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Factors Affecting Apartment Complexes with an Approach to Improving the Quality of Residential Space

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ABSTRACT

The concept of the quality of the residential environment is the social, cultural, economic, physical-spatial conditions of the environment that indicate the level of satisfaction or dissatisfaction of the citizens with the environment. The quality of the residential environment is not only a quantitative and technical concept, but it is related to qualitative concepts such as quality of life, diversity of social spaces, social activities, spatial dependencies and city identity. Considering the growth of population and urbanization and the strategy of high-rise construction and vertical growth at the present time, it is possible to explain the components such as social supervision, unity and social order, attendance, social participation, etc. as the most important effective components of high-rise buildings on the quality of the residential environment. It improved the quality of social relations and increased the level of satisfaction with residential environments. In the current research, after extracting the above components in the form of the Delphi method using a questionnaire tool and based on the content analysis of the texts obtained from the library method and the opinions of scholars, in order to improve the high-ranking components and increase their impact on the quality of the residential environment. Strategic and executive solutions have been explained.

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Introduction

According to his needs, values and goals, man transforms the environment and is reciprocally affected by the transformed environment (Motalabi, Golestani, and Miri, 2015). One of the missions of designers and architects is to create a suitable relationship between people and their surroundings. To achieve this goal, space creators must have a correct understanding of human behavior in different environments, so as to make the bond between man and place stronger (Waxman, 2004).The growing growth of urbanization and the increase in population along with the limitations of urban land in which there is an increasing demand for housing on the one hand and the increase in the price of land prone to urban development on the other hand, has made the phenomenon of high-rise construction necessary, especially in metropolises (Mabhut, Soroush, and Rahmani, 2012). In this way, living in high-rises was prescribed for the communities without paying attention to some of its consequences, including in urban life, such as environmental problems and the decline in the quality of the urban environment. Therefore, considering the increasing importance of the residential environment as the most important human settlement and the existence of many people who are strongly influenced by the prevailing conditions of their residential environment (Van Poll, 1977), the need to pay attention to the concept of quality and its improvement in the residential environment is increasing. finds According to these cases, the main criteria for the formation of the spirit of the high-ranking architectural space should be considered according to the functions of each space and the desirable life that flows in it, and what is in the hand of the architect to create this spirit and the tools It shapes the architecture to be important (Najafi, Khairi, and Faraji, 2021).The main problem of this research is to examine the high-level effective components on the quality of the residential environment, which is done through the analysis of the thinkers' point of view. Undoubtedly, in this direction, the first step is to accurately identify the issue and clarify the concept of the quality of the residential environment, and then by identifying the most important influential components in the form of the Delphi method, using a questionnaire tool, to provide solutions in order to increase the quality of the living environment of high-rise residents is paid.

Research Method

In the current research, qualitative information and data and the opinions of thinkers were collected using library texts and documents, and then their content was analyzed with quantitative analysis, and an attempt was made to use the Delphi method to rank the components. be used in this regard, after terminology and expressing the meanings and definitions of high-ranking, environment, quality and quality of the residential environment, as a result of literature review, the effective components of high-ranking on the quality of the residential environment were extracted from the views of scholars, which included 35 items. And in the form of the Delphi method, using a questionnaire tool in three stages and based on the snowball method, with a

statistical sample including 32 experts in the field of architecture, it was measured and ranked, and 9 components were among the most important high-ranking influencing components on the quality of the residential environment. At the end, a solution was selected to improve and upgrade the high-ranking effective components on the quality of the residential environment.

Meanings and concepts of words

High-rise

High-rise building and vertical growth are a phenomenon that has been addressed more or less throughout the history of architecture. The strategy of building high-rise buildings at a height as a product of population increase, the need for housing in cities, the idea of better use of land considering the replacement of population density on less land, reconstruction and renovation of urban infrastructure, the demand of people to live or work in a certain place and preventing the expansion of cities and optimizing the energy consumption of buildings have become popular in recent decades. The phenomenon of high-rise building is one of the consequences of rapid urbanization. Different definitions have been proposed in this regard. Geometrically, it refers to buildings that are built in a single shape and are high and their plan shape is circular or square (Ismaili, and Moshiri Tayabinejad, 2022). Although high-rise buildings with different purposes and different functions have a long history in human civilizations, the construction of high-rise buildings is a solution to prevent horizontal expansion and realize vertical development of cities (Abbasi and Qazi Moradi, 2022). The construction of tall buildings, especially in Iran, was not a functional, cultural, social and developmental need in the beginning, and this was done in imitation of the big cities of the world, and only in the fourth decade and the first half of the fifth decade and the seventh decade of the current Hijri century, high-rise buildings were built. were emphasized with residential use to help solve the housing problem (Bamanian, 2010). The growth and formation of these types of buildings, according to the characteristics and features of this issue, naturally, besides its positive effects, it also faces limitations and threats (Golabchi, 2010).

In this regard, by observing the principles and standards of architecture and urban planning, it is possible to create the possibility of proper and desirable use of high-rise buildings. In general, according to the special conditions of the present century, the appropriate and conditional use of high-rise buildings can be considered a realistic and desirable solution for the social and economic settlement of people in large cities (Bamanian, 2010).

In the table below, the facts and requirements of interest and the binding components in the metropolises have been collected in a summary form, which can be mentioned as the components that make up the form of high-rise buildings, such as land use, access network, visibility, and public places.

Table 1. Facts and requirements to be considered in the realization of the future of high-rise construction in big cities (Source: Authors, 2024).

Facts and mandatory components of high-rise construction in big cities	Constituent components of the urban form
Lack of high-rise construction land, lack of mixed-use areas	Land use
Existence of incorrect hierarchy of urban roads, high volume of traffic in all urban roads, improper separation of pedestrian and bicycle roads	Access network
The lack of interaction between high-rise buildings and the ground floor, lack of attention to Iranian architectural and urban planning patterns	Proportions
Visual and environmental pollution, lack of attention to urban landscape design, lack of sufficient attention to pristine nature and scenery inside the city	Urban landscape and aesthetics
Low per capita green space, improper distribution of green space, social security of open spaces, lack of urban open spaces, existence of abandoned open spaces.	Public places - open space - green space
Security of children's space-control of spatial interference-comfort-social surveillance-control of human environment	Security and comfort culture
Lack of physical cohesion in urban walls	Spatial continuity
Containment-density-permeability-human scale-diversity of the environment	Physical need

The environment, as a phenomenon that surrounds man in all aspects, has many effects on all aspects of his life. Therefore, man has always had a close interaction with nature and his surroundings and he has played an effective role in shaping it. Humans in the early societies had never realized the great role of the environment in their mental health due to this proximity. Gradually, the growth of urban life and high-ranking distanced him from understanding the feelings and emotions of the surrounding environment and the comfort resulting from the qualities in the environment (Deldar, 2008). Artold Burnett writes: If we assume the word environment as synonymous with the natural world, we often forget that there is very little of such a world left, most of the time we live in places and experience spaces that have minimal natural elements. Environment is everything: culture and human beings placed in a system of interrelated communication. As a result, all the components, processes and human activities that make up the world must be considered. (Shahcheraghi and Bandarabad, 2014). Therefore, since the basis of our behavior is the characteristics of the environment and individual characteristics together, our behavior is a result of the needs, motivations, ability of the environment, perception, mental image and finally the meaning that we have made from the environment for ourselves. Therefore, it is clear that our activities can take different forms under the influence of these factors (environmental and individual) (Pakzad and Bozorg, 2013).

The word quality is a concept that has been used in all fields of knowledge and related to human life. Quality is normally used in a very clear sense to describe the degree of perfection of

objects and phenomena (Ghaffari, Swayzi, and Majidi, 2013). Qualities give an object relative stability, and according to Aristotle, qualities are those that express the "difference of a being". The meaning of quality is, on the one hand, the main features and characteristics of a thing, and on the other hand, the generality and rules of the qualities that created a thing (Pakzad, 2006: 106). In general, the quality of a place as a subset of factors of planning, design, development and maintenance of citizens' living environment should respond to livability, individuality, personality, aesthetics, communication, connectivity, accessibility, visibility and diversity. The quality of life today has become more important than anything else in urban life. In connection with this issue, the issue of urban design is expressed, which is the art of organizing physical space (Shahabi, Shokrian, and Heydari Fanoni, 2022).

The quality of the residential environment is the social, cultural, economic, physical-spatial conditions of the urban environment, which shows the level of satisfaction or dissatisfaction of the citizens with the urban environment. (Meshkini, Muezzin, and Nowrozi, 2014).

The quality of the residential environment is a measure to evaluate the conditions of the residential environment that bring minimum usefulness for life and the factors affecting it can be the amount and manner of social services, hierarchy in the major and service uses of the city, social security in Urban spaces, how to access urban spaces, the location of the main uses and spaces of the city in the context of the city, the urban environment, the function of different departments in the city, the ongoing activities in the urban environment, paying attention to the local culture of the residents. and so on. In fact, the quality of the urban environment lies in the simultaneous attention to the qualitative and quantitative aspects of urban elements and their components (Khodaei and Pourkhiri, 2008).

With the publication of the book "Good City Shape Theory" in 1981, Kevin Lynch declares that achieving the appropriate quality of urban design and consequently improving the quality of urban life depends on five criteria:

Vitality: In the concept of biological and sociological human survival in the city environment.

Meaning (feeling): It means the mental and meaningfulness of urban places

Compatibility: In order to adapt the urban form to various activities and behavioral circuits

Access: The concept of ease of physical penetration into different parts of the urban fabric

Control and supervision: In the sense of providing the possibility of citizens' choice and intervention in matters related to the management and use of the same field (Khakzand and Aghabozurgi, 2013). Dr. Korosh Golkar also mentioned qualities such as legibility, color of belonging, inclusiveness, flexibility, visual character, educatedness, quality of public arena, harmony with nature, sense of time, energy, climatic comfort, permeability and movement, sensory richness, safety and security. Mixing use and form, efficiency

and environmental cleanliness; which, along with vitality, form the "overall quality of urban design" (Tabibian and Mousavi, 2015).

On the other hand, Kevin Lynch refers to the conceptual and perceptual aspect of the quality of the environment, as he says: "The understanding of the quality of a city is created by seeing it by citizens, and this is due to the mental image and perception of the environment that people have from their place of residence. In other words, characteristics such as legibility and symbolicity are evident only in the good arrangement of urban elements. These factors give quality to human life and separate them from low quality environments (Lynch, 2002). Residents' satisfaction with the residential environment is defined objectively and subjectively. Satisfaction with the quality of the residential environment is one of the most important indicators for raising the level of quality of life and general well-being, which is one of the most important indicators of the quality of life (Sephvand, Taghdisi, and Rezvani, 2021). Measuring residential satisfaction is complex and depends on many factors (Gifford, 2017). Understanding the level of satisfaction is different for each person and in different personal, social, economic, cultural and physical conditions.

According to Baba and Stein's research in 1989, people with high socioeconomic level, elderly people, and apartment owners were more satisfied with the physical characteristics of their neighborhood units compared to people with low socioeconomic level, younger people, and renters. Of course, in general, wealthy people get the house of their choice better and are more satisfied in this case (Khadem, Qaraei, and Ghasemi Esfahani, 2016).

Proximity to public transportation stations and accessibility are other main factors affecting people's satisfaction (Gordon, 1994). Huang et al. have investigated the relationship between residents' satisfaction with the ownership or rental of the building and concluded that those who live in houses that they own are more satisfied (Huang et al, 2015). Another important factor affecting residential satisfaction is density. According to research conducted in California, the level of residential satisfaction among people, especially the elderly, increases with the reduction of density and the increase of open space, and this increase in satisfaction can be attributed to things such as the human need for privacy, silence, and a suitable environment outside the home (Potter and Cantarero, 2006). Amergo and Aragones have stated 4 factors of residential satisfaction as follows:

1. The physical aspects of the living environment include the quality of construction and how the design provides the basic needs of life
2. What is the structural space of the residential environment according to the amount of population and its solitude and how do these affect the ability to provide the basic needs of life.
3. Security, unity and neighborhood
4. Relations between neighbors and sense of place (Dabbagh and Alfat, 2014).

5. The opinion of thinkers regarding the high-ranking effective components on the quality of the residential environment

Experts in architecture and urban planning have presented various components to measure the quality of the residential environment. Among these experts, Jane Jacobs, Kevin Lynch, and Dohl can be mentioned, whose opinions are summarized in the table below4- The opinion of thinkers regarding the high-ranking effective components on the quality of the residential environment that are summarized in the Table 2.

Table 2. Components effective high-rise on the quality of residential environment from the perspective of thinkers (Source: Authors, 2024).

Criteria	Year	Theorist
Spatial continuity, permeability, flexibility of spaces, accessibility, activity continuity	1961	Jane Jacobs
Open space, comfort, permeability, social participation, human interaction in the environment	1969	Lansing and Marans
Security culture, good quality schools, social unity and order, safety of children's space, social participation, access network, enclosure, green space, public places, presence, the opportunity to communicate between people and space.	1972	Sanoff and Savoni
Security culture, stress, noise and pollution, solitude, creation of hierarchy in the territory, privacy, social participation, sense of belonging and attachment to the environment	1972	Illiard and Lintel
Sound, beauty, neighbors, security culture, urban management, access network, mobility, harassment	1976	Karp et al
Safety of children's space, non-acceptance of strangers, public places, social participation, richness of the environment, social participation, social reaction, diversity of the environment, self-esteem	1984	Professor Dohl
Permeability, compatibility, spatial continuity, diversity of the environment, readability, flexibility, proportions, richness of the environment, sense of belonging and attachment, efficiency of resources, cleanliness, urban management	1985	Ian Bentley et al
Spatial continuity, enclosure, edge continuity, control of axes and perspectives, intermingling of inside and outside spaces, access network, spatial continuity, spatial interference control	1986	Rogers
access network, memorableness, livability, identity, community and public life, environmental richness, spatial interference control, urban self-sufficiency	1987	Alan Jacobs and Dale Appleyard
Readability, form, access network, comfort, social monitoring, open space, liveliness and pleasantness, variety of environment, spatial continuity, environment of meaning, compatibility, social participation, presence, unity and social order, memorableness, permeability	1989	Southworth
Function, unity and social order, identity, readability, symbolicity	1992	Green
environment diversity, flexibility, legibility, people's places, human scale, comfort,	1992	Francis Tibbalds
Liveliness and pleasantness, spatial continuity, variety of environment, human scale, permeability, privacy, readability, flexibility, richness of environment.	1992	Brian Goody

Environmental diversity, density, permeability, security, human scale, spatial determination, creative relations, flexibility, social participation	1994	Hutton and Hunter
Access, density, inclusiveness, space time management, functional component, perceptual or semantic component, social component, visual component, functional component, time component	2002	Matthew Carmona
Access network, green space, social response, urban management, public places	2006	Bonauito
Green space, open space, security, social participation, access network, urban management, social opinion	2007	Tu & Ling
Urban management, satisfaction with neighborhood relations, social participation, sense of belonging and attachment, social structure, unity and social order.	2008	Lee

The relationship between the quality of the residential environment and the quality of life in high-rise buildings.

Considering that the quality of life has no meaning without the quality of the environment in which we live, it can be said: the quality of the environment is a part of the quality of life and includes all the factors that form a part of human satisfaction (Khodaei and Pourkhiri, 2008). The three components of the environment and urban space include form, function and meaning. The form of tall buildings plays an important role in creating a relationship between the viewer and the building due to the fact that these buildings are indicators (Behzadipour, Daudpour, and Zabihi, 2021).

In expressing the importance of the quality of the urban environment, it can be pointed out that the quality of an environment is actually a part of the quality of life, therefore knowing the effective components in improving the quality of the environment will lead to the growth of the quality of life of the citizens (Alimardani and Mahdinejad, 2014). Some social experts believe that the quality of residence can also be an influencing factor on the quality of life, because Lansing and Maranz (1969) believe that a high-quality environment creates a sense of comfort and satisfaction through the characteristics that It may be physical, social or symbolic, it inspires its population and thus improves the quality of life. In contrast to this opinion, some others consider the quality of life in a high-rise as a qualitative concept that does not branch out from the environment alone, but is a behavior-oriented action between environmental characteristics and individual characteristics (Maleki et al., 2014).

Because the individual's perception about the personal position in the cultural issues and value systems of life that a person has in relation to his goals, expectations, standards and concerns in life, can be effective on the quality of life of people (WHO-QOL Group, 1993).

By examining various theories and experiences in the field of quality, the current study attempted to provide a model using a descriptive and analytical method, so that it could be used in Shiraz city's Environmental and Social to assess the perception of the residential environment and to take action on the specified goals. There is little doubt that the improvement of urban life and residents' impressions of their local environment pave the way for the eradication of many social ills that now have an impact on residential environments (Tavakoli and Sabetan, 2022).

Also, according to Zalai (1980), the quality of the residential environment is not a fixed concept and is constantly changing and evolving. A high-quality environment conveys a sense of well-being and satisfaction to its residents through features that may be physical, social, or symbolic. Certain aspects of quality indicators such as health and safety in combination with aspects of comfort and attractiveness of the environment can evoke a deeper concept of the term environmental quality (Van Kamp et al., 2003).

The quality of the residential environment is an aspect of the quality of life that includes people's sense of well-being, comfort and satisfaction from the physical-spatial, socio-economic, environmental and symbolic factors of their living environment. In other words, the quality of the environment is not only concerned with the estimation of human material needs, but it is also concerned with the provision and promotion of social capacities and the development of communities, which also affects their social behavior patterns (Rafiyan and Askari, 2016).

The quality of the residential environment with an emphasis on the construction of the city and the readability of its physical form, elements such as identity, characteristics and characteristics of the neighborhood, the clarity and clarity of the street pattern, etc. as influential factors in determining the level of quality of life (Bahrini, 2011: 211).

Research Findings

Effective components of high ranking on residential culture

The first step in this research is to identify the most important high-level effective components on the quality of the residential environment. For this purpose, through a review of the research literature and Table 3, the most important high-level effective components on the quality of the residential environment were identified and categorized in this way:

Table 3. Components effective high-rise builder on the culture of residence (Source: Authors, 2024).

Sanoff and Sawney (1972), Rogers Transic (1986),	Confinement
Hutton and Hunter (1994)	Spatial determination
Naghizadeh (2017), Moayidi et al. (2018)	Clarity
Jane Jacobs (1961), Ian Bentley et al. (1985), Rogers Transic (1986), Southworth (1989), Brian Goody (1992)	Spatial continuity

Jane Jacobs (1961)	Activity continuity
Bowling et al. (2006), Sanov and Savoni (1972), Harvey (1981), Malek Hosseini (2016)	green space
Karp et al. (1976), Naghizadeh (2002), Golkar (2000)	beauty
Frick and Schultz (2005)	Variability
Professor Dohl (1984)	Not accepting strangers
Bentley et al. (2010), Jane Jacobs (1961), Lansing and Marans (1969), Southworth (1989), Brian Goody (1992)	Permeability
Professor Dohl (1984)	Social reaction
Lansing and Marans (1969), Southworth (1989), Harvey (1981),	open space
Prof. Dohl (1984), Ian Bentley et al. (1985), Southworth (1989), Brian Goody (1992), Hutton and Hunter (1994)	Environmental diversity
Lansing and Marans (1969)	Human interaction in the environment
Appleyard and Lintel (1972)	Create a hierarchy in the territory
Sanoff and Sawney (1972), Rufusor Duhl (1984)	Safety of children's space
Alan Jacobs and Dale Illard (1987)	Spatial interference control
Southworth (1989), Moayidi et al. (2012)	Social monitoring
Sanoff and Sawney (1972), Alan Jacobs and Dale Illiard (1987), Southworth (1989), Golkar (2010)	Access network
Naghizadeh (2002), Lynch (1981)	Spatial identification
Harting et al. (2003)	Environmental control over humans
Lansing and Marans (1969), Sanoff and Sawney (1972), Illiard and Lintel (1972), Southworth (1989), Hutton and Hunter (1994), Margaret Mead, silver work (2007)	Social participation
Rieger (1981)	Attendance
Aini Far (2001), Taheri (2016)	Social structure
Sanoff and Sawney (1972), Berkman (2003)	The opportunity to communicate between man and space
Sanoff and Savoni (1972), Professor Dohl (1984), Silver Work (2007)	Public places
Professor Dohl (1984)	The richness of the environment
Naghizadeh (2002), Bentley et al. (2011), Brian Goody (1993), Lynch (2000), Ian Bentley et al. (1985), Southworth (1989), Green (1992)	Readability
Alan Jacobs and Dale Illard (1987), Southworth (1989), Lynch (2000)	Memorability
Illiard and Lintel (1972), Brian Goody (1992)	Privacy
Sanoff and Sawney (1972), Green (1992)	Unity and social order
Professor Dohl (1984)	Self esteem
Moayidi et al. (2012), Illiard and Lintel (1972)	A sense of belonging and attachment to the environment
Southworth (1989)	Environment of meaning
Lynch (1995), Green (1992), Naghizadeh (1991)	To be symbolic

The first round of the Delphi method: in the Delphi questionnaire, the respondents (experts) were asked to declare the impact of each of the 35 high-ranking components on the quality of the residential environment by choosing one of the available options Table 4. These options were in the form of a Likert scale.

Table 4. Statistical description of the respondents (first round Delphi) (Source: Authors, 2024).

Component	Number of responses	Average responses	Standard deviation	Order of importance
Confinement	32	3.56	0/68	17
Spatial determination	32	3.31	0/77	28
Clarity	32	3.56	0/74	19
Spatial continuity	32	3.01	0/74	34
Green space	32	3.57	0/56	15
Changeability	32	2.92	0/58	35
Permeability	32	4.35	0/81	3
Open space	32	3.58	0/64	14
Environmental diversity	32	3.35	0/86	26
Safety of children's space	32	3.72	0/75	10
Spatial interference control	32	3.41	0/96	24
Social monitoring	32	4.27	0/97	4
Access network	32	3.69	0/98	12
Environmental control over humans	32	3.49	0/86	21
Social participation	32	3.62	0/77	13
Attendance	32	3.76	0/8.	9
Human interaction in the environment	32	3.56	0/69	16
Social structure	32	3.47	0/69	22
Social reaction	32	3.19	1/12	31
Activity continuity	32	3.27	1/09	27
Not accepting strangers	32	3.83	1/13	7
The opportunity to communicate between man and space	32	3.28	1/00	30
Public places	32	3.96	0/74	6
The richness of the environment	32	3.07	0/74	33
Readability	32	3.71	0/66	11
Memorability	32	4.42	0/77	2
Create a hierarchy in the territory	32	3.15	0/58	32
Privacy	32	3.57	0/81	20
To be symbolic	32	3.79	0/64	8
Spatial identification	32	3.38	0/85	25
Unity and social order	32	4.08	0/62	5
self esteem	32	3.29	0/51	29
A sense of belonging and attachment to the environment	32	4.59	0/75	1
Beauty	32	3.55	0/96	18
Environment of meaning	32	3.44	0/93	23

The second round of the Delphi method: In the first part of the second round of the Delphi method questionnaire, a set of components were presented, which were recognized as high-ranking effective components on the quality of the residential environment based on the first round of the Delphi method. The second part of the questionnaire also deals with the question about the importance of the components in the modified and new state, the modifications of

which are described below. According to the proposal made by a number of experts, "urban management" was added to the second-round questionnaire.

Therefore, in the second questionnaire, list of the proposed new components and the remaining components were prepared. The second round of Delphi questionnaire includes 21 components was delivered to the same 32 people, whose components are described in Table 5.

Table 5. Statistical description of the respondents (Delphi second round) (Source: Authors, 2024).

Component	Number of responses	Average responses	Standard deviation	Order of importance
confinement	32	3.46	0.68	14
Clarity	32	3.15	0.74	16
green space	32	3.03	0.56	17
Permeability	32	4.24	0.81	4
open space	32	2.85	0.64	18
Safety of children's space	32	3.62	0.75	11
Social monitoring	32	4.69	0.97	1
Access network	32	3.57	0.98	13
Social participation	32	3.63	0.77	10
attendance	32	3.85	0.80	8
Human interaction in the environment	32	3.42	0.69	15
Not accepting strangers	32	3.65	1/13	9
Public places	32	4.16	0.74	5
readability	32	2.59	0.66	21
Memorability	32	4.42	0.78	3
privacy	32	2.79	0.81	19
To be symbolic	32	3.94	0.64	7
Unity and social order	32	4.05	0.62	6
A sense of belonging and attachment to the environment	32	4.61	0.75	2
beauty	32	2.64	0.96	20
Urban management	32	3.61	0.63	12

The third round of the Delphi method: In this round, the method of the second round was used. The third-round questionnaire with 12 distribution components, the results of which are shown in Table 6.

Table 6. Statistical description of the respondents (third round Delphi) (Source: Authors, 2024).

Component	Number of responses	Average responses	Order of importance
Permeability	32	4.32	2
Safety of children's space	32	3.28	11
Social monitoring	32	4.75	1
Access network	32	3.61	6
Social participation	32	3.58	7
attendance	32	3.94	4
Not accepting strangers	32	3.32	10
Public places	32	4.23	3
Memorability	32	3.46	9
To be symbolic	32	3.47	8

Urban management	32	3.62	5

In total, the following 9 components were extracted using the Delphi model as high-ranking effective components on the quality of the residential environment, Table 7.

Table 7. High-ranking effective components on the quality of the residential environment using the Delphi model (Source: Authors, 2024).

Component
Social monitoring
A sense of belonging and attachment to the environment
Permeability
Public places
Unity and social order
attendance
Urban management
Access network
Social participation

Conclusion

After obtaining the most important components in the form of Delphi method, the effect of these components was analyzed and investigated in two residential complexes as a representative of high-rise construction in Shiraz city, and the following solutions were presented in order to improve the residential culture.

Today, providing housing is considered as one of the basic issues in the construction and development of cities. In Iran, along with the growth of urbanization and the increase in population and the lack of suitable land for construction, the construction of high-rise buildings became necessary, among other measures, to respond to this ever-increasing need for housing.

However, on the one hand, this phenomenon can lead to many urban issues such as lack of land, housing, optimizing the cost of urban facilities, preventing the horizontal growth of cities, and so on. respond, but on the other hand, it creates adverse physical and spatial, environmental effects and reduces the quality of residential space. The quality of an environment as a subset of factors of planning, designing, developing and maintaining the living environment of citizens must respond to livability, individuality, personality, aesthetics, communication, connectivity, accessibility, visibility and diversity (Ghaffari, Swayzi, and Majidi, 2013).

In this way, while preserving the identity and strengthening the positive effects of this phenomenon, it is necessary to provide measures and solutions to eliminate and improve its negative effects and to improve and idealize the quality of living conditions for high-rise residents.

Explanation of components such as social supervision, sense of belonging and attachment to the environment, permeability, public places, unity and social order, attendance, urban management, access network, social participation as the most important high-level effective

components on the quality of the residential environment to improve the quality of social relations and the increase in the level of satisfaction with residential environments were achieved. Also, in order to improve these components and increase their impact on the quality of the residential environment, strategic and operational solutions have been explained in Table 8.

Table 8. Strategic solutions to improve high-ranking effective components on the quality of the residential environment (Source: Authors, 2024).

Component	Solution
Social monitoring	Preventing events that disturb the comfort of residents
	Strengthening and using residents' social supervision over unusual relationships
A sense of belonging and attachment to the environment	Increasing social relations between neighbors
	Strengthening the sense of solidarity among residents
	The pleasantness and attractiveness of the environment
Permeability	Trying to build a high-rise with a creative and eye-catching design
	Trying to use landscape design and grounds more creatively
	Creative and uplifting design of exterior facades and high-rise public spaces
Public places	The need to build large areas with facilities such as suitable green spaces, parks for children, pavilions
	Construction of multi-purpose halls for sports, celebrations, religious holidays, etc
	Spaces for conversation as well as conversations of different age groups in an open and semi-covered manner
Unity and social order	Formation of charitable and public benefit associations and loan funds
	Elaboration of the charter of apartment living with the participation of high-rise residents
	Planning and appointing competent people to establish the social order of the residents
Attendance	Holding an uplifting and sports event
	Holding conferences and sports competitions inside and outside the building
	The presence of people and high-ranking residents in the construction, renovation and maintenance of common spaces
Urban management	Reducing noise and air pollution caused by traffic
	Timely collection and sanitary transportation of urban waste and solid materials
	Proper management and compilation of the principles and basics of urban facilities with the proper supervision of urban management
Access network	Creating safe and comfortable footpaths and sidewalks
	Requirement to build more parking than the number of units for guests
Social participation	Designing public spaces in a way that integrates cultural, religious, green spaces, and services in order to promote social interactions among residents.
	Regular and continuous participation in meetings between and within the collections

Author Contributions

All authors contributed equally to the conceptualization of the article and writing of the original and subsequent drafts.

Data Availability Statement

Data available on request from the authors.

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Ethical considerations

The study was approved by the Ethics Committee of the Islamic Azad University, Shi.C. The authors avoided data fabrication, falsification, plagiarism, and misconduct.

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Conflict of interest

The authors declare no conflict of interest.

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