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Assessing Neighborhood Satisfaction as a Livability Indicator in a Historic Quarter: Esfanjan Neighborhood, Semnan, Iran

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Abstract

Background: Satisfaction with neighborhood environment in historic quarters is a major indicator of livability and urban quality of life in these quarters, yet little research has been conducted on neighborhood satisfaction in historic contexts of Iranian cities. This descriptive-analytical study aimed to evaluate the level of the neighborhood (outdoor living spaces) satisfaction and determinants contribute to it in Esfanjan historic neighborhood, Semnan city, Iran.

Methods: Determinants of neighborhood satisfaction were collected through a comprehensive literature review, organized in a questionnaire form, and distributed among 215 residents of the neighborhood using the convenience sampling method. The Likert scale was used to express satisfaction levels and the Pearson correlation test in SPSS software was used to measure the level of satisfaction and the relationship between influenced factors and neighborhood satisfaction.

Results: The results show that the level of neighborhood satisfaction in the Esfanjan quarter is low and there is a meaningful relationship between all determinant categories and satisfaction. The most significant relationship is related to physical-spatial, functional-structural, socio-cultural, and individual-contextual factors respectively. Among functional-structural factors, maintenance; among physical-spatial factors, quality of access routes; among socio-cultural factors, social interaction and participation; and among individual-contextual factors length of habitation have the strongest correlation with neighborhood satisfaction.

Conclusions: This study reveals the importance of good design as the chief factor that influences neighborhood satisfaction in this historic quarter. It also suggests some measures and strategies achieve a more livable urban environment in Esfanjan historic quarter based on neighborhood satisfaction.

Keywords: Livability, Urban quality of life, Neighborhood satisfaction determinants, Urban redevelopment, Historic quarters, Esfanjan neighborhood.

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Introduction

Historical districts in cities are the manifestation of cultural, social, and economic dimensions of communities that have lived there and established their cultural identity. These old urban zones, which were responsive to the hierarchy of their residents' needs while established, are now worn-out and dissatisfied inhabitants are leaving.[1] Residential satisfaction is an important livability measure and urban quality of life indicator.[2] As multiple studies found, living environment satisfaction is directly and indirectly linked to subjective well-being, psychological welfare, and life satisfaction.[3-7] This emphasizes the need to identify determinants of satisfaction in historic contexts to enhance them to achieve a higher quality of life and well-being among the residents.

Little research has been conducted on neighborhood satisfaction in historic contexts of Iranian cities, so the needs and desires of their residents are unknown to policymakers and the neighborhoods are not booming as expected even after renovation.

The current study is analyzing the satisfaction of the residents of Esfanjan historic quarter in Semnan, Iran, with their neighborhood. The measures of satisfaction are derived from literature review and previous studies and are evaluated in Esfanjan historical neighborhood to realize the current status of the neighborhood environment and contribute the satisfaction factors and results in further planning and policy making for the neighborhood. The data obtained are assessed through a questionnaire and finally, the results are provided and some strategies are proposed.

Historic urban quarters (HUQ) have special relevance in a country's cultural and historical heritage since they are coherent entities, which are defined by their architectural value and traditional character.[8,9] HUQ can be defined as city quarters consist of physical structures, intangible and tangible heritage of olden days while also showcasing the peoples' culture and their way of living.[10] Despite the important role HUQ play in the sustenance of ancient cultural heritage, modernization of urban areas usually neglects these culturaly sensitive areas.[1] This negligence has led to continued relocations and dissatisfaction amongst its residents.[11] Residents' satisfaction with historic neighborhoods is a major indicator in assessing the effectiveness of the renovation strategies and plans taken and provides the opportunity to enhance public presence and vitality in these neighborhoods.

Neighborhood satisfaction can be defined as a subcategory of satisfaction. Satisfaction levels reflect the gap between reality and one's expectations.[12] Such conceptualization of satisfaction essentially treats satisfaction as a function of how much one can acquire and how close their perceived situation is to their aspired-to level.[13,14] This concept has been introduced into residential studies to measure the degree to which a residential environment can meet the needs and desires of its inhabitants and further the attainment of their goals.[15,16] Studies

suggest that residential satisfaction increases with the decrease in the gap between demand and need.[8] Residential satisfaction is recognized as an outstanding aspect of an individual's quality of life, and it has long been the main subject of residential environment research.[16,17] It can also measure how effective housing policy reforms are and is often used as an indicator to evaluate the success of housing programs.[18,19] In their research, Amerigo and Aragones have presented a systematic model for satisfaction with the environment. According to this model, satisfaction is achieved when objective features of the environment have changed into the mental features. Individual features affect mental features of the environment and the level of satisfaction with the environment.[20]
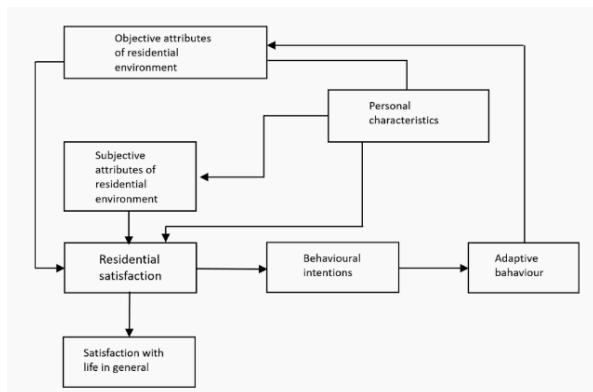

Figure 1. A systematic model for satisfaction with environment by Amerigo & Aragones (1997)

Because living environment satisfaction represents a subjective evaluation of the living environment, it determines the way individuals respond to their environment.[14] Dissatisfaction with the living environment can result in different responses; first is trying to change the environment to promote the characteristics of the environment and objective features to a specific subjective ideal level in mind. The second is adapting to the environment, and the last one is disconnection from the environment which is appeared due to the lack of place attachment.[21] As many studies have found, living environment dissatisfaction is an important factor influencing residents' intention to move.[22]

A survey by Azimi and Esmaeilzadeh conducted on the relationship between house types and residential satisfaction indicated that neighborhood characteristics are the main predictors of residential satisfaction for all house types.[23] The current study aims to evaluate satisfaction with neighborhood characteristics of the Esfanjan historic quarter. So the literature review is focused on the determinants that contribute to neighborhood satisfaction.

Satisfaction with the urban living environment is a multidimensional concept that can be related to different disciplines.[24,25] literature reviews on neighborhood satisfaction show that peoples' perception of satisfaction varies in different personal, social, economical, cultural and physical conditions.[26] An in-depth literature review on satisfaction with urban living environment revealed that determinants that affect neighborhood satisfaction can be put into one of 4 categories

including socio-cultural, physical-spatial, structural-functional, and individual determinants. Socio-cultural factors are related to social and cultural aspects of the neighborhood, physical-spatial factors refer to architectural and urban design features, structural-functional factors refer to services and facilities and individual-contextual factors are related to individuals' characteristics.

Studies on residential environment show that physical characteristics of the environment play a chief role in neighborhood satisfaction.[20,27,28] The quality of the built environment and design is the main predictor of residential satisfaction.[29-31,23,32] Bonaiuto and others also revealed in their study that neighborhood satisfaction hinged on physical characteristics, the appearance of mass and space, built environment functionality, and the presence of nature.[33] Among physical determinants of neighborhood satisfaction, access quality is the main factor. Walkability[32,34] and quality of streets and access[23,35] are influential factors of neighborhood satisfaction. Safety from physical accidents (e.g. fire, demolition, traffic accidents, etc.) is also a major predictor of neighborhood satisfaction. If residents perceive their living environment as unsafe, the satisfaction is reduced and residential mobility increases.[15,18,28,29,36-40] According to several studies, environmental conditions (pollutions, noise level, green spaces, etc.) have a great contribution to neighborhood satisfaction. Noise, pollutions and the lack of natural spaces lead to residential dissatisfaction.[41,39,29,19,42,43] Some studies even found that environmental variables such as noise or pollution are more important predictors of neighborhood satisfaction in comparison to safety,[44] and a similar situation exists regarding crowdedness or population density in the neighborhood.[19,32] Environmental quality, landscaping, and visual connection with nature increase neighborhood satisfaction and property values.[45] Some researchers have pointed out the role of environmental comfort, visual conditions, the general appearance of the neighborhood, and perspective in urban residential satisfaction.[13,19,39,44,46,47]

Public services and facilities also affect the judgment of residential satisfaction.[30,47-49] Some studies have indicated that distance from shopping sites, public transports, medical centers, and schools and accessibility to urban amenities positively links to neighborhood satisfaction and affect residential location choice.[1,28,32,42,50,51]

Studies have shown that not only distance, but the quality of public facilities and servisecs are also the main influential factors of neighborhood satisfaction.[23,30,32,33,45,52-54] Residential satisfaction can be enhanced through the provision of adequate infrastructural facilities. satisfaction with the quality of actual features and physical amenities and urban furniture also affect satisfaction.[27,39,55,56]

Social qualities of the residence are also proven to be highly influential on neighborhood satisfaction.[31,32,47] Krap (1966) proved that the social characteristics of the neighborhood have more influence on the satisfaction of residents with their environment than the physical characteristics. In cases where the neighbor's connections were satisfactory, the satisfaction with the residential environment

was also high, even if other determinants might not be acceptable in the residential area.[57]

Social interactions and participation in neighborhood activities improve the overall satisfaction with neighborhood.[14,19,28,39,49,58-62] Neighborhood relationships and social ties are other potential factors affecting the level of satisfaction with the residential environment. Participating in neighborhood activities and frequent meetings with neighbors is related to neighborhood satisfaction.[18,44,59]

Safety from crime is another powerful predictor of neighborhood satisfaction. Higher levels of crime and social problems lead to less satisfaction.[28,39,40,42,44,59,63-65]

According to some studies, homogeneity, and similarity of neighbors is another factor that can increase neighborhood satisfaction.[30,35,63,66] Sense of belonging and residential satisfaction are also proven to be interrelated. Residential and community attachment is an important antecedent of residential satisfaction.[20,22,33,60,67] Smith and others (2012) claim that sense of belonging and sense of place underpin residential satisfaction.[68] A survey by Tiantian and others carried out in China also demonstrated that a strong sense of community belonging had a meaningful correlation with neighborhood satisfaction.[69] However, Oktay and others (2008) suggest that satisfaction with neighborhood does not necessarily associate with place attachment, but there is a positive relationship between satisfaction and feelings of the neighborhood as home.[70]

Urban residential satisfaction is also found to be sensitive to demographic and individual characteristics such as age, gender, income, and educational attainment.[12,14,26,31,47,57,59,71] Age, income, and education are commonly identified as positively influencing residential satisfaction,[53,54,72] but the degree of influence for each factor is not precisely specified and is subject to the design context.[73]

Some studies suggest that the elderly are more satisfied with their living environment conditions compared to the youth, because of their higher level of acceptance and compatibility with the living conditions.[10,49,72,74] According to Van Praag (2003), residents who are less than 35 years of age are more likely to be dissatisfied with their residential environment than those of 35 years of age and older. Respondents who are 65 and over are usually the most satisfied with their living environment.[75] However, a study by Mohit et al (2010) suggested that age is negatively related to housing satisfaction.

Education is another factor that is shown to be related to the level of satisfaction. According to several studies, housing satisfaction increases with educational attianments.[42,54,72,75] However, Lu found that education doesn't have a significant impact on satisfaction.[14] Silvia et al (2012) also suggest that more educated people are less satisfied with the quality of living environment compared to lower-educated households. Other empirical studies also reveal that homeownership has remarkable impacts on increasing satisfaction with place.[13,14,31,42,53,54,76] Homeowners are more satisfied with their residential conditions than renters.[14,37,39,77] Barcus (2004) found that tenure shift from renters to owners was the only significant variable in residential satisfaction of American migrants.[78] Some studies also point out a relationship between gender and residential satisfaction and suggest that women are more likely to be satisfied with housing conditions.[16,54,56,75,79] Higher satisfaction has also been shown to be associated with higher income. It is assumed that higher income enables households to move to more suitable housing.[14,32,54,59] Length of residency also has a significant influence on housing satisfaction. According to some studies, the longer one lives in an area, the more likely they are to be satisfied with their environment.[14,55,80] However, He and Qi (2014) suggest that residential satisfaction is negatively associated with residential time. Summarizing literature reviews, factors that influence satisfaction with neighborhood environment are demonstrated in table 1.

Table 1. Influence factors of residential satisfaction

Dimension	Factors		Relevant references
Physical-spatial	Access paths	Quality of walking and riding access	6- 49- 53- 56- 75
	Views and visual conditions	Aesthetic values of the neighborhood	4- 19- 20- 40- 46- 52- 59- 73
	Environmental and natural conditions	Lack of environmental pollution and nuisance, Presence of natural features	8- 14- 19- 35- 40- 48- 59- 73
	Security	Security from accidents	5- 21- 23- 30- 33- 35- 40- 53- 76
Structural-functional	Maintenance	Maintenance of urban equipment, garbage and sewage disposal	14- 40- 42- 45- 53- 75- 77
	Services and facilities	Adequate services, urban facilities and infrastructures	2- 4- 6- 8- 12- 14- 20- 21- 26- 34- 39- 40- 53- 51- 65- 74- 75- 77
	Social capital	Neighborly relations and social participation	12- 13- 15- 21- 27- 38- 40- 50- 53- 55- 59- 60- 67- 73- 74
Socio-cultural	Neighbor compatibility	Compatible socio-cultural status of the neighbors	31- 39- 47- 56
	Safety	Lack of crimes and social problems	8- 14- 15- 17- 21- 31- 39- 40- 47- 56- 57- 59- 64
	Sense of belonging	Sense of attachment and belonging to the neighborhood	3- 13- 28- 29- 36- 58- 62- 66
Individual- contextual	Age	-	2- 15- 17- 27- 43- 50- 53- 66- 69- 72- 74- 77
	Length of habitation	-	8- 12- 36- 41- 50- 53- 54
	Gender	-	8- 32- 45- 70- 72- 77
	Education	-	8- 17- 50- 66- 72- 77
	Income	-	4- 12- 15- 16- 37- 50- 66- 75- 77
	Homeownership	-	2- 7- 8- 9- 18- 23- 25- 37- 40- 50- 77

Materials and Methods

The historical district of Semnan is composed of 5 main neighborhoods named Nasar, Esfanjan, Chubmasjed, Latibar, and Shahjugh. Each neighborhood is regarded as a major unit of social connections (figure 2 & 3).
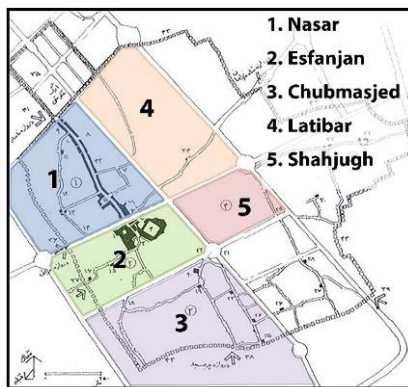

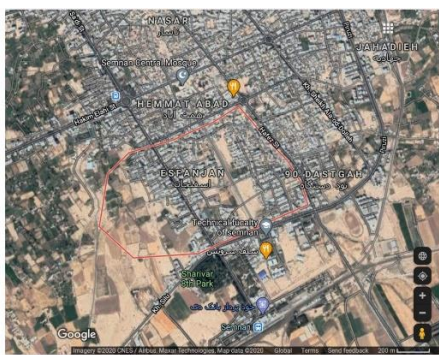**Figure 2. Historic quarters in Semnan city**

Figure 3. Esfanjan quarter in Semnan satellite map. Map data: Google, 2020 CNES/Airbus, Maxar technologies

Esfanjan is located in the middle of the historic quarter of the city and the presence of important public buildings as facilities such as bazaar, central mosque, Emam mosque, and Taheri house has added to the historical significance and the brilliant religious history of the neighborhood. Nowadays destructions and inappropriate interferences occurring in old districts like Esfanjan and the new constructions developing regardless of the old spatial structure and identity have caused a disturbance in Esfanjan physical texture.

Severe damage and dilapidation of buildings, poor quality of the road network, discordance between new buildings and the old texture, malformation of facade additions and urban facilities and equipment, lack of greenery and parks in public spaces are other issues related to the physical texture of the neighborhood, resulting in decreased visual quality. Finally, lack of state investment and lack of adequate urban services has exacerbated negative public perceptions about old urban textures, causing them to gradually change into low-income neighborhoods.

This Empirical research has an ethic code number of UMIN000044831 from UMIN clinical trials registry (UMIN-CTR) and aims to measure the level of residential satisfaction in Esfanjan historical neighborhood in Semnan city and the most determinant factors affecting satisfaction using the descriptive-analytical method. Residential environments include a set of residential units and public open spaces. This research has taken an urban approach and examines the level of satisfaction only in the field of public spaces in the neighborhood, referred to as "neighborhood satisfaction".

This research seeks to find the right answer to the following questions:

- What is the level of satisfaction with the urban living environment in Esfanjan historic neighborhood?

- Do the proven factors affecting residential satisfaction also affect residential satisfaction in historical quarters?

- What are the chief factors of satisfaction or dissatisfaction with the urban living environment in the historical neighborhood of Esfanjan?

Influencing factors of neighborhood satisfaction were extracted through a comprehensive review of the literature and research conducted in this field. To obtain data, a questionnaire was developed to be distributed among the residents of the neighborhood, questioning the quality of each of these factors in the Esfanjan neighborhood from the perspective of its residents. Table 2 below shows the factors and the detailed features related to each one to be asked in the questionnaire.

The questionnaire was composed of 2 parts. The first part identified the demographic characteristics of respondents, including age, gender, education level, income, and length of residence. The second part of the questionnaire enlisted 23 questions, each one was specific to a particular factor, asking respondents to assess the level of satisfaction they thought they had with that particular factor. The answers were in 5 points Likert scale spectrum with the highest level of 5 and the lowest level of 1.

According to official statistical sources, at the time of the survey, the population of the Esfanjan neighborhood was about 450-500, which was studied as the statistical society for the survey. The research sample volume was calculated to be 208 individuals using the Cochran formula sample size determination with 95% confidence level and 5% permissible error. The number rounded up to 215 individuals. The convenience sampling method was used to distribute questionnaires in which the survey administrator sample respondents who are available in the study area and willing to participate in the study. Using this method, 210 questionnaires were distributed among the residents of Esfanjan and 211 were received. Thus, the rate of return was 98%. 211 fully-answered questionnaires were collected. Of 211, 116 respondents were men and 94 were women. Table 3 summarizes the demographic data.

Table 2. Detailed features related to influential factors of residential satisfaction to be asked in the questionnaire

Category	Factors	Detailed features to be asked
Physical- spatial factors	Access paths	- Quality of walking and riding access
	Views and visual conditions	- Aesthetic values of the neighborhood
	Environmental and natural conditions	- Environmental pollution
		- Noise
		- Crowdedness or population density
		- Presence of natural features
	Security	- Security from accidents
Structural-functional factors	Maintenance	- Maintenance of urban equipment
		- Garbage and sewage disposal
		- Surface water management
	Services and facilities	- Adequate urban facilities (medical, recreational, educational, …)
		- Adequate urban services and infrastructures (parking, lighting, urban transportaiton, ..)
Socio-cultural factors	Social capital	- Friendly neighbors relations
		- Neighbors social participation
	Neighbor compatibility	- Socio-cultural compatibility of the neighbors
	Safety	- Crimes and social problems
	Sense of belonging	- Sense of attachment and belonging to the neighborhood
Individual- contextual factors	Age	- Respondent's age
	Length of habitation	- Respondent's length of habitation
	Gender	- Respondent's age
	Education	- Respondent's education level
	Income	- Respondent's income
	Homeownership	- Respondent's homeownership

Table 3. Basic demographic information of respondents

Gender		Age				Education				Length of habitation			
Male	Female	20-30 years	31-40 years	41-50 years	Over 50 years	High school or less	Diploma	College or Bachelor	Master or doctor	1-5 years	5-10 years	10-15 years	Over 15 years
55%	45%	35%	20%	25%	20%	25%	40%	30%	5%	31%	12%	33%	24%

The obtained data were analyzed quantitatively. The Likert scale spectrum was used to interpret the information. Each answer was given a point of 1 to 5, 1 to the lowest level, and 5 to the highest level, giving the answers a quantitative equivalent. The range of scores for each answer was calculated using the class width formula. Table 4 shows the data valuation and scores.

Then, the respondents' satisfaction with the Esfanjan neighborhood was measured. First, the overall satisfaction of each respondent was calculated using the Likert system. After calculating all 211, data frequency for each answer was obtained. Figure 4 shows the frequency for each answer. Then, using statistical average formulas, the respondents' average satisfaction score was calculated. This was 2.13, which as seen in table 4, is in the low range of the Likert scale.

Table 4. Level of respondents' satisfaction with the urban living environment in Esfanjan neighborhood in the obtained ranges from the Likert scale

Answer	Quantitative Equivalent	Range of scores
Very high	+5	4.21 - 5
High	+4	3.41 - 4.20
Moderate	+3	2.61 - 3.40
Low	+2	1.81 - 2.6
Very low	+1	1 - 1.80
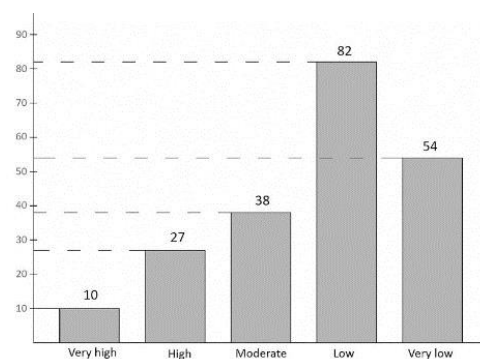
Figure 4. The frequency of each Likert spectrum range

Results

As mentioned, determinants of satisfaction with neighborhood were divided into 4 categories of socio-cultural factors, physical-spatial factors, functional-structural factors, and individual-contextual factors. The relationship between each group and the satisfaction level -as the dependent variable- was examined to determine the extent to which each group affects the satisfaction level. Since the variables have a normal distribution and the amount of data is large, the Pearson correlation test was used in SPSS software to determine the type and intensity of the relationship between the factor groups and the satisfaction level. Pearson correlation value and the

significance level concerning the satisfaction level for each of these groups are given in table 5 below.

As the table above shows, the significance level for all factor groups is 0.00, indicating that all the groups have a significant correlation with the satisfaction level obtained (Pvalue<0.05). Also, the correlation value is positive for all factors, suggesting all factors have a direct positive relationship with satisfaction (r> 0) the most significant correlation is found for physical-spatial factors. Functional-structural, socio-cultural, and individual-contextual factors have the strongest correlation with the reported satisfaction level respectively.

In the next step, the analysis of the effect of physical-spatial factors on satisfaction shows that all physical-spatial factors have a strong significant relationship with satisfaction (1>r> 0.75 and Pvalue>0.05) while the strongest one is related to access. (Table 6).

The effect of socio-cultural factors on satisfaction has also been investigated through the Pearson correlation test. The results show that all socio-cultural factors have a direct (positive) and significant correlation with satisfaction (1>r> 0.5 and Pvalue>0.05) and the most significant relationship is related to neighborhood connections and social participation (Table 7).

Examining the effect of individual-contextual factors on satisfaction shows that length of habitation and age have a positive significant relationship with satisfaction while the former has the strongest correlation, but education and gender did not have a significant relationship with satisfaction. The table below shows the relationships between the individual-contextual factors and the level of satisfaction through the Pearson correlation test (Table 8).

Pearson correlation test has also been used to evaluate the effect of functional-structural factors on satisfaction. The results in the table below show that all functional-structural factors have a direct (positive) and significant relationship with satisfaction and the strongest one is related to care and maintenance (Table 9).

Table 5. Pearson analysis of factor groups influencing satisfaction with urban living environment in Esfanjan neighborhood

Variable	Significant level (Pvalue)	Correlation value (r)	Correlation type and intensity
Physical-spatial factors	0.00	0.88	0.75<r<1 Pvalue <0.05 Meaningful- positive- highly significant
Functional-structural factors	0.00	0.76	0.75<r<1 Pvalue < 0.05 Meaningful- positive- highly significant
Socio-cultural factors	0.00	0.63	0.05<0r<0.75 Pvalue < 0.05 Meaningful- positive- relatively significant
Individual-contextual factors	0.00	0.56	0.05<0r<0.75 Pvalue < 0.05 Meaningful- positive- relatively significant

Note. Dependent variable is urban living environment satisfaction. Significant level at 0.05

Table 6. Pearson correlation analysis between physical-spatial factors and satisfaction with urban living

Physical-spatial factors	Details	Pvalue	r	Correlation type and intensity
Access	- Adequate walking and riding access to residential units, services and urban facilities - Appropriate width of access routes and walkways - Ensured safety of roads and car traffic	0.00	0.86	0.75<r<1 Pvalue < 0.05 Meaningful-positive- highly significant
Views and visual conditions	- Adequate visual conditions - Aesthetic values of facades (material, quality design)	0.00	0.83	0.75<r<1 Pvalue < 0.05 Meaningful-positive- highly significant
Environmental conditions	- Lack of noise and environmental pollution - Lack of congestion and crowding - Presence of natural features (green space, water)	0.00	0.80	0.75<r<1 Pvalue < 0.05 Meaningful-positive- highly significant
Security	- Security from accidents	0.00	0.78	0.75<r<1 Pvalue < 0.05 Meaningful-positive- highly significant

Note. Dependent variable is urban living environment satisfaction. Significant level at 0.05

Table 7. Pearson correlation analysis between socio-cultural factors and satisfaction with the urban living environment in Esfanjan neighborhood

Socio-cultural factors	Details	Pvalue	r	Correlation type and intensity
Neighborly relations and social participation	- Strong neighborly connections and friendly relations - Neighbors' participation in public affairs	0.001	0.61	0.05<r<0.75 Pvalue <0.05 Meaningful- positive- relatively significant
Neighbor compatibility	- Compatible socio-cultural status of the neighbors	0.00	0.59	0.05<r<0.75 Pvalue <0.05 Meaningful- positive- relatively significant
Safety	- Lack of crimes and social problems	0.00	0.59	0.05<r<0.75 Pvalue <0.05 Meaningful- positive- relatively significant
Sense of belonging	- Sense of attachment and belonging to the urban residential environment	0.00	0.57	0.05<r<0.75 Pvalue <0.05 Meaningful- positive- relatively significant

Note: dependent variable is urban living environment satisfaction. Significant level at 0.05

Table 8. Pearson correlation analysis between individual-contextual factors and satisfaction with the urban living environment in Esfanjan neighborhood

Individual-contextual factors	Details	Pvalue	r	Correlation type and intensity
Age	-	0.001	0.52	0.05<r<0.75 Pvalue<0.05 Meaningful- positive- relatively significant
Length of habitation	-	0.00	0.55	0.05<r<0.75 Pvalue<0.05 Meaningful- positive- relatively significant
Gender	-	0.60	-*	Pvalue>0.05 No relationship
Education	-	0.49	-*	Pvalue>0.05 No relationship
Income	-	0.33	-*	Pvalue>0.05 No relationship

Note. dependent variable is urban living environment satisfaction. Significant level at 0.05
*. Given that there is no correlation between the variables, the intensity and direction of the relationship are not examined

Table 9. Pearson correlation analysis between Functional-structural factors and satisfaction with the urban living environment in Esfanjan neighborhood

Functional-structural factors	Details	Pvalue	r	Correlation type and intensity
Maintenance	- Maintenance of urban equipment - Garbage collection and disposal - Sewage and surface water Disposal	0.00	0.74	0.05<r<0.75 Pvalue<0.05 Meaningful- positive- relatively significant
Services and facilities	- Proper lighting - Adequate urban furniture - Adequate recreational, educational, sports, commercial and medical services in the area - High quality public transportation - Car parking	0.00	0.71	0.05<r<0.75 Pvalue<0.05 Meaningful- positive- relatively significant

Note. Dependent variable is urban living environment satisfaction. Significant level at 0.05

Discussion

Satisfaction with the urban residential environment is a crucial factor in residents' welfare and life quality and the main measure to assess the success of renovation plans and policies for residential quarters, yet this factor is of double importance in the historic textures development plans, as these plans must be able to adapt the old textures to the new needs and changes of today's urbanization in addition to preserving the historical, physical and conceptual values. Despite its importance, assessing residential satisfaction and its influencing factors has often been overlooked in development planning and approaches for historic textures in developing countries. This study evaluates the level of satisfaction of residents of Esfanjan historic texture in Semnan city, Iran, and examines the relationship between the satisfaction level and the influencing

factors. For this purpose, at first, determinants of satisfaction with the urban residential environment (outdoor environment) were extracted from related studies and literature review and were classified into 4 categories as physical-spatial, functional-structural, socio-cultural, and individual-contextual factors. Then the quality of each factor was questioned from the perceptions of the residents through a questionnaire. 310 questionnaires with 5 point answers on the Likert scale spectrum were distributed in the neighborhood using the convenience sampling method. Findings show that the level of satisfaction with the urban living environment is low and nearly all the extracted residential satisfaction determinants have a significant relationship with urban residential satisfaction level in the Esfanjan neighborhood. Factors with the most influence on satisfaction are respectively are physical-spatial, functional-structural, social-cultural, and individual-contextual factors. Among the physical-spatial factors, the most effective factors were access, vision and landscape, environmental comfort, and natural factors respectively. Due to being located in a hot dry climate, Esfanjan historic quarter has a dense texture and narrow alleys and nowadays, with the presence of cars in urban spaces, narrow routes make it difficult to access residential units and urban services by car. To improve satisfaction with access, the walkways and streets must be adapted to today's conditions and needs in redevelopment plans. The physical texture of the neighborhood has also deteriorated over time and some facades have been destroyed. This has caused dissatisfaction with the visual quality of the neighborhood. To enhance satisfaction, the appropriate restoration of the facades should be considered while preserving their historic identity. The amount of green space and natural views are also very low in the neighborhood and needs to be considered as well. Thanks to valuable public buildings such as the bazaar and the Imam mosque in the Esfanjan neighborhood, a large number of people come to the Esfanjan neighborhood daily to take advantage of these public

services. Therefore, the aggregation of cars in the narrow alleys and the lack of space for parking has caused annoying congestion, noise, and environmental pollution in the neighborhood. Solving this problem can increase the level of satisfaction in residents. Among the socio-cultural factors, strong neighborly relations and participation in public affairs have been considered as the most effective factor in satisfaction by respondents. Thus, to increase the level of satisfaction of the residents, the redevelopment strategies and approaches should be participatory and strengthen social interactions among the residents. Also, the compatible socio-cultural status of the families and the sense of attachment and belonging to the residential environment were two other factors influencing satisfaction respectively. Considering the stronger effect socio-cultural compatibility of the residents has on satisfaction compared to a sense of attachment and belonging, the importance of relative similarity in the value of residential buildings in redevelopment planning for the Esfanjan neighborhood is concluded. Among individual-contextual factors, the meaningful impact of age and length of residence on satisfaction can be justified by the fact that the elderly are more satisfied with the same residential environment than the youth thanks to better acceptance of living conditions and lower expectations ensued by aging. Also, the longer one lives in a residential area, the more likely they adapt to it. In terms of functional-structural factors, because of the dilapidation of the compact texture of the neighborhood and its urban equipment and the worn-out waste disposal and surface water systems, modernizing these services and facilities is the most important structural step to increase satisfaction among neighborhood residents. According to data analysis results and the obtained relationships between the factors and the level of satisfaction, the most important measures to be taken in the development plans to increase satisfaction in the Esfanjan neighborhood can be proposed in table 10 below.

Table 10. Proposed measures and strategies to increase satisfaction in the Esfanjan neighborhood

Proposed physical-spatial measures to increase satisfaction based on the impact intensity	- Providing adequate standard access for riders and pedestrians to residential units, services and urban facilities - Ensuring proper safety for car traffic - Proper repair of damaged walls and facades - Increasing the per capita green space of the neighborhood and providing visual communication with greenery - Providing acceptable measures and programs to reduce noise, congestion and environmental pollution in the neighborhood
Proposed functional- structural measures to increase satisfaction based on the impact intensity	- Providing appropriate urban furniture, equipment and infrastructure maintenance - Provision of welfare, recreational, commercial, educational, and medical and other services and facilities
Proposed socio-cultural measures to increase satisfaction based on the impact intensity	- Planning and design strategies to enhance social interactions in the neighborhood - Relative equalization of property value in the neighborhood - Providing social security overall requirements - Design strategies to enhance sense of attachment to the environment

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Conflict of Interest

The authors declare that they have no conflict of interest.

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