IJAPAS

International Journal of Applied Arts Studies

Print ISSN: 2588-4506 Online ISSN: 2588-4670

Homepage: www.ijapas.ir

Islamic Azad University
Yazd Branch

Revitalization and Adaptation of Houses in the Historical Neighborhood of Moghadamian in Dezful City with a Sustainable Architecture Approach

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Article Info

Article type:
Research Article

Article history:
Received December 02, 2023
Received in revised form January 01, 2025
Accepted July 14, 2025
Published online August 15, 2025

Keywords:
Revitalization,
Adaptation,
Sustainable architecture,
Moghadamian neighborhood,
Dezful city.

ABSTRACT

Revitalization of historical works and buildings are of special importance as an important part of the history of culture and civilization of any society. Historical houses are facing the development of urbanization today. This development and expansion have been associated with destruction and change in historical contexts. The best way to protect abandoned and decaying buildings is to revive them and give them use, which should be done in such a way that their spiritual, material, and historical values are compatible with the new values that are given to them. In most cases, these buildings have been defined as different from their original identity during intervention for revitalization. Many small spaces of the houses have been left unused. This research is based on a qualitative and quantitative approach in terms of its practical purpose and its governing system. The researcher has used survey methods to collect information and descriptive-analytical methods to achieve the conceptual model. Interviews, questionnaires study of documents, and field surveys were the tools of research data collection. AHP and Delphi techniques have been used to analyze and infer data. The results show that in the restoration of the historical houses of the Moghadamian neighborhood in Dezful City, there is a big gap between the appropriate methods of intervention that are presented in the restoration documents and criteria and the results of the research. Also, according to experts in the field of restoration, the interventions made in historical houses for revitalization have not been at a favorable level.

Cite this article: Ghafari Khalaf Mohammadi, S. M., & Ghobadian, V. (2025). Revitalization and Adaptation of Houses in the Historical Neighborhood of Moghadamian in Dezful City with a Sustainable Architecture Approach. ***International Journal of Applied Arts Studies***, *10*(2), 97-126.

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Publisher: Islamic Azad University, Yazd Branch.

Introduction

In the last century, the issue of historical monuments and monuments and how to deal with them in the matter of reviving and giving life to them as historical monuments of a border and region has been of special importance (Ziya Shahabi and Imani, 2018: 37).

Today, the historical context of cities is going through stagnation and backwardness due to the traditional structure, wear, and tear of residential units, difficulty of access, weak infrastructure, and environmental organizations. Taking into account that the historical monument was responsive to the needs of the people of his time; Therefore, its non-compliance with the needs of today's people makes the issue of revitalization and functional compatibility of historical neighborhoods important. The ancient and historical context of the cities is the valuable historical, cultural-social, and physical-spatial heritage of the cities, which is considered an indicator of the urban identity. Therefore, the restoration and reconstruction of this fabric prevent its identity lessness and wear and tear from the inside and can contribute to the appropriate development of the city (Kusheshgaran, 2011: 73)

Textures and historical buildings contain historical-cultural values and show a teaching of the collective wisdom of humans, which includes a mixture of art, experience, a sense of place and the biological world of humans, and a precious heritage for future generations. (Shahbazi et al, 2020). It is considered, therefore, that abandoning the historical context prevents the contemporary man from making wise use of past experiences and being on the path of historical continuity, which is the key to the survival of any culture. (Randall, 2002). The special nature of the old texture rejects any neglect of it in many ways. From the economic point of view, it has potential infrastructural and construction facilities, from the cultural point of view, it is a relic of the previous history, and from the physical point of view, it has unique architectural and urban planning values. (Shahbazi et al., 2020). It seems that revitalization and other methods of protection and restoration as long as the historical monument is still identifiable as a work and the possibility of granting new functions and adaptation of human activities to the body of architecture in the form of a defined use in If it exists, it can prevent the deterioration of the work and help preserve the historical work (Baker, 2009)

When it comes to revitalizing a building or worn-out urban fabric, the main goal is something beyond physical and spatial measures. In this process, an attempt is made to create a creative link between the past, present, and future of the historical building. What should always be considered in this direction is the preservation of the material and spiritual values of the historical work (Redondo, 2008).

Getting to know as much as possible about the architecture of traditional textures and how to make them, in addition to getting to know more solutions in the direction of maintenance and

restoration, can be a beginning for the implementation of modern architectural constructions, and Iranian engineers in the continuation of the identity of the architects that their predecessors They have achieved it, it has helped. The purpose of this article is to compare the revitalization and compatibility of the historical neighborhood of residents in Dezful City with the approach of sustainable architecture and answer the following questions:

1. What kind of interventions have been done in the historical houses of the Moghadamian neighborhood to revive and adapt the houses?

2. Where is the place of the revitalization of historical buildings of Moghadamian neighborhoods in sustainable architecture and how is it addressed?

Theoretical Foundation

Revival

Revitalization or revival in architecture is the use of visual styles, which is conscious feedback from the architectural styles of the past.

Revitalization or revitalization in architecture and design means reviving a pre-existing building so that life can flow in it. This term is mostly used in the architecture and urban planning literature in the branch of building restoration. Regeneration and revitalization have something in common. Regeneration is a process that leads to the creation of a new urban space by preserving the main spatial characteristics (physical and functional). (Caple, 2000). In this action, a new urban space is created that, while maintaining the basic similarities with the old urban space, has substantive and semantic differences with the old space. This word also means "regeneration" and "renewal", which actually means renewal and updating, although this action can have differences in behavior and norms in addition to external similarities, and has an independent personality and identity (Ansari and Anjomani, 2011: 3). Contemporizing a historical work, from a material point of view, means an intervention in the work for the creator's dialogue between stable ancient values and contemporary high values, and not temporary and transitory decisions, contemporizing a historical work from a spiritual point of view, means turning the material and cultural heritage into material and cultural wealth. (Lorestani et al., 2010).

Table 1. Dimensions and common principles of urban revitalization and conservation regeneration, (Source: Author).

Dimensions of reconstruction of base protection		Dimensions of urban revitalization	
Improving the quality of life and social relations, reducing social crime, overcoming stigmatization and social exclusion	Social	Creating social cohesion and the spirit of participation and increasing social capital	Social
Increasing employment opportunities, improving the distribution of wealth, cultivating talents, increasing taxes and local rents, the relationship	Economic	Attracting investors, creating economic job opportunities and	Economic

between civil engineering and local, regional and urban improvement, attracting domestic investments.		modernizing the city economy	
Development and management of the environment along with the introduction of a more comprehensive idea of environmental sustainability	Environmental	Dealing with environmental pollution and improving the quality of life	Environmental
Reorganizing decision-making mechanisms through democratic understanding, increasing the amount of space for cooperation and participation, considering different expectations, emphasizing various regional partnerships, paying attention to interactions between organizations and institutions and their internal relations.	Rulership	Promotion of cultural heritage and urban tourism	Cultural
Contemporizing the historical environment means functional intervention and taking over it for a creative dialogue between ancient sustainable values and contemporary high values.	Practical	Improving access network, public transportation network and urban infrastructure quality	Practical
Solving problems related to physical wear and tear along with new lands and appropriate needs	Physical	Improving the physical-spatial quality of buildings, creating a coherent network of public spaces, creating attractive and readable public spaces	Physical-spatial
Integrated management of existing resources and applied changes	Management	Enhancing physical-spatial quality of buildings, creating a complex network of public spaces, creating attractive and readable public spaces	Management

Based on the contents of the above Table 1, it can be acknowledged that in urban revitalization, the qualitative and quantitative improvement of all the above-mentioned dimensions is treated equally, while the restoration of minibar protection pays more attention to the economic benefit of historical buildings and environments and attracts tourists (Golant, 2015: 1539). In the meantime, neighborhoods and historical areas play an important role in the success of these regeneration projects for the following reasons (Landeta, 2006: 469).

Investing in historical places are attractive lands for the establishment of companies, life, and residence, people are business investments and tourist destinations, and the market value in historical places are higher than anywhere else; a sense of place people enjoy living in historical places and generally have more social cohesion is seen in these places (Yaghoubi et al., 2024).

The sustainable reuse of historic buildings minimizes the exploitation or misuse of resources, and the findings also imply a lower cost of maintaining historic houses (Orbasli, 2000).

The quality of life in neighborhoods and historical areas leads to the improvement of the quality of life and the enrichment of people's understanding of the diversity and changing nature of society Figure 1.

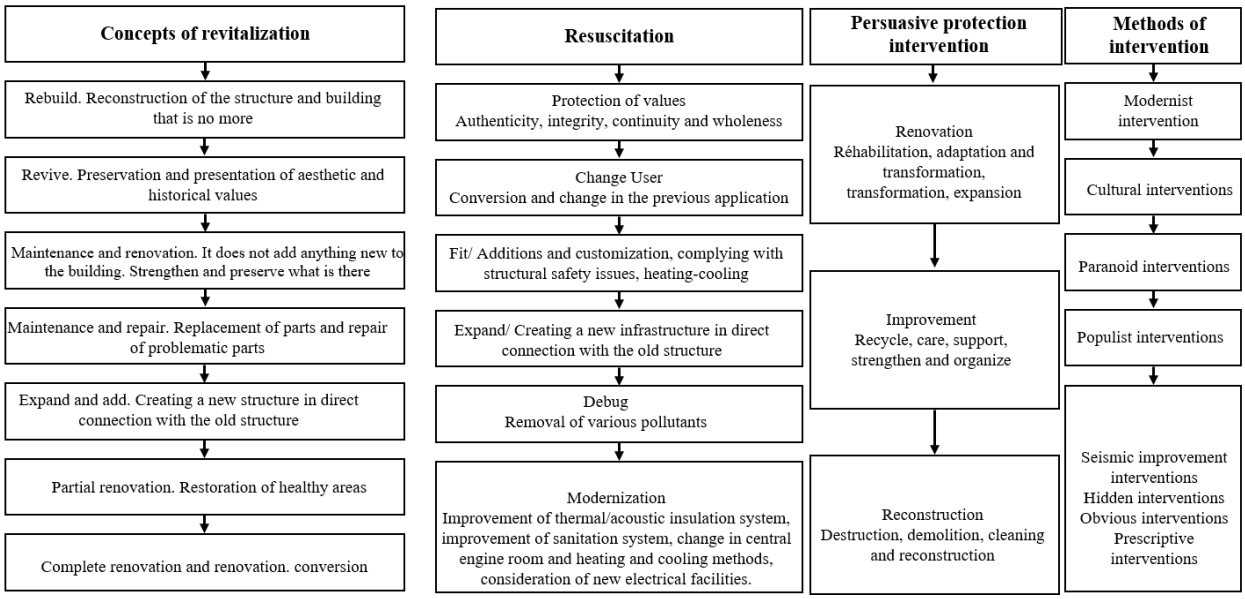


Figure 1. General diagram of resuscitation and intervention methods taken from research literature.

Sustainable Architecture

The concept of sustainability in architecture is not to create buildings that will only last a long time, because a building with a lifespan of several hundred years is not in harmony with the needs of the present time (Pye, 2001: 173). Sustainable architecture is a design method that deals with reducing the consumption of non-renewable resources and optimizing the consumption of renewable resources and states that we can get what we need for survival from the environment (Belniak, 2008: 92).

Sustainable development means providing solutions to the physical, social, and economic patterns of development that can prevent issues such as the destruction of natural resources, the destruction of biological systems, global pollution, climate change, excessive population growth, injustice, and the lowering of the quality of human life (Kusheshgaran, 2011: 157).

Sustainable architecture is a broad term that describes architectural design techniques that are in line with environmental attitudes and formed with the idea of respecting nature (Tavakoli Kazeruni et al., 2023) In fact, this architecture is not a new trend, because in many ancient

civilizations and traditional architectures, including the traditional architecture of Iran, it has existed in a fundamental way, and today, due to the negative consequences of the industrial world, such as increasing air and environmental pollution, the reduction of natural resources, and the energy crisis (Olia et al., 2023). It has become one of the most important concerns of people in the present age (Vinas, 2009).

Compatibility

The history of using this word in the literature of the management field is more than 50 years (Tsaur et al., 2014) in management and psychology, adaptation means the proper integration between the needs and capabilities of a person and the supply and demands of the environment.

Spokane, Meir Catalano, (2000) according to another definition, adaptation is the set of actions and behaviors that a person shows in new situations and conditions in order to provide appropriate responses to existing stimuli (Amani et al., 2012: 16). Edward Hall defined adaptation as the encounter of cultures with each other or a culture with new spaces and believes that when the effort to reorganize the space begins, the person has begun to adapt himself to the environment (Hanan, 2012: 152). Karl Steiner has defined compatibility as the coordination between the characteristics of the physical form of an environment and the characteristics of its activities, and he believes that to evaluate compatibility, both the qualitative relationships - form - activity and their quantitative relationships can be examined (Jusan, 2010). Lynch used compatibility in urban spaces and believes that compatibility has three different types, which are type compatibility, is the coordination between the type of activity of a place and the type of its form. Density compatibility, which is the coordination between the busyness of a place's activity and the spatial and informational density of its shape, and importance compatibility, which is the coordination between the importance of a place and its physical form. In an explicit definition, Moore (2014) defines adaptation as the degree of harmony between human needs and the capabilities of the environment (Moore, 2014). In his research, Shin (2016) also considers adaptation to be the process of optimizing the relationship between humans and the environment, and it is an endless cycle. Regarding residential space, Festinger (1962) believes that residents are trying to achieve the highest level of compatibility between what they have made of the living space in their minds (ideal environment) and the actual living space of the original environment (Festinger et al., 1962) in general. In research that has paid attention to the issue of compatibility, we come across two main approaches

1. Some have focused on the results of human-environment compatibility, such as satisfaction with the environment and improvement of living conditions (Jusan, 2010; Musiol and Boehnke, 2013; Altaş and Özsoy, 1998; Galster and Hesser, 1981; Jansen, 2014).

2. Some strategies of people to create compatibility between themselves and the built environment have been studied. (Brown and Moore, 1970; Pickvance, 1973; Morris and Winter, 1975; Angell, 1984; Parrot, 1985; Ann Lodi and Raedene Combs, 1989; Baum and Hassan, 1999; Crull, Bode, and Morris, 1991; Steggell et al., 2003; Helderman et al., 2004; Ferreira et al., 2004)

For example, Ann and Ryden used the term housing adaptation in their research as equivalent to adaptation strategies. They consider housing adaptation as strategies that are used to better meet the needs in housing, and its goal is to achieve better housing; In other words, housing adaptation can be interpreted as overcoming normative deficiencies in housing (Ann Lodi and Raedene Combs 1989). Morris and Winter have defined adaptation in the context of the relationship between family and housing. They believe that the behaviors and strategies that the family performs throughout its life to always be able to meet its needs from housing are called adaptation (Morris and Winkel, 2009).

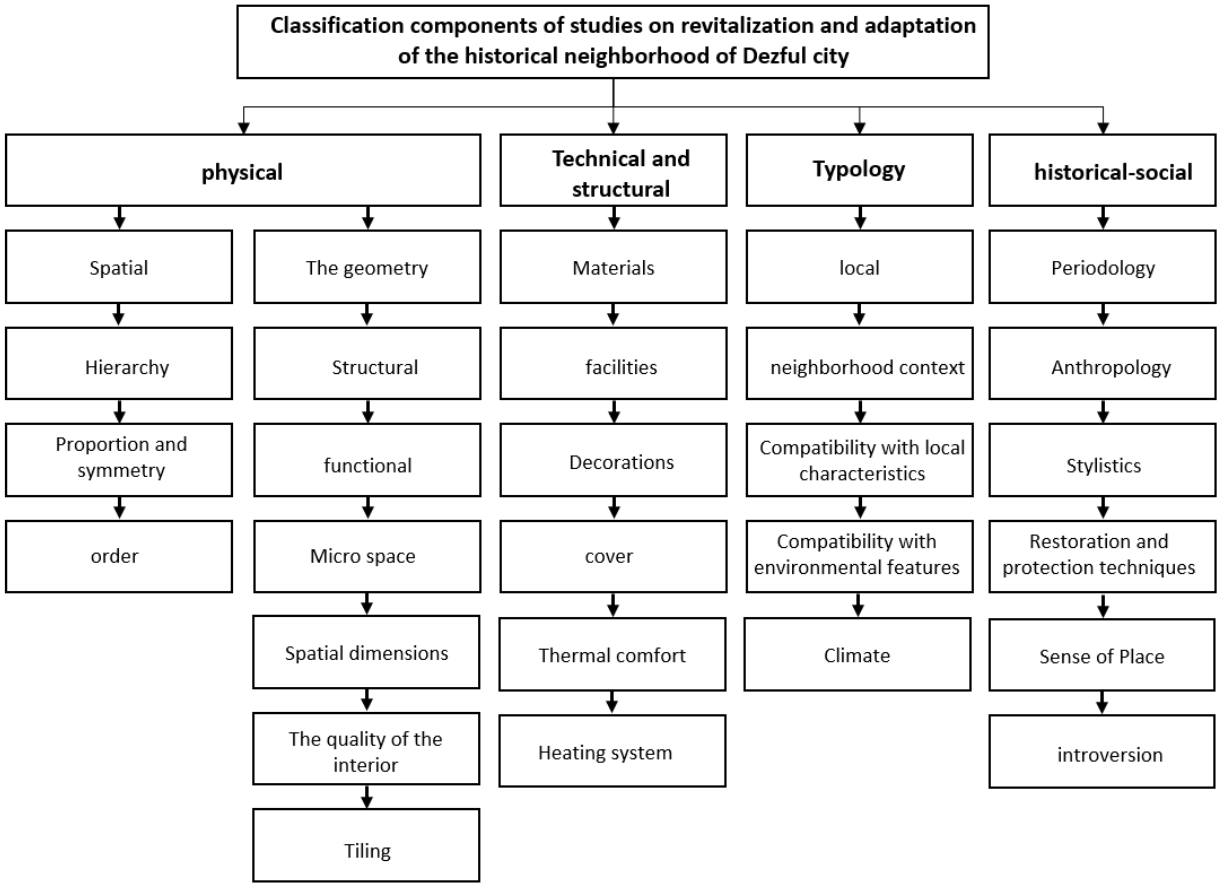


Figure 2. Research components for revitalization and adaptation of historical houses in Moghadamian neighborhood.

In 2019, Kamranifar in her thesis titled "Restoration plan of Azar Dezful house with feasibility approach of restoration", after studying and presenting the findings in the form of literature, tries to analyze the experiences of Reconstructed and revived studies. The purpose of this thesis is to design a social space by considering the effective factors in creating a sense of place and then using the obtained components in the design of the desired space in order to achieve a desirable environment.

In 2016, in his thesis entitled "Revitalization of Tuideh Neighborhood of Noushabad City Based on Sense of place criteria", Mazifian investigated the dimensions of different dimensions of sense of place and its role in the revitalization of the historical Tuideh neighborhood of Noushabad City. The results show that the physical-social cohesion of the Tuideh neighborhood will be realized as an integral part of the historical context and connected with it, relying on the revitalization of the whole city. Formulating the type of relationship between the audience (residents and tourists) with the body of the historical context, identifying the main influencing elements in the identity of the place, and finally establishing a logical connection between the parameters of the sense of place in the process of revitalization and creating a sociable space are among the achievements of this research.

Galwani and Khanmohammadi, 2014, research is about the necessity of revitalizing historical buildings (case example: Shahr Khoi Khan Caravanserai) with the approach of revitalizing Khan Caravanserai through the establishment of suitable uses in the caravanserai. The obtained results show that the creation of cultural and attractive uses for the Khan Caravanserai will activate and revive the worn-out fabric of the city, especially the Caravanserai building.

Ghanbari and Sharif Khaje Pasha, 2013, their article is about the investigation of the identity crisis in the architecture of contemporary buildings in Gilan. The results of this research show that although the construction industry in Gilan has experienced significant growth in various quantitative and qualitative dimensions in recent years and has depicted novel and at the same time unique effects, it has been disconnected from values, history, and culture. It has caused the disappearance of systematic architecture in people's lives, and contemporary architecture is suspended between the past and the future, so its architecture and construction must be in accordance with the identity, originality, and rich traditions of the earth, which includes all these dimensions.

By reviewing the conducted studies, it is clear that in most of the research conducted in revitalization and conservation and restoration interventions, focusing on the case study is the main approach of the research and in the rest of the cases, generalities and frameworks have been discussed. Also, in most cases, the extraction of intervention criteria has been the main concern of researchers; In addition, in most cases, the intervention is in the urban context and no single buildings or historical monuments that need a clear restoration approach. On the other hand, in

some cases, criteria and criteria have been investigated, and the rest of the research is devoted to the investigation of methods and procedures. This issue reveals the necessity of categorizing the methods of intervention and the reasons for the different types of this category. It seems that the types of categories and classifications of intervention definitions are based on the following criteria.

Case Study

Geographical and climatic location of Dezful City

The city of Dezful is part of Khuzestan province in the southwest of Iran and is located at 32 and 25 north latitude and 48 and 28 east longitudes from the Greenwich meridian. This city is located on the east bank of the Dez river and in the southwest of the Zagros Mountain range. This area faces the mountains on one side the Khuzestan plain on the other side and then the Persian Gulf. Therefore, it has a climatic position between the desert and peripheral cities of Fars. The heat of the air in the summer sometimes reaches more than 50 degrees Celsius and the relative distance from the Persian Gulf (about 250 km) reduces the air humidity; Therefore, it has a warm and semi-humid climate.

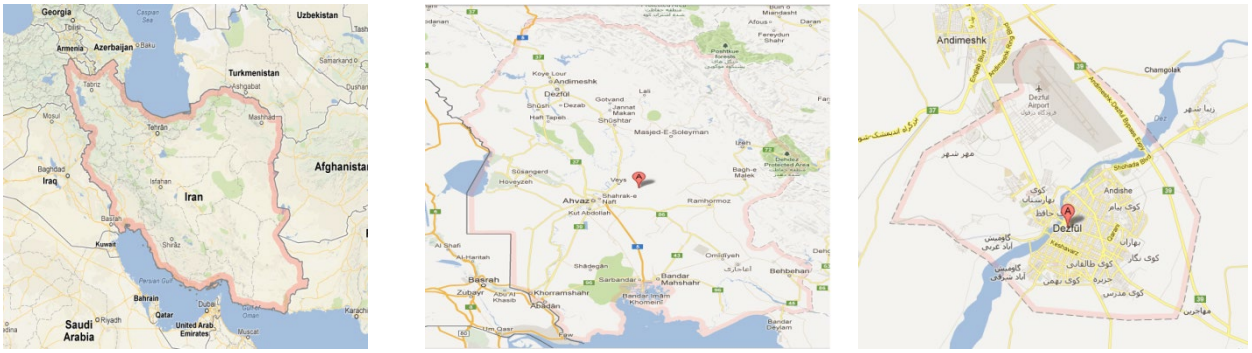


Figure 3. Google Map database, 2019

The climatic conditions of this city require dense architecture with a lot of shade and blinds. In the old context of this city, there are many narrow alleys and sabbats. This city is built on a conglomerate rock formation and has a height above the river Dez, and has always benefited from the clear and cold water flowing from the Bakhtiari mountains Figure 3.

Moghadamian neighborhood

The results of the housing population census show that the highest population density in the old context of Dezful is related to the northern part of Shariati Street, that the population density of peaks in this section is generally between 300 and 600 people per hectare, and it is considered

the densest part of the area, which is the neighborhood Moghadamian is also placed in this section.

Moghadamian neighborhood is limited to the Kattan neighborhood from the north, the Lurian neighborhood from the south, the Sarmidan and Sakian neighborhoods from the east, and the Dez river bank from the west. Moghadamian and Kat Katan neighborhoods were formed next to a part of the Dez river bank called Rana. Centuries ago, the river bed was at a much higher level than the current level and almost in line with the current location of these areas. Due to the extremely hot weather in the summer season, the early residents of this area used the proximity of their residence to the clear water of the Dez River and created their living spaces in the form of hand-cut holes in the coastal wall. Examples of these coats can be seen in Azar's house. It should be mentioned that there are examples of these coats on the western side of the Dez River bank, which is used as a summer resort for people. Moghadamian neighborhood is known by this name because of the presence of an influential person named Haj Gholmareza Moghadamian who had dealings with Khanin. It is necessary to mention that the mentioned neighborhood is located on the land of Mahori Hill and at a higher level than the river bed, and for residents to access the river water, the neighborhood is connected to the river bank by means of stairs, which include the Moghadamian stairs and Bandar Abdullah Neychit pointed out. Ni Chit is one of the traditional artifacts of the Dezful people, which is made by finding and connecting long reeds together. In the old days, people used to sleep under the roofs and sometimes one roof was a resting place for several families, they used reeds as a barrier Figure 4.

All the residents of the Moghadamian neighborhood are natives of Dezful City, Shiite Muslims, and speak with Dezfuli dialect. According to the statistics obtained from the questionnaires, the gender composition of the neighborhood is 312 men and 288 women. Despite the migration of many of the original residents of the neighborhood, the old residents of the neighborhood still have the largest percentage of residence time, which includes more than 80 plots according to the field survey and with the help of questionnaires. In the picture below, neighborhood 8 is the neighborhood under study (Moghadamian neighborhood). According to the aerial photographs of different years of the Moghadamian neighborhood and the surrounding area of Azar house, it can be concluded that from 2009 to 2019, there was no significant destruction and change in the texture, and the greatest change occurred between 1998 and 2009. As can be seen, the road construction of Dezful coastal road, which is one of the main traffic routes in Dezful, has not caused any damage to the Moghaddmian neighborhood except for the loss of direct connection between the neighborhood and the river, and this neighborhood is one of the healthiest old neighborhoods in the old context of Dezful city.

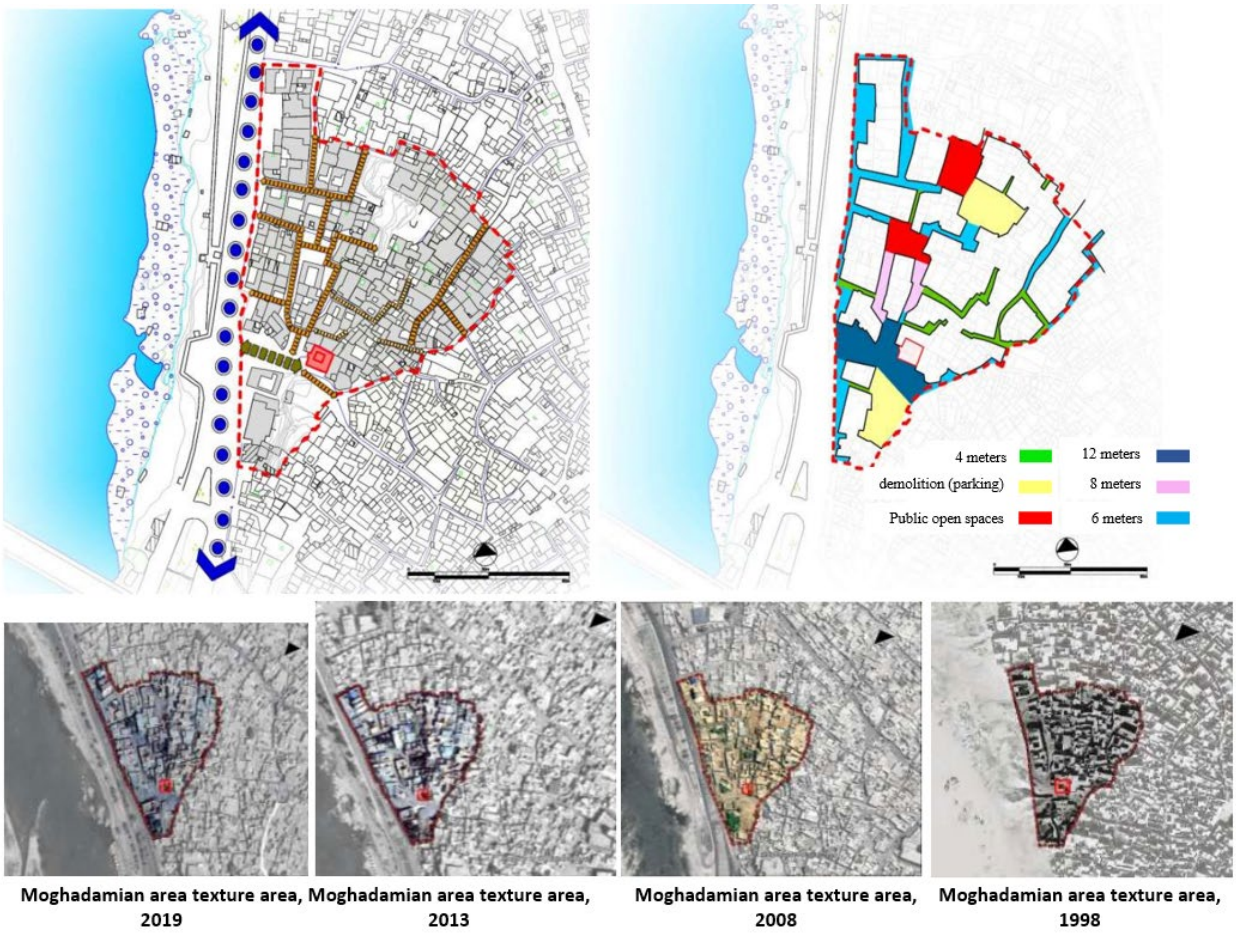


Figure 4. Access to Moghadamian neighborhood

The duration of residence is a suitable indicator to measure the interest and stability of the residents in the neighborhood. Also, this issue can show the willingness of residents to participate in improvement and renovation projects. However, what this index provides is more related to the category of tissue migration. The higher the number of newly settled residents, the greater the migration potential of the area. According to the results of the questionnaire, about 38% of the residents have been living in Baft for more than 20 years. Also, 44% of households have lived in the area for less than 10 years. About 90% of immigrants have entered Bafat in search of housing according to their financial ability Figure 5. People looking for work and families forced to migrate due to job transfer each make up 4% of immigrants.



Figure 5. A view of the historical houses of Moghadamian neighborhood.

Research Method

In terms of method, this research is based on the description and examination of the structures of houses in the Moghadamian neighborhood in Dezful City. On the other hand, data collection has been done through library and field methods such as questionnaires and interviews. From the point of view of genealogy, it is considered a survey and examines the conditions and relationships in the historical houses of the old neighborhood of Moghadamian. In fact, the

research method is mixed (qualitative and quantitative). The strategy of this research is induction, and it is actually a descriptive and in-depth research; Because the houses of the old neighborhood of Moghadamian in Dezful city have been studied deeply and widely. Its purpose is to study and understand all the variables related to the historical houses of the Moghadamian neighborhood in order to achieve the way of revitalization and compatibility with the approach of sustainable architecture. In this research, the researcher designed questionnaires for experts and restorers of traditional buildings. The purpose of using this method is to evaluate the information of these people about the methods used in the construction, restoration, intervention process, and revitalization of these buildings Figure 6. For this reason, the questionnaire was sent to the statistical community of experts in different stages. But due to the specificity of the subject and the inadequacy of the information obtained through the questionnaires, it was necessary to directly interview some people involved in the restoration of historical houses. The questions included the following:

1. What issues and problems do the historical houses of Moghadamian neighborhood in Moghadamian neighborhood face?

2. What components of the intervention can play the greatest role in the process of revitalizing the historical houses of the Moghadamian neighborhood?

3. What challenges and obstacles are there to reaching the appropriate use in the stage of the redevelopment of historical houses in the Moghadamian neighborhood? What are the appropriate strategies and criteria for the revival of historical houses in the Moghadamian neighborhood?

4. What kind of interference has been created in the historical houses of the Moghadamian neighborhood during construction?

5. What institutions or organizations should be involved in the process of revitalization and adaptation of the historical houses of the Moghadamian neighborhood that currently do not have a role in this process or their role is not properly defined?

6. How can we achieve a conceptual model of sustainable intervention in the revitalization and adaptation of historical houses in the Moghadamian neighborhood?

According to what has been said about the Delphi sample, there is a possibility of participants dropping out during the research; In this way, 63 people were selected from the beginning of the research, with the aim of remaining between 30 and 40 participants. The size of the participating population during the different stages of Delphi was as follows:

In the first questionnaire, the questions were asked in an open-ended manner and were given to 12 Delphi members, of which 7 were faculty members and 5 were cultural heritage experts.

In the second stage of Delphi, questionnaire questions were designed with 22 indicators based on the Likert spectrum, and 17 faculty members and 13 cultural heritage experts answered. The questions were analyzed with the Delphi technique

The questions of the third stage questionnaire were designed on the basis of the second stage questionnaire in the form of a Likert scale, and 15 faculty members and 13 cultural heritage experts answered. These questions were analyzed with the Delphi technique.

Based on the information obtained from library studies, questionnaires, and interviews, both qualitative and quantitative methods of analysis have been used simultaneously to review the data and information collected on the way to achieve the research goals. By using the interpretation of old pictures, historical maps of houses, and the use of qualitative content analysis, each of the sub-spaces that make up the historical neighborhood has been extracted and analyzed after separating them; The indexing of the indicators as well as the weighting of the sub-indices taken from the research questionnaire has been done using the multi-indicator decision-making model (AHP) method. The validity of this research is based on content validity. Usually, experts in the studied subject determine the content validity of a test. To increase the credibility of this research, a questionnaire was prepared, derived, and combined from two primary questionnaires. The validity of the research questionnaire has been checked by ten experts and is also based on the opinion of the supervisor. In this questionnaire, the reliability of the whole questionnaire is 0.878, which becomes 0.880 after standardization. Then, with the information obtained from the studies and their compatibility with each other, it is possible to reach the desired results regarding the presentation of a conceptual model for the revitalization and adaptation of the Moghadamian neighborhood with a sustainable architecture approach.

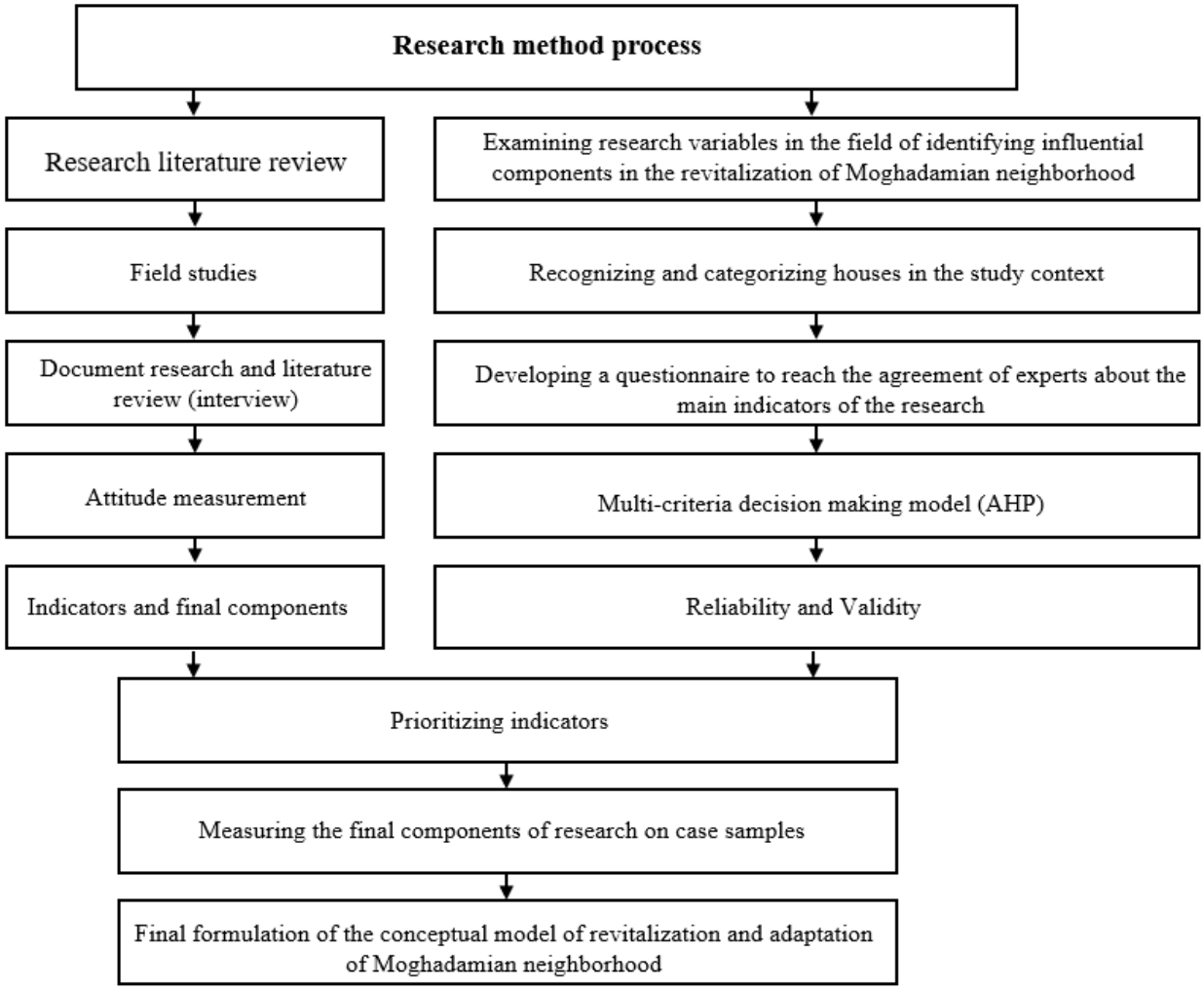


Figure 6. The process of the research method.

Research Findings

In order to evaluate the influential indicators in developing the conceptual model of intervention in the revitalization of historical houses, questionnaires were distributed and completed among cultural heritage experts. After completing and collecting these questionnaires, they were coded and entered into SPSS software. Data analysis was done based on frequency distribution tables, in this chapter attention is paid to the results of research data analysis. In addition to Delphi questionnaires, Analytical Hierarchy Process (AHP) model and CHOICE EXPERT software were used to check other relevant information, and the details and stages of the work were compiled and analyzed in the form of two research phases.

Analysis of the first phase of Delphi

The concepts extracted from the research literature and interviews were carried out in the preliminary stage with 12 experts in the field of restoration and an open questionnaire was provided to the experts. According to the review of the research literature and using the content analysis method, 101 codes were extracted to achieve the research indicators. The extracted codes are as described in the Table 2.

Table 2. Concepts extracted from the research literature and interviews of the preliminary stage about the revitalization and adaptation of Moghadamian neighborhood in Dezful city with sustainable architecture approach.

Basic coding				Conceptualization of primary code	Category
Quality of extensions	Quantity, how to implement	During the intervention, respect, material	Documenting evidence of distortion	Minimal intervention, Reversible, repeatable Maintaining maximum available materials Same original form and scale Skilled people, originality	Quality of intervention
Compliance	Amount of intervention	Physical conditions	Structure	Protection, historical effect, level of intervention	Limits of intervention
Integrity	Development	Body	Quality of the environment	Improvement, renovation, renovation, maintenance, keeping fit, concealed, prescriptive, overt	Methods of intervention
Heritage	Rules	Framework	Instructions	Pay attention to the rules	Legal rules and regulations in historical monuments
Economy	Project	Fund	Profitability	Financial facilities, government departments	Funding and cost resources
Cooperation	People's participation	Restoration	Point of view	Integrated management, increasing the sensitivity of officials to revitalization	Satisfaction and cooperation of owners, trustees and policy makers
Changes	Expanding and adding to the building	Construction	Space	Strengthening the sense of place, creating new spaces, additional components, stylistic reconstruction	Modernization
Consonance	Increase the life of the building	Changes	Granting a user	Degree of concordance of the building, proportionality	Adaptability and programmability
Original patterns	Cultural significance	Building capacity	Respect for texture	Preservation of physical values, form and appearance of the building, strengthening	Compatible user
Restoration	Destruction	Complication	Natural factors	Pathology, damaging factors	Documentary
Assimilation	Heat	Humidity	Light	Sound comfort, visual comfort	The quality of indoor spaces
Liming	Tiling	Miniature	Native materials	Removal, transfer, style, maintenance	Maintain home decorations
Economy	Prosperity	Opportunity	Tourists	Reviving and functionalizing houses, paying attention to cultural values,	Development of the tourism industry

				strengthening infrastructure	
Thermal comfort	Orientation of the building	Facility heating system	Climate of the region	Manufacturing techniques, skilled and expert people	Specialized implementation
Building height	Sustainability	Building load	Coordination with the structure	Geometry, proportionality of spatial dimensions	Physical features of Moghadamian neighborhood houses
Spatial complexity	Ease and accessibility	Between the greenhouse, Bineh, Chal Hoz	Quadrilateral plan, entrance	Micro space, programmability	Spatial situation of the sub-spaces of historical houses in Moghadamian neighborhood
Local employment	Economic activity	Resuscitation	Level of living	Performance injection, building activity, social solidarity	Social and economic development
Getting attention	Informing	Promotion	Education	People's participation, people's institution, cooperation in the project	Interest groups and local people
Adaptation	Debugging	Modernization	Protection	Methods of renovation, change, use	Methodology of revitalization and revitalization of houses
Health considerations	Specialized working group	Management	Push	Staging, intervention strategies	Development of management plan
Building upgrade	Amount of destruction	Repair	Shape of space	Partial renovation, regular renovation, complete renovation	Spatial intervention in houses
Cultural beliefs	Social structures	Culture	Historical identity	Recognizability of time and historical layers, preservation of historical identity, architectural and aesthetic values	Historical-cultural and functional values

Analysis of the second phase of Delphi

After conducting the interviews, a structured questionnaire was prepared in the preliminary stage to achieve the research objective. In the second stage of Delphi, after initial and back-and-forth reviews and changes made to the questionnaire, 22 indicators with items suggested by experts were provided to 30 Delphi members and they provided their quantitative and qualitative opinions. In this period, the purpose of the research was again reminded to the participants and they were asked to give their opinions only about determining the indicators, regardless of how the indicators are measured.

Analysis of the third phase of Delphi

After collecting the data in the third stage of the Delphi method, to find the level of experts' agreement with each index, the sum of the scores and their average were first used. In this course, in general, 22 qualitative indicators, 2 exclusion indicators, and 20 indicators related to priority

indicators have been used to develop a conceptual model of intervention in the revitalization of historical houses in the Moghadamian neighborhood Table 3.

Table 3. Statistical analysis of the Delphi table.

Category	Sub criterion	Average	Middle	Mode	Number of quality comments
Quality of intervention Limits of intervention Methods of intervention	The visibility of historical evidence in the interventions made in historical houses	3.57	3.00	3	2
	Preservation of existing materials and reversibility of interventions and additions in the revival of historical houses	3.14	2.00	2	0
	Maintaining the originality of the building with the same form and scale in historical houses	3.89	2.00	2	2
Legal rules and regulations in historical monuments Funding and cost resources Satisfaction and cooperation of owners, trustees and policy makers	Compliance with the permitted level of intervention in the body of historical houses	3.43	2.00	1	1
	Preservation of historical works according to the type of structure and physical and environmental conditions of historical houses	3.17	2.00	2	0
	Using the capacity of the building with minimal interventions	3.36	2.00	2	0
Modernization Adaptability and programmability Compatible user Documentary The quality of indoor spaces	Using the improvement method, especially in the physical field, to integrate and preserve the integrity of historical houses	3.54	2.00	2	1
	Renovating and preserving existing proportions in historical houses	3.18	3.00	3	2
	Using the reconstruction method to complete and achieve the destroyed parts of historical houses	3.23	3.00	3	0
	Considering the improvement of tremors in overt and hidden and prescriptive interventions in maintaining and maintaining the houses as a whole	2.35	2.00	2	0
	Using non-physical methods such as works of art to make the historical monument more readable for observers	3.25	2.00	1	2
Maintain home decorations Development of the tourism industry Specialized implementation	Considering the methods, framework and principles of appropriate intervention	3.18	2.00	2	1
	The requirement to implement the considered rules and regulations along with compliance with the rules and regulations of the intended use area in the houses	3.18	2.00	2	0
	Eliminating legal gaps and developing executive regulations in the field of revitalizing historical houses	3.64	2.00	1	0

Physical features of Moghadamian neighborhood houses The spatial situation of the sub-spaces of historical houses in Moghadamian neighborhood Social and economic development	Allocation of financial facilities from the government for revitalization projects of historical houses	3.68	2.00	1	2
	Driving and paying attention of the stakeholders to the profitability of investing in the revitalization of historical houses	3.31	2.00	1	0
	Attracting capital in television programs or holding side events to attract public and charitable donations	3.65	2.50	1	1
Interest groups and local people Methodology of revitalization and revitalization of houses Development of management plan	Increasing the sensitivity of the officials to wear and tear and possible and irreparable damage to historical houses	3.00	1.00	1	2
	Integrated urban management in the field of revitalization of historical houses among officials	3.54	2.00	1	0
	Pushing the owners to revive and use successful national and transnational experiences while avoiding any uninformed imitation.	3.36	2.00	1	0
Spatial intervention in houses category Quality of intervention	Creating new spaces in the revitalization process considering the role of strengthening the sense of place and preserving the urban identity of houses	3.43	2.00	2	1
	Reconstruction and creation of new space (expansion and addition) according to the climate of the region and the historical character of the houses	3.32	2.00	3	0
	The requirement to consider any possible future changes in the lifestyle of the residents of the historical context around the historical houses, the feasibility and feasibility of the revitalization plan	3.21	2.00	2	0
	The need to include all amenities and comfort for users	3.00	2.00	2	0
Limits of intervention Methods of intervention Legal rules and regulations in historical monuments	Coordinating the adaptation of the new function and its requirements with the body of historical houses	3.39	3.00	2	1
	The degree of coordination of the new function with the previous use of the building in the revival of traditional houses	3.27	2.00	1	0
	Coordination of new performance according to the needs of society and people	3.71	2.00	2	1
Funding and cost resources Satisfaction and cooperation of owners, trustees and policy makers	Preservation of physical values in revitalization and giving use to historical houses	3.72	2.00	1	2
	Fortification and preservation of authentic patterns in accordance with the form and appearance of historical houses	3.14	2.00	1	0

Modernization	Coordination of new components added to the house with old components	3.89	2.00	1	0
Adaptability and programmability Compatible user Documentary	Providing thermal and environmental stability and comfort for users in historic house spaces	3.13	2.00	1	2
	Matching the interior furniture of the house with the proposed use	3.56	1.00	1	0
	Enhancing the sense of place in the interior spaces of houses	3.18	2.00	1	0
The quality of indoor spaces Maintain home decorations Development of the tourism industry	The importance of knowing the natural and human factors effective in the erosion of houses and preventing the factors that damage the building	3.79	2.00	2	0
	Knowing the historical intervals of the houses to achieve a suitable restoration plan	3.14	2.00	2	0
	Showing the documents and historical periods of the work in the building site in a visual form, telling the stories of the events that happened in different places of the historical houses.	3.54	2.00	1	0
Specialized implementation Physical features of Moghadamian neighborhood houses The spatial situation of the sub-spaces of historical houses in Moghadamian neighborhood	Maintaining and preventing the removal and relocation of decorations related to the building according to the style used in historical houses	3.57	1.00	1	1
	Preserving the sanctity of works of art in historical houses by observing the hierarchy of valuation	3.81	1.00	1	0
	Restoration, redrawing and display of current and previous decorations of houses	3.71	2.00	1	0
Social and economic development Interest groups and local people Methodology of revitalization and revitalization of houses	Revival and functionalization of historical houses as an opportunity for prosperity and development due to the presence of tourists	3.89	1.50	1	2
	The need to strengthen political, economic and social infrastructures in order to attract more national and international tourists in the surrounding areas of historical houses.	3.76	1.50	1	0
	Attention to cultural values along with tourism development	3.23	1.00	1	0
Development of management plan	Using specialized working groups familiar with construction techniques to intervene in houses according to the climate of the region	3.57	1.00	1	0
Spatial intervention in houses category Quality of intervention	Updating the science and knowledge of restoration specialists involved in the restoration of historical houses	3.04	1.00	1	2
	Taking health considerations into account when renovating homes	1.25	2.00	1	1
	Preservation of existing structure and geometry in the body of historical houses	3.86	1.50	1	0

	Application of historical houses according to physical characteristics and spatial proportions	3.40	2.00	1	0
Limits of intervention Methods of intervention Legal rules and regulations in historical monuments	Identifying and redefining the sub-spaces of traditional houses based on revitalization and programmability capabilities	3.89	1.00	1	1
	Investigation and analysis of the architecture used in the small spaces of historical houses	3.96	1.00	1	0
	The influence of small space dimensions in granting the use of houses	3.86	1.00	1	0
Funding and cost resources Satisfaction and cooperation of owners, trustees and policy makers Modernization	Raising the standard of living of the residents with economic activities through the restoration and revitalization of historical houses	3.71	2.00	2	0
	Creation of local employment centers, prosperity of handicrafts through the revival of historical houses; This development should not come at the cost of losing the residents' previous abilities	3.84	1.00	1	0
	Employing local forces for the self-sufficiency of residents by creating job opportunities	3.92	2.00	2	0
Adaptability and programmability Compatible user Documentary	Attracting the opinions of stakeholders, including officials and people of the region, and the possibility of people's participation in revitalizing houses	3.52	2.00	1	0
	Education and public awareness in the field of revitalization of traditional houses	3.71	2.00	1	1
	Attention to the effective position of people's approach in revitalization projects	3.86	2.00	2	0
The quality of indoor spaces Maintain home decorations	Considering practical methods in the reconstruction of historical houses	2.25	2.00	1	2
	Developing operational strategies for revitalizing houses	1.82	2.00	1	0
Development of the tourism industry Specialized implementation	Prioritizing different stages of restoration in the revival of historical houses	3.82	1.50	1	0
	Pushing the custodian organization towards continuous supervision in the restoration process of historical houses	3.86	2.00	2	0
Physical features of Moghadamian neighborhood houses The spatial situation of the sub-spaces of historical houses in Moghadamian neighborhood Social and economic development	Adhering to proportionality in the amount of admission of visitors in the interior of historical houses	2.68	2.00	2	2
	Repairing and preventing destruction and improving the existing condition of historical houses in different stages of restoration	2.88	1.00	1	0
	Coordination in the color of the materials in the interior of the houses	2.50	1.00	1	0

Interest groups and local people	Preserving the architectural and aesthetic values of historical houses in any interventions aimed at revitalization	3.64	2.00	2	1
	Recognizability of the temporal and historical layers of the work in the intervention process aimed at revitalizing the house	3.43	2.00	1	0
	The requirement to preserve the originality and integrity in the process of revitalizing historical houses	3.68	1.50	1	0

The foundations considered for this part of the research are to select the main indicators and the final sub-criteria of AHP, the importance of the main indicators and sub-indices of the research relative to each other in the decision-making process, to develop a conceptual model of intervention in the revitalization of historical houses, is considered as a comparison. In this section, the 20 indicators identified in the third stage of Delphi have been summarized and organized into 11 groups according to the items suggested by the experts for each indicator Table 4. For a pairwise comparison, 18 faculty members and 14 cultural heritage experts have been used. It is important to mention that for better communication of experts, equivalent expressions of each index are mentioned in parentheses and in front of it for pairwise comparison. Definitions of specialized words are needed to enter data into Expert Choice software and perform pairwise comparisons. Using the introduced specialized equations, modeling will be done in the software below. In the table below, an image of the process model is presented.

Table 4. Objectives and indicators of input to Expert Choice software.

Term in Expert Choice	**Main objective**	**Row**
Revival of historical houses in Moghadamian neighborhood	Revitalization and adaptation of houses in the historical neighborhood of Moghadamian in Dezful city with a sustainable architecture approach	1
The term in Expert Choice	Indicator	Row
Criteria 1	Considering the methods, framework and principles of appropriate intervention	1
Criteria 2	Identification and obligation to preserve the authenticity and integrity of the sub-spaces of historical houses in the process of intervention	2
Criteria 3	Attention to the legal laws and executive requirements approved at the national level	3
Criteria 4	Intervention aimed at attracting investors	4
Criteria 5	Intervention with the participation and application of local people's opinions and votes	5
Criteria 6	Staging building restoration operations for optimal management and specialized restoration	6
Criteria 7	Optimization and application of historical houses according to the characteristics of the structure of the work	7
Criteria 8	Preservation of historical values related to the building	8
Criteria 9	Development of the region due to intervention	9
Criteria 10	Intervention aimed at developing the tourism industry	10
Criteria 11	Compatible user according to previous performance	11

Then, consistency in judgments and stability coefficient as well as the final weight of each criterion have been calculated by entering the information of the pairwise comparison table into the Expert Choice software. The factor weight table is given in detail in the third step. The available options are measured according to the double standard. This work has been done in the first stage by using the questionnaire and the opinion of experts. After collecting the questionnaires, the statistical inference of the data was formed and entered into the software, and the results of the final matrix for comparing the indicators and the calculated compatibility rate are shown in Table 5.

Table 5. Pairwise comparison of the main research indicators in the model made in Expert Choice software.

Criteria	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 5	Criteria 6	Criteria 7	Criteria 8	Criteria 9	Criteria 10	Criteria 11
Criteria 1	1	-2	2	8	4	5	2	-3	5	5	4
Criteria 2	-2	1	8	8	6	8	5	1	8	8	7
Criteria 3	2	8	1	7	3	2	5	-4	5	7	5
Criteria 4	8	8	7	1	1	1	-3	-7	2	7	-3
Criteria 5	4	6	3	1	1	1	-2	-4	1	2	-3
Criteria 6	5	8	2	1	1	1	2	-4	3	3	-3
Criteria 7	2	5	5	-3	-2	2	1	-4	3	6	2
Criteria 8	-3	1	-4	-7	-4	-4	-4	1	8	9	8
Criteria 9	5	8	5	2	1	3	3	8	1	2	-3
Criteria 10	5	8	7	7	2	3	6	9	2	1	-4
Criteria 11	4	7	5	-3	-3	-3	2	8	-3	-4	1

Compatibility rate = 0.09

According to the pairwise comparison, the research of ranking and weighting of its main indicators is as follows:

The term in Expert Choice software is “Shakhese”.

Examining the results of pairwise comparison of the main indicators of the research

1. Considering the appropriate methods, framework, and principles of intervention
2. Identification and obligation to preserve the authenticity and integrity of the sub-spaces of historical houses in the process of intervention;
3. Attention to legal laws and executive requirements approved at the national level;
4. Intervening with the participation and application of local people's opinions and votes;
5. Intervention with the aim of attracting investors;
6. Staging building restoration operations for optimal management and specialized implementation;
7. Applying historical houses according to their physical characteristics;

8. Preservation of historical values related to the building;
9. Development of the region due to intervention;
10. Intervention aimed at developing the tourism industry;
11. Compatible user according to previous performance.

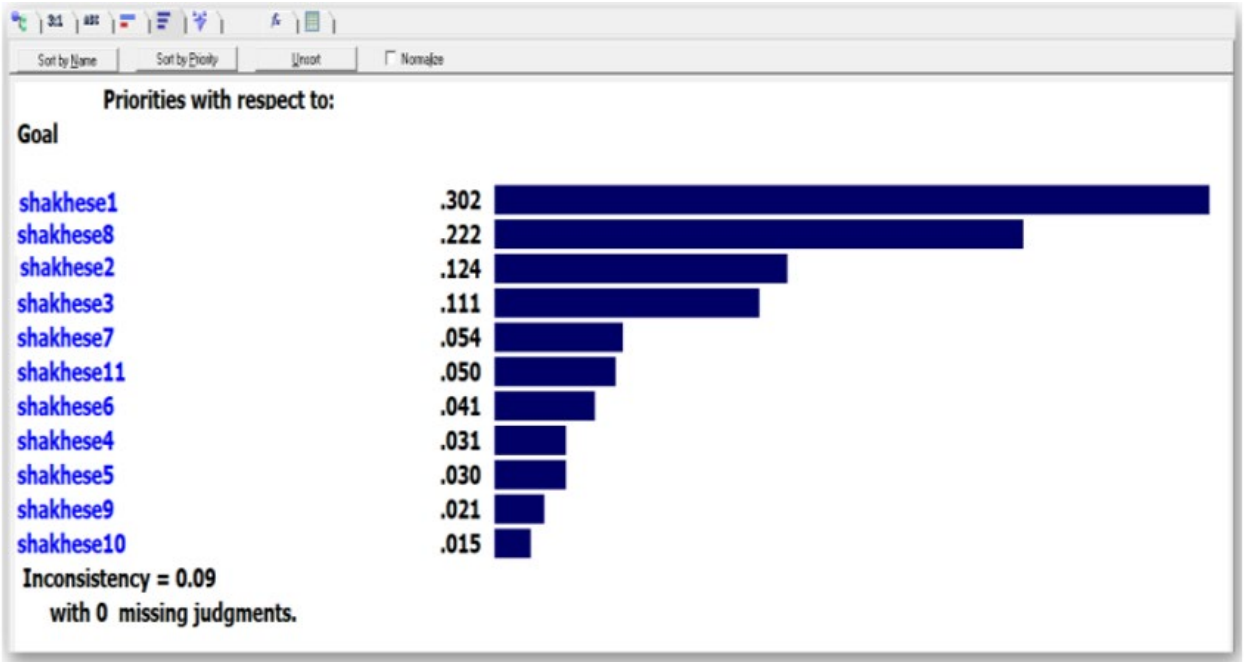


Figure 7. Calculated weights for the main criteria using the hierarchical analysis method.

As it is clear from the results of the hierarchical analysis, index number 2 (paying attention to the importance of recognizing the effect and investigating the spatial condition of the small spaces of historical houses in the intervention phase) has the highest rank with a weight of 0.302, index number 8 (preserving historical values related to the building)) with a weight of 0.222 have the second rank and indicator number 10 (intervention aimed at developing the tourism industry) with a weight of 0.015 is ranked the lowest compared to other indicators. is 0, which is acceptable in terms of numerical standards Figure 7.

Historical houses have always played a role in the formation and consolidation of an important part of social subcultures. Such influence has been accompanied by highs and lows in various periods. Historical houses, due to having a deep connection with the native beliefs and culture of the people, have formed interconnected sets of behaviors and customs. Historical houses are made up of small spaces such as a vestibule, kitchen, hall, and Shahneshin.

This system of formation of small spaces reveals the importance of preserving and stabilizing them in the process of restoration and revitalization of historical houses. Identifying and redefining small spaces through their analysis and documentation as well as coordinating the

restoration plan with the concept and function of small spaces the requirements of the master plan for the restoration of a historical house are from the pathological point of view, not knowing the function of small spaces can lead to the loss of a part of the conceptual and functional organ of the historical house. It is possible to preserve the small space from the process of revitalizing a historical house in several ways:

• Physical preservation without playing a role in the new use in such a way that it reflects its original function.

• The use of small space in the new activity process and showing the primary function through images, tools, etc.

• Maintaining the body without playing a role in the new activity process and strengthening the perception of the basic function for the later users of the building through the display of images of tools and...

• Identifying and requiring the preservation of small spaces as the most important influencing factor identified in the process of revitalizing a historical house requires documentation of all stages and technical recording of actions from the recognition stage to direct intervention in the work.

In houses, the body, as that which expresses and represents the ideas of construction and function in architecture, is an objective entity that includes the volume of the building, structure, materials, and shape characteristics; But the conceptual and semantic part has less objective capability and is perceptual. The spirit and heaviness of the house have meaning in the interior spaces and in the exterior space. At the stage of granting new functions with changes, openings, lights, etc., it becomes difficult to understand and feel the semantic part of old houses. In order to transfer and strengthen this aspect of old houses, it is recommended to leave all the decorations, tools, and signs of the previous building in their place in the new function. Although the awkward connections are in the form of the new function, these few signs are necessary to remember what the predecessors have created. In the meantime, decorations play a special role. Tiling, plastering, brickwork, and limestone are the result of the combination of brick, plaster, and soil; A combination that is perfected only in the context of Iranian architecture. Although in the process of losing the main parts of Iranian houses, few original decorations have been left, those few also deserve to be kept in their original place without any recommendation to add them for the purpose of completing them or embellishing them to attract the attention of the next users of historical houses. be fixed and not completed.

Conclusion

Reviving and giving new life to historical houses in the city bed can lead to the formation of a pattern of supporting cultural heritage from an economic-social point of view and bring economic

vitality to the cultural and social fabric of the society. The specific architecture of houses - due to their special function - is much more complicated than other historical buildings, and this has caused the creation of special spaces in them, by examining and analyzing these spaces and understanding the relationships between them, it is possible to revive and give appropriate use to historical houses. did it in the best possible way. The upcoming research will identify the effective criteria and options for intervention and revitalization of historical houses as the best option for the protection of historical houses.

Based on the table, the measures taken in both historical houses have been evaluated with eleven indicators and thirty-three sub-criteria. For example, other influential sub-criteria, such as earthquake improvement, did not have a place in the restoration intervention process of both houses. Vibration improvement is one of the most complex modern techniques for the stabilization of historical buildings, which is associated with many difficulties in terms of implementation in historical buildings and in practice has led to many interventions in the building and will sacrifice the originality of the stability. Collapsed buildings under restoration are perhaps the best opportunity to implement some vibration improvement in the building. This has not been done in both houses investigated. Identifying and redefining sub-spaces as the first sub-criterion in the most important index from the perspective of the evaluated expert community shows the importance of sub-spaces and perhaps it is more important than the main spaces such as Sarbineh, Hashti, and Miander as index components of old houses; But in the intervention process of Yaqoubieh House, the small spaces have been changed or removed in the first stage of the implementation process. This matter has been accompanied by more caution in Aghanaghi's house. Another profound difference between the opinions of the expert community and what has been achieved in practice in the intervention process of Yaqoubieh House has been the influence of the last indicator on the policy of intervention in the house. The development of the tourism industry as the eleventh indicator, in practice, has become one of the most important indicators, or in other words, the ultimate goal in the revival of Yaqoubieh House. This incident reveals the gap between the view of the specialized community and the policymakers and investors regarding the revitalization of historical buildings; A gap that is not limited to historical houses and practically includes all buildings subject to revitalization. In the historical houses of the Moghadamian neighborhood, the choice of a new function, although it did not conform to the original function of the building, has established a limited activity with the minimum requirement for change in the building.

Author Contributions

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

Data Availability Statement

Not applicable.

Acknowledgements

The authors would like to thank all participants of the present study.

Ethical considerations

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

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of interest

The authors declare no conflict of interest.

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