 1402). According to the last census conducted (2015), it is one of the most populated urban areas of Tabriz with a total of 196,507 people (Table 2).

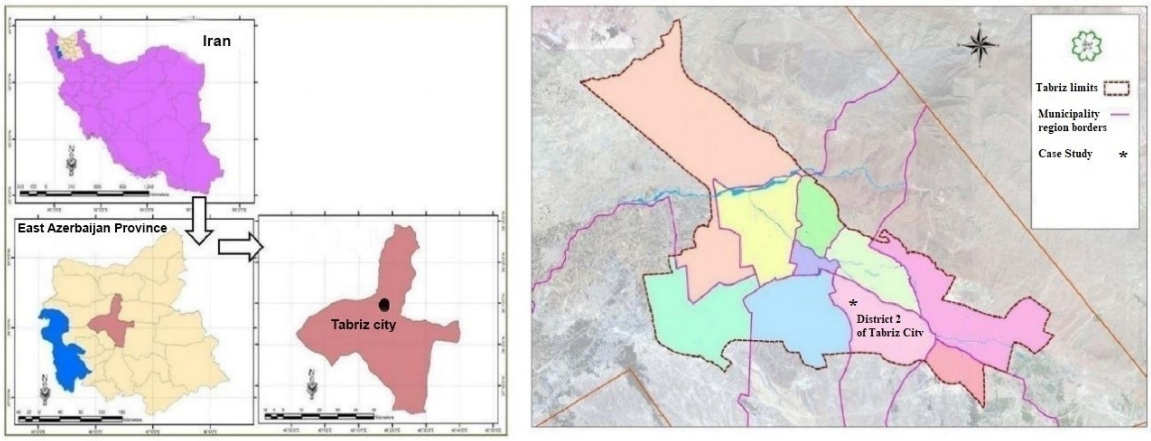

Figure 1. Location map of Tabriz city and statistical area Source: (Deputy of Architecture and Urban Development of Tabriz Municipality, 2019).

Table 2. The population of Tabriz Region 2 based on the census of 2015.

Household	Total	Female	Man	Urban area
62348	196507	99919	96588	Region 2

6. Sample size

In the pre-test stage(first step of the test), the sample size was collected in a simple random way. In this step, the sample size was estimated by the personal estimation method. A total of 50 people were interviewed, the duration of each interview was about twenty-five minutes. Adopting the sample size in the second step of the test was in line with the hypothesis test. In this step, the method of selecting the statistical population was done by simple random and the estimation of its sample size was done by adopting Cochran's statistical technique. This step was done by taking a closed questionnaire and resampling from the statistical population, a total of 405 people (more than the estimated sample size of 7) were tested. In both steps of the test, sample people were selected from the statistical population using a table of random numbers, for this purpose, first, the neighborhoods were numbered with sequential numbers, and then, with the help of random numbers, contacts from different parts of the neighborhoods were tested.

7. Research findings

7.1 Pre-test

At this stage of the research, by combining vocabulary derived from documentary data and words that are in the perception of people, important Gauges and parameters based on the "ideals", "norms" and "expectations" of the inhabitants, with their language. It was understood by the researcher. In this step, the interview process was in such a way that, at the beginning of the questions, the residents described the features of their desired and ideal house to the questioner, then they explained their expectations from their current house and described its advantages and disadvantages. In the following, a series of options containing the components affecting satisfaction extracted from the documentary data were presented to the users, the audience expressed their opinion about them in terms of the realization of the desired housing, and then a score based on the 5-point Likert variable of the degree of importance (very little (1), low (2), medium (3), high (4), very high (5)). In the continuation of the interview process, to obtain more data, each of the spaces inside the house, including the living room, reception, bedroom, service, kitchen, etc. Life at home, relations with neighbors, privacy, and other effective criteria were also discussed from the perspective of the residents to address the opinions of the residents regarding the issues of satisfaction in terms of the realization of desirable housing. Based on the survey conducted at this stage, the Factors and Gauges related to the topics of satisfaction in terms of the realization of desirable housing were understood from the people's point of view, so that in the second step of the test, in line with the hypothesis test, which is presented in the following Table 3. Cronbach's alpha was used to check face validity (confirmed by professors) and Cronbach's alpha was used to check the reliability of the parts under the Likert scale. Cronbach's alpha in this step is 0.924 (higher than 0.7).

7.2 Second step of the test

This stage was in three parts and a continuation of the pre-test stage based on its findings in the area of Factors and Gauges. This stage was by re-sampling the statistical population, to measure the existing situation of the region and to identify the effective variables with a high factor load for explanation. The residential environment desirability patterns

Table 3. The effective factors of satisfaction and their gauges in terms of the realization of desirable housing from residents to residents.

Factors	Gauges
Environmental factors	Public services for the residents, playgrounds and entertainment places in the neighborhood, facilities for buying daily necessities in the neighborhood, green spaces in the neighborhood and near the house, main streets for proper access, security of the residential environment and the neighborhood, and pollution in the area.
Social factors	The process of building management, the degree of willingness to communicate with the neighbor, the degree of knowing the neighbor, satisfaction with the neighbor's behavior, the existence of a pause and interaction with the neighbor (lobby, meeting spaces)
Physical and functional factors	The quality of the facade, the quality of the entrances (inside the building, inside the unit, inside the building), proper connection with nature and the green yard, good view and view, quality of construction and materials, maintenance condition of the apartment, maintenance costs of the apartment, optimal daylight Inside the unit, natural and artificial ventilation, the quality of common spaces, silence and peace inside the units, appropriateness of the number of units, building facilities
Cultural factors	aristocracy, cultural interactions of neighbors, the privacy and appropriateness of the house with the lifestyle, attention to the tradition of maintaining relationships with the family, the degree of attention to fashion, the degree of individual belief and credit to culture and tradition, the degree of media influence, the degree of attention to the content of factors instead of the appearance of fakes Mentally, the importance of cultural-religious monuments and satisfaction with cultural and religious ceremonies

based on the ideals of residents' satisfaction are carried out to test the hypothesis. In this, SPSS'23 and Smart PLS'3.1.1 software are used to analyze research data. At this stage, the descriptive statistics and normality analysis of the data are done using the Kolmogorov-Smirnov test in the SPSS software, and based on that data, after being converted into the PLS software format, the construct validity and reliability of the research variables and indicators resulting from the confirmatory factor analysis test are analyzed. Lastly, the method of structural equations based on the significant values of t-value and p-value, according to the model fit check and also the significance check, path coefficients, and (t) and (p) coefficients, removing invalid items from the paths, is used for modeling of findings. In this step, a closed-ended questionnaire was compiled in line with Table 2 under the Likert scale, which indirectly examines the level of satisfaction with each of the social, physical, functional, and cultural variables. To check validity and reliability, face validity (confirmed by professors), VIF index, convergent validity (AVE index), and divergent validity were used. Also, Cronbach's alpha, composite reliability, and factor loadings of questionnaires were used to check the reliability of the research. Its results show that Cronbach's alpha and combined reliability of all variables are higher than 0.7 and the AVE index is higher than 0.5. Therefore, the convergent validity and reliability of the research tool were confirmed. Also, the Fornell Larcker matrix was used to check the divergent validity. The results of the research show that the root mean square value (AVE) of all first-order variables is greater than the correlation value between them, which shows the appropriate variance validity and good fit of the measurement models. Another test used to check the validity and reliability of the research in this section What is the test? It is K.M.O[9] or Bartlett's significance level. Also, to confirm the validity of the results, indicators such as the appropriate fit of the model, including goodness of fit[10], modified goodness of fit[11], comparative goodness of fit[12], root mean square of estimation error[13], and chi-square on degree of freedom[14] have been used (Table 4).

7.2.1 Evaluating the existing status

In this part of the second step of the test, the evaluation items based on physical and functional, social, environmental, and cultural variables were considered with a Likert scale so that the audience could determine the description of each factor based on the criteria. Based on this, each of the measures was measured with five units: very low (1), low (2), medium (3), high (4), and very high (5), all the measures were placed below the number 4 and Number 3 were evaluated with a low or relative degree of satisfaction (3.5 and above, relative to upward), Next, the findings related to the evaluation based on the mentioned factors are presented via Tables 5 and 6 and the descriptive statistics and analysis of the abnormality of the data are presented by figures 2 and 3.

7.2.2 Evaluation of factor loadings of variables

The factor load is a numerical value that shows the intensity of the relationship between a structure and its indicators. The criterion value for the appropriateness of factor load coefficients is 0.4. Next, in line with the goals, the factor loading coefficients of each of the Factors and Gauges are shown by figure 4 and then the factor loading coefficients of some questionnaire questions that were below 0.4 were removed from the model, which was shown by figure 5 is presented. Therefore, at this stage, the mentioned questions will be removed from the model and the rest of the questions will be evaluated in the continuation of the process.

7.2.3 Determining correlation model of factors

In this part, after checking the fit of the measurement models and checking the validity and reliability of the model and the research tool that was mentioned in the first part of this step, the models with significant values of t-value and p-value for the statistical area are given (figures 6 and 7). In the following, according to the examination of the fit of the model, as well as the examination of the significance, path coefficients, and t coefficients and the removal of invalid items from the relevant paths, the final model of the relevant region is presented by figure 8.

8. Result and analysis

This research seeks to redefine the desirability patterns of the existing residential environment of the 2nd urban area of Tabriz based on the satisfaction indicators of its residents. Based on this, the explanation of the patterns affecting the desirability of the existing residential environment based on satisfaction indicators based on the "ideals", "norms" and "expectations" of the residents was on the agenda of this research. Therefore, to achieve the intended goal, in the first step, the field findings of variables and Gauges were found by addressing the core of the residents' opinions and understanding their desired indicators with a vocabulary drawn from documentary data and vocabulary found in the perceptual container of the residents in the study platform. was carried out, in the continuation of the evaluation of the existing situation of the region and the recognition of the effective variables with high factor load in the field of the components obtained from the first step of the test. At this stage, the attained data was first entered into SPSS'23 software to perform descriptive and inferential tests, and after clarifying the non-normality of the data distribution (based on the Smirnov-Kolmogorov test), it was entered

Table 4. Test results.

Cronbach alpha test	Chi/df	RMSEA	CFI	AGFI	GFI	K.M.O	
0.869	2.87	0.075	0.83	0.915	0.93	0.805	Region 2
Zero to 1	Less than 3	less than 0.08	More than 0.06	More than 0.06	More than 0.06	Greater than 0.06	

Table 5. Summarizing the average opinions of Physical and functional (left) Cultural (right) variables in Region 2.

Physical and functional factors of Zone 2 of Tabriz Municipality							Cultural factors of region 2 of Tabriz municipality						
gauge	the sign	Number	the least	the most	Average	standard deviation	gauge		Number	the least	the most	Average	standard deviation
facade quality	K1	405	1.00	5.00	2.8195	.87980	Paying attention to tradition and maintaining relationships	F26	405	1.00	5.00	3.8844	1.17894
Quality of inputs	K2	405	1.00	5.00	3.0591	.94118	Attention to fashion	F27	405	1.00	5.00	3.4851	1.29691
Connection with nature and green yard	K3	405	1.00	5.00	2.9023	1.22422	Lack of faith in tradition and culture	F28	405	1.00	5.00	3.3541	1.26821
Good view and view	K4	405	1.00	5.00	2.9913	1.35553	Media influence	F29	405	1.00	5.00	2.8891	1.30888
Quality of construction and materials	K5	405	1.00	5.00	3.0610	1.09935	Attention to appearance and separation from content	F30	405	1.00	5.00	2.8835	1.28903
Maintenance condition of the apartment	K6	405	1.00	5.00	3.3415	.921943	Important cultural spaces	F36	405	1.00	5.00	3.5488	1.19858
Apartment maintenance costs	K7	405	1.00	5.00	3.2132	.914528	Satisfaction with cultural-religious ceremonies	F37	405	1.00	5.00	3.1023	1.24653
Optimum daylight inside the unit	K8	405	1.00	5.00	3.5614	1.14212	Dissatisfaction with the aristocracy	F31	405	1.00	5.00	3.1155	1.44114
Natural and artificial ventilation	K9	405	1.00	5.00	3.2431	1.23219	Cultural interactions	F32	405	1.00	5.00	3.0560	1.28744
Quality of common spaces	K10	405	1.00	5.00	3.0809	1.01789	Home Privacy	F33	405	1.00	5.00	3.5321	1.11044
Silence inside the units	k11	405	1.00	5.00	3.7121	1.01163	Suitability of arrangement and dimensions of spaces with lifestyle	F34	405	1.00	5.00	3.3281	1.07781
The occasion of the number of units	k12	405	1.00	5.00	3.5520	1.09193	Matching spaces with lifestyle	F35	405	1.00	5.00	3.2610	1.07875
building facilities	k13	405	1.00	5.00	3.3933	.944467	cultural factors	F	405	1.00	4.08	3.2866	.58344
Physical and functional factors	K	405	1.15	4.69	3.2254	.50852							

2717-4190[https://doi.org/10.57647/j.ccd.2025.0802.08]

Table 6. Summarizing the average opinions of social (left) and environmental (right) variables in Region 2.

Social factors of area 2 of Tabriz municipality							Environmental factors of region 2 of Tabriz municipality						
gauge	the sign	Number	the least	the most	Average	standard deviation	gauge		Number	the least	the most	Average	standard deviation
Building management process	AA 14	405	1.00	5.00	3.2691	.95393	Public Service	M 19	405	1.00	5.00	3.2789	1.08843
The degree of willingness to communicate with neighbors	AA 15	405	1.00	5.00	2.8293	1.23818	Playgrounds and entertainment places	M 20	405	1.00	5.00	3.2433	1.17750
The degree of recognition of neighbors	AA 16	405	1.00	5.00	2.7566	1.10628	Facilities for buying everyday items	M 21	405	1.00	5.00	3.6794	1.13270
The behavior of neighbors	AA 17	405	1.00	5.00	3.2663	1.06983	The green space of the neighborhood	M 22	405	1.00	5.00	3.5298	1.11230
Pause space for interaction	AA 18	405	1.00	5.00	2.2606	1.23097	Main streets	M 23	405	1.00	5.00	3.8371	.97120
social factors	AA	405	1.00	5.00	2.8763	.72875	Security of the residential environment	M 24	405	1.00	5.00	3.4505	1.07009
							Light, sound, and air pollution in the area	M 25	411	1.00	5.00	3.0773	1.06471
							Environmental factors	M	411	1.71	5.00	3.3375	.70169

2717-4190[https://doi.org/10.57647/j.ccd.2025.0802.08]

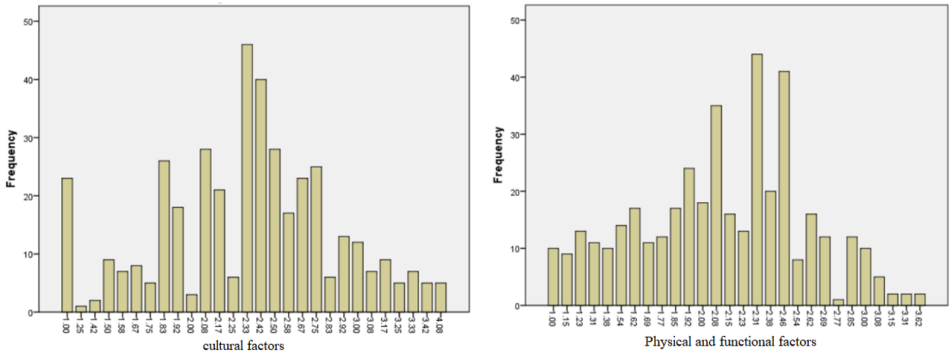

Figure 2. Descriptive information of physical and functional variables (right), cultural (left) in region 2.

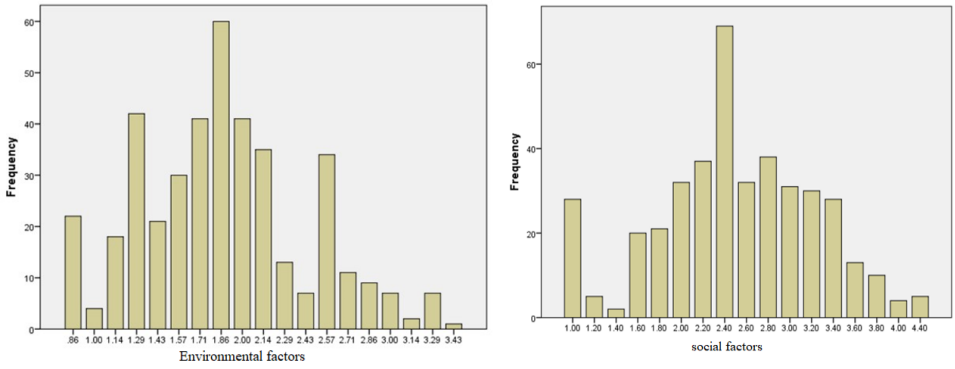

Figure 3. Descriptive information of social variables (right side), environment (left side) in region 2.

into the Smart PLS' 3.1.1 software for impact assessment and modeling of structural equations. Accordingly, after entering the information into the PLS software, the validity and reliability of the structure of the research variables and the indicators resulting from the confirmatory factor analysis test were carried out, based on which, the validity and reliability of the research components and questions were confirmed with very high and acceptable coefficient. This is while in the research process, some questions in structural modeling with a coefficient limit lower than the standard (0.04) were omitted. Next, the significant values of t-value and p-value were used for the final modeling of the findings. Consequently, to measure the significance of the coefficients, the test of (t) and (p) statistics was used, and the attained coefficients of all factor loadings were significant at the 99% confidence level. Lastly, regarding the examination

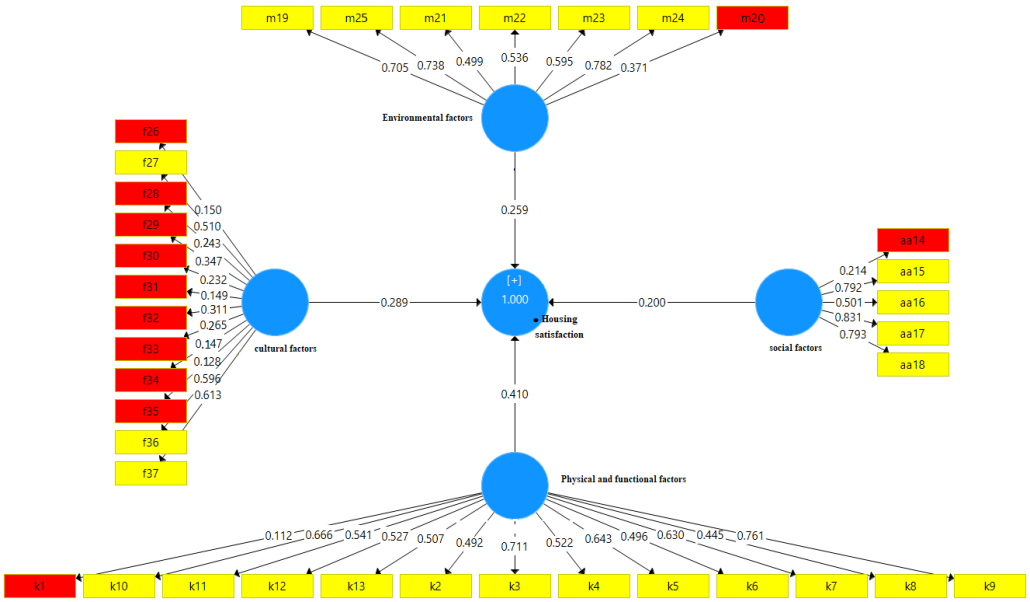

Figure 4. The model with factor loading coefficients (before removing items with factor loadings less than 0.4) (Tabriz urban area 2).

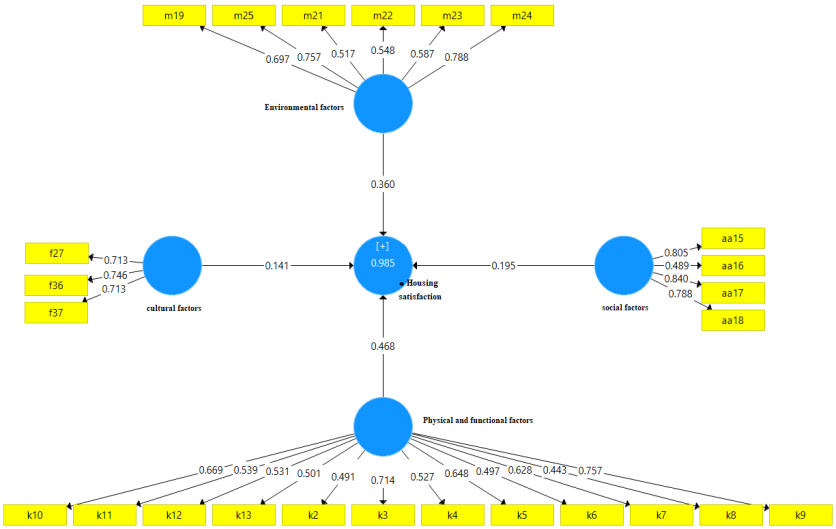

Figure 5. The model with factor loading coefficients (after removing the items with factor loadings less than 0.4) (Tabriz urban area 2).

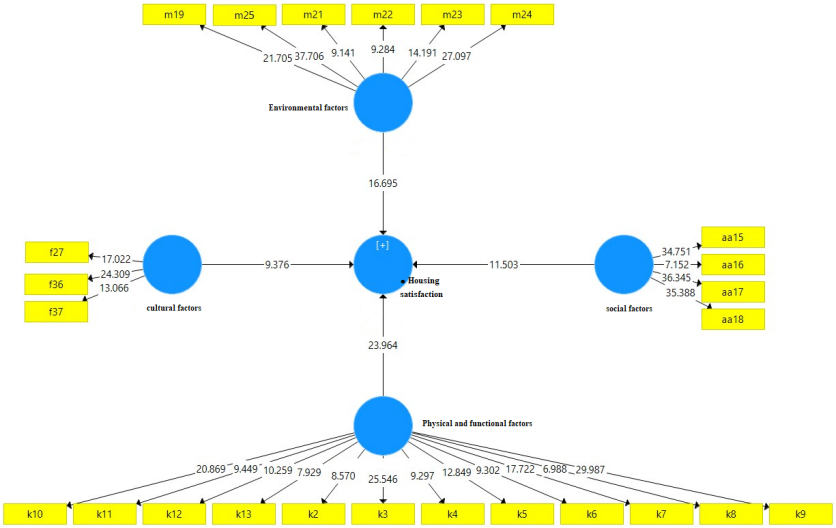

Figure 6. The model with significant values of t-value (Tabriz urban area 2).

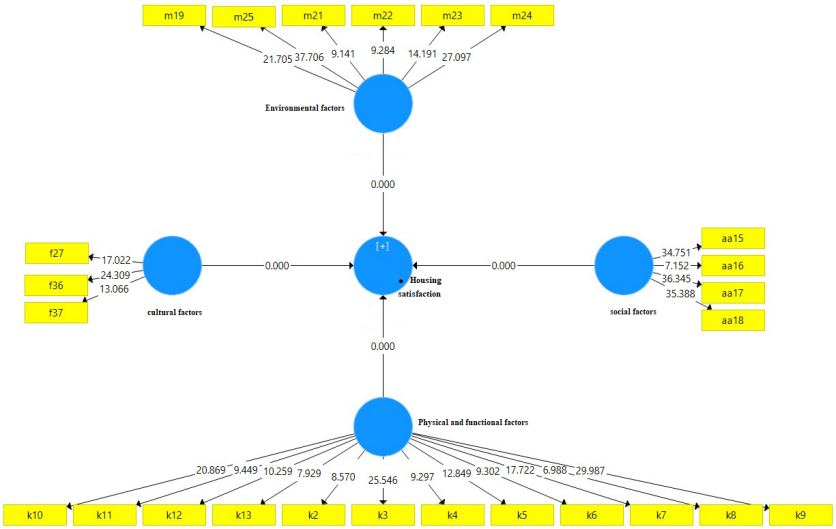

Figure 7. The model with significant p-value values (Tabriz urban area 2).

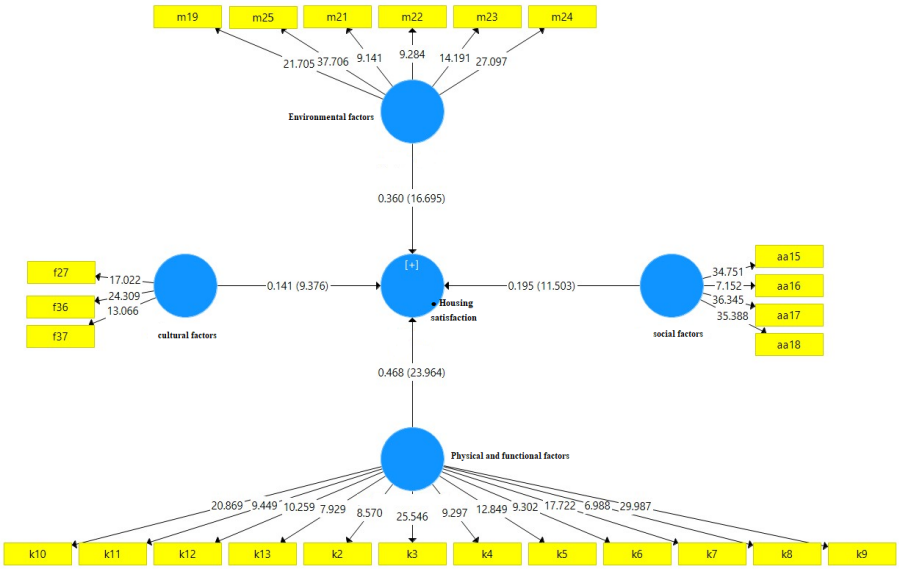

Figure 8. The final model of the 2nd urban area of Tabriz.

of the fit of the model as well as the examination of the significance, path coefficients, and (t) and (p) coefficients of removing invalid items from the respective paths The final model of the study platform was presented. In this regard, the results indicated that all the Variables of physical and functional components, except the quality of the building facade (K1), had a high impact on the level of satisfaction of the residents in terms of the realization of residential desirability, and among these 12 measures, appropriate natural and artificial ventilation K9) was recognized as having the highest effective factor load and the most effective physical and functional component of desirability based on the satisfaction measures considered by the residents in this area. Also, all the effective physical and functional components are on average with a path coefficient of 0.468, positive, strong, and significant influence. depends on the desirability of the residential environment based on residents' satisfaction measurements. In the field of environmental variables, the only low-impact measure was the existence of recreational and game places for different strata (M20). In this context, the rest of the components had a high factor loading on the dependent variable. In this case, the security of the residential environment (M24) was the highest factor loading coefficient among the environmental factors. Also, all the effective environmental components, on average, with a path coefficient of 0.360, had a positive, relatively strong, and significant impact on the desirability of the residential environment based on residents' satisfaction measurements. In the field of social variables, among the tested factors, the measures of willingness to communicate with neighbors, the degree of knowing the neighbor, the type of behavior of the neighbors, and the presence of a lobby and gathering space for interacting with the neighbors, had a high factor loading on the dependent variable and were among the effective components. They were based on desirability based on the satisfaction measures of this factor. Among these, the type of behavior of neighbors (AA17) had the highest effective factor load among social measures. All the effective social components on average with a path coefficient of 0.195 have a positive, moderate, and significant effect on the desirability of the residential environment based on satisfaction measurements. They have residents. In cultural variables, measures of attention to fashion, importance of religious spaces, and satisfaction with cultural-religious ceremonies, as components affecting the desirability based on the satisfaction measures of this factor. In this regard, the importance of cultural spaces (F36) has the highest factor load. The influencer was among the above variables. All the effective cultural components have a positive, moderate downward, and significant influence on the desirability of the residential environment based on the residents' satisfaction measurements, with a path coefficient of 0.141.

9. Conclusion

To achieve the given objectives of the study for explaining desirability patterns of the residential environment based on the satisfaction indicators of citizens living in Municipal District 2 of Tabriz, the assessments are reported in figure 9. The findings of this study are matched with studies conducted by Rapoport [27], Alexander [28], Smyth and Croft [29], and Gehl [30]. A model was obtained for patterns affecting the desirability of physical and functional, social, environmental, and cultural components of the current status in the residential environment of the research context, which is discussed based on the satisfaction indicators from the view of citizens. In this case, effective physical and functional components average with path coefficient of 0.468, effective environmental components average with path coefficient of 0.360, effective social components average with path coefficient of 0.195, and effective cultural components average with path coefficient of 0.141 respectively have a most powerful positive and significant effects up to average, moderate downward and low effect on the housing desirability in the district. Hence, it is recommended to consider the found effective patterns to realize desirable housing in a considered statistical society.

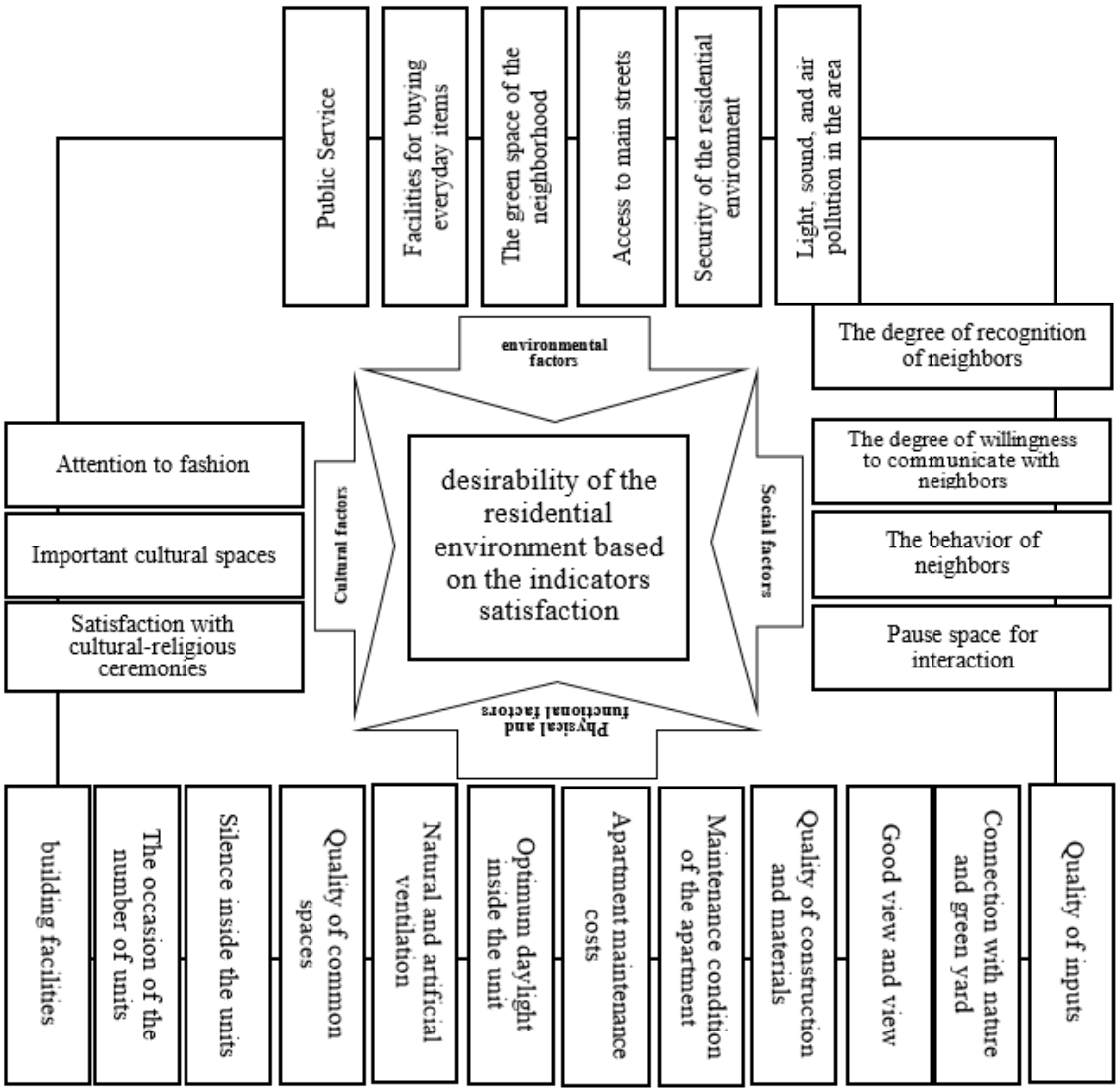

Figure 9. Patterns affecting the desirability of the existing residential environment of the study bed based on Satisfaction Indicators in the Residents' Opinion.

Subscripts

1. Housing
2. Rapoport, 1969
3. Pre-test stage
4. Feature
5. In research, the minimum sample size for correlation is 30 people.
   In causal and experimental research, the minimum sample size is 15 people.
   In descriptive field research and surveys, the minimum sample size is 100 people.
   In the research that requires the classification of society for sampling, the minimum sample of each class is between 20 and 50 people [31].
6. Cochran's formula in this case is equal to:

$$n = \frac{Nz^2pq}{Nd^2 + z^2pq}$$

where: N; community size; z: equal to 1.96; $p = q = 0.5$; d: allowed error value (0.5) [31].

7. "Some of the questionnaires may not be returned or they may not be able to allocate the findings" Therefore, more questionnaires than the estimated sample size were distributed in the covered area.
8. One of the problems of understanding the measurement of satisfaction is the way of questioning so that it is not possible to ask the statistical community whether you are satisfied with ... or not. And how satisfied are you? Rather, Amerigo and Aragones believe that asking direct questions to people causes them to deviate from the correct answer. Accordingly, in the research, they raised two categories of direct and indirect questions about satisfaction parameters for their statistical sample. The result of the research determined that people expressed about 30% less satisfaction with their housing, neighborhood, and neighborhood in front of indirect questions (Amerigo & Aragones, 1997)).

9. K.M.O
10. GFI
11. AGFI
12. CFI
13. RMSEA
14. Chi/df

Acknowledgment
This article is derived from the PhD thesis of the first author, which is entitled "Explaining the Strategies for the Realization of Desirable Iranian-Islamic Housing with a Participatory Approach (Case Study: Tabriz City)" under the supervision of the second and third authors, and via the advice of the fourth author at the Department of Architecture, Mashhad Branch, Islamic Azad University.

Authors contributions
Authors have contributed equally in preparing and writing the manuscript.

Availability of data and materials
The data that support the findings of this study are available from the corresponding author, upon reasonable request.

Conflict of interests
The author declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

[1] H. Purdehghan, A. Shahcheraghi, and S. M. Mokhtabadamrai. "**Evaluation and analysis of the theoretical rules of optimal housing based on people's opinions**.". *Housing and Village Environment*, 38(165):81–96, 2018.
DOI: https://doi.org/10.22034/38.165.81.

[2] F. Kowsari, M. J. Karbaschi, and N. Gholamhossein. "**Recreating cultural components in the development of physical factors in the design of residential spaces (Case study: Damghan city)**.". *Creative City Design (CCD)*, 8(1):1–12, 2025.
DOI: https://doi.org/10.57647/j.ccd.2025.0801.04.

[3] M. Bonaiuto, F. Fornara, and M. Bonnes. "**Perceived residential environment quality In middle- and low-extension Italian Cities**.". *Revue Européenne de Psychologie Appliquée European Review of Applied Psychology*, 56:23–34, 2006.

[4] M. Amerigo and J. I. Aragones. "**A theoretical and methodological approach to the study of residential satisfaction**.". *Journal of Environmental Psychology*, 17:47–57, 1997.
DOI: https://doi.org/10.1006/jevp.1996.0038.

[5] G. C. Galster and G. W. Hesser. "**Residential satisfaction: Compositional and contextual correlates**.". *Environment and Behavior*, 13(6):735–758, 1981.

[6] P. Schrijnen. "**Infrastructure networks and red-green patterns**.". *Landscape and Urban Planning*, 48(3-4):191–204, 2000.
DOI: https://doi.org/10.1016/S0169-2046(00)00042-6.

[7] R. Gifford. "**Environmental psychology: Principles and practice**.". *Optimal Books*, 2002.

[8] R. Gifford. "**Environmental perception and cognition**.". *Architecture and Culture Quarterly*, 1(2-3):5, 1977.

[9] R. G. Barker. "**Ecological psychology**.". *Stanford University Press*, 1968.

[10] K. Tabibzadeh, K. Sadat, H. Moztarzadeh, M. Parva, and V. Hodjati. "**Identifying the most influential physical-environmental subcomponents of social housing on users' place attachment (case study: Shiraz)**.". *Creative City Design (CCD)*, 7(1):1–12, 2025.
DOI: https://doi.org/10.71619/crcd-2024-7722.

[11] H. Zanjani. "**Population and urbanization in Iran**.". *Iran Urban Planning and Architecture Studies and Research Center*, 1992.

[12] H. Zabihi, F. Habib, and M. Kamal. "**Investigating the relationship between the level of satisfaction with residential complexes and the impact of residential complexes on human relations: A case study of several residential complexes in Tehran**.". *Hoviate Shahr*, 5(8):103–118, 2013.

[13] M. Asefi and E. Imani. "**Redefining the design patterns of contemporary Iranian-Islamic desirable housing with a qualitative evaluation of traditional houses**.". *Islamic Architecture Research*, 4(2):56–73, 2015.

[14] M. Akbarpour, F. Jafari, and Y. Karimi. "**Analyzing people's attitude towards suitable rural housing criteria: A case study of the central part of Hashtroud city**.". *Geographical Urban Planning Research*, 20(58):23–42, 2015.

[15] G. Bachelard. "**The oneiric house; housing and dwelling; perspectives on modern domestic architecture**.". *Routledge*, 2007.

[16] J. Lang. "**Creation of architectural theory, the role of behavioral sciences in environmental design**.". *Tehran University Press*, 1994.

[17] R. Gifford. "**Psychology of residential environments**.". *Architecture and Culture Quarterly*, 1(2-3):71, 1977.

[18] D. Canter and K. Rees. "**A multivariate model of housing satisfaction**.". *International Review of Applied Psychology*, 31:185–208, 1982.
DOI: https://doi.org/10.1111/j.1464-0597.1982.tb00087.x.

[19] M. Bonaiuto, A. Aiello, M. Perugini, M. Bonnes, and A. P. Ercolani. "**Multidimensional perception of residential environment quality and neighbourhood attachment in the urban environment**.". *Journal of Environmental Psychology*, 19:331–352, 1999.
DOI: https://doi.org/10.1006/jevp.1999.0138.

[20] R. V. Poll. "**The perceived quality of the urban residential environment**.". *University of Groningen*, 1997.

[21] Sh. Purdihemi, B. Zamani, and S. Negin Taji. "**Human approach to housing**.". *Page Magazine*, 36:5–14, 2013.

[22] M. Naghizadeh. "**The sense of presence is the most desirable outcome of human-environment communication**.". *Iranian Architectural Studies Journal*, 1(2):27–46, 2012.

[23] S. N. Ghazizadeh and M. Behzadfar. "**The sense of satisfaction from the open residential space of residential complexes in Tehran**.". *Fine Arts Magazine*, 3(45):15–24, 2013.
DOI: https://doi.org/10.1001.1.22286020.1390.3.45.2.4.

[24] M. Rafiyan, M. Masoudi Rad, M. Rezaiee, and M. Masoudi Rad. "**Measuring the level of satisfaction of residents with a residential quality of Mehr housing: A case study of Mehr Shahr Zahedan**.". *Geography and Urban-Regional Planning*, 4(12):135–150, 2013.
DOI: https://doi.org/10.22111/gaij.2014.1671.

[25] A. Mumtaz, M. Rafiyan, and A. Agha Safri. "**Investigation of the factors affecting residential satisfaction of low-income housing projects: A case study of Mehr Garghi Housing**.". *Iranian Journal of Architecture and Urban Planning*, 8(1):247–257, 2016.
DOI: https://doi.org/10.30475/isau.2018.62060.

[26] Y. Aslanian, H. Zabihi, and R. Kamal. "**Structural analysis of the concept of housing satisfaction with the approach of phenomenological philosophy: A case study: Sheikh al-Islam's Qajar house and several residential complexes in Zanjan**.". *Islamic Art Studies*, 16(37):28–46, 2019.
DOI: https://doi.org/10.22034/ias.2020.109320.

[27] A. Rapoport. "**House form and culture**.". *Prentice Hall*, 1969.

[28] Ch. Alexander. "**The timeless way of building**.". *Oxford University Press*, 1979.

[29] G. Smyth and J. Croft. "**Our house: the representation of domestic space in modern culture**.". *Rodopi Press*, 2006.

[30] J. Gehl. "**Cities for people**.". *Island Press*, 2013.

[31] M. R. Hafez Nia. "**Introduction to research methodology in human sciences**.". *Samit Publications*, 24 ed., 2017.