



# Harmonizing Human Needs and Sustainability in Islamic Architecture: A Case Study of Zenab Khatoun House

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## Abstract

This study examines the fundamental components of Islamic architecture in an effort to find correlations between these components and ecological harmony and human well-being. Islamic architecture not only concentrates the potential of wind and soil, but also places a strong emphasis on social sustainability, community participation, and social cohesion. It acts as community centers that foster a sense of belonging and identity. With its adaptability and longevity, this study emphasizes the integration of human needs and environmental stewardship within Islamic architectural design, drawing on historical precedents and analyzing Zainab Khatun's house as a case study. It looks at the way space is organized, the materials used, and the construction methods used in Islamic architecture to find principles that support sustainability. An awareness of sustainability in Islamic architecture and its significance for fully satisfying human needs. The research has significance for architects, urban planners, decision-makers, and researchers who support sustainable design strategies that put people and the environment first while also considering cultural and historical contexts. In the end, the research aims to suggest original and useful methods for architects and urban planners. and create a foundation for Islamic architecture that balances sustainability with human needs. This study aims to stimulate the development of a more considerate and environmentally friendly built environment that promotes the wellbeing of people and communities.

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Keywords: Islamic Architecture, Sustainability, Human Needs, Contemporary Dwelling.

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## 1. INTRODUCTION

Sustainability is an important concept in contemporary architecture, addressing the need to balance environmental, social, and economic considerations for the well-being of current and future generations. Islamic architecture, with its rich historical and cultural significance, offers valuable insights and principles that can contribute to sustainable design practices. The intersection of sustainability with Islamic architecture is explored, with a particular focus on how principles of Islamic architecture can align with human needs in sustainable design.

Understanding human needs is central to designing sustainable environments that enhance the well-being of individuals and communities. By examining the relationship between Islamic architecture and human needs, this research aims to identify ways in which Islamic architecture can contribute to sustainable design solutions that prioritize social, cultural, and environmental aspects.

The research will use an interdisciplinary approach, drawing from Islamic studies, environmental sciences, and social sciences. It will include an analysis of Zeinab Khatoun's dwelling as an example of Islamic architecture and its sustainable characteristics, and an investigation of contemporary sustainable design practices inspired by Islamic principles.

In short, this research aims to explore the relationship between sustainability, Islamic architecture, and human needs. By investigating the principles and practices of Islamic architecture in the context of sustainable design, we seek to contribute to the development of more holistic and culturally responsive approaches to architecture that address the pressing challenges of our time.

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1.1. Research Objective:

The objective of research to explore how architectural principles and design in Islamic tradition can address human needs while promoting environmentally friendly and sustainable practices. It aims to find ways to create built environments that align with Islamic values and principles of stewardship, resource conservation, and community well-being. By investigating this topic, researchers seek to develop architectural solutions that are both culturally relevant and ecologically responsible.

1.2. Research Aim:

The research aims to know the relationship between sustainability and human needs in Islamic architecture and the compatibility between the principles of Islamic architecture and sustainable practices, considering the social, cultural, and economic aspects related to human needs.

**The study specifically aims to:**

- Analysis of the basic principles of Islamic architecture and its relationship to sustainability. This includes exploring concepts such as harmony and balance and incorporating nature into architectural design.
- Studying the sustainable design strategies used in the Islamic dwelling and determining the possibility of their potential applications in contemporary practice. Including examination of traditional building materials, passive design techniques, and efficient use of resources.
- Evaluation of the impact of sustainable Islamic architecture on human needs. and examining how sustainable design can enhance comfort, enhance social interaction, and contribute to a healthier environment.

1.3. Methodology:

The study of sustainability analysis in Islamic architecture and human needs requires an approach that combines the principles of Islamic architecture, environmental design, and social sciences. The following is a suggested methodology for conducting such a study (see Fig. 1):

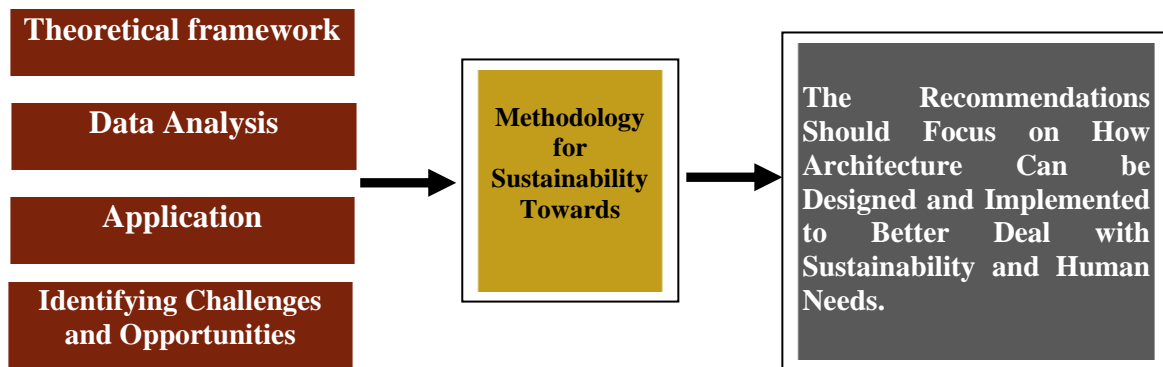


Fig. 1. Research Methodology and Steps of Study. (Author).

**Theoretical framework:** Developing a theoretical framework that integrates concepts of Islamic architecture, sustainability, and human needs. Where Islamic architectural principles that promote sustainability and consider different human needs such as cultural, social, and environmental factors are recognized.

**Application: First:** Choose a case study related to Islamic architecture, which is the dwelling of Zainab Khatoun.

**Second:** Data collection Determine the appropriate methods for data collection. This may include a mixture of quantitative and qualitative methods. Possible methods include interviews with visitors, residents, and staff, site observations, surveys, and document analysis.

**Data Analysis:** Analyzing the data collected using appropriate techniques. For qualitative data, a thematic analysis is performed to identify recurrent themes and patterns. For quantitative data, use statistical methods to draw conclusions.

- Case studies in terms of the attributes of sustainability and how they meet human needs. Evaluate the effectiveness of different strategies and interventions.

**Identifying Challenges and Opportunities:** Identifying the challenges facing integrating the principles of sustainability in Islamic architecture while addressing human needs. Highlight opportunities for improvement and suggest strategies to overcome these challenges.

**Recommendations:** Based on the findings, we make recommendations to architects, urban planners, policymakers, and other stakeholders. These recommendations should focus on how architecture can be designed and implemented to better deal with sustainability and human needs.

## 2. LITERATURE REVIEW

In a study entitled “Traditional Islamic Dwelling (Ottoman Dwelling) Architecture, in Old Fatimid Cairo and Rosetta Cities, Egypt - An Example of Sustainable Architecture”, emphasizing the influence of Islamic housing design and its architectural elements on the traditional Islamic context (natural and cultural environments), the study highlighted the importance of Islamic house design and low technology in house design and construction, which can be a sustainable and advanced architectural form of high technology in the future. In a comparative study of the Islamic dwellings, five dwellings were selected from the ancient Fatimid city of Cairo and six from the city of Rosetta [1].

In the study “Effect of Day-lighting Strategies on Thermal Performance in Historical Buildings”, Emphasizes the importance of studying the nature of the surroundings, the climate, the economic situation, and compatibility with the environment, which leads to saving electric energy consumption, and among the means of energy saving is relying on daylight in residential buildings as a main source and artificial lighting used to integrate with daylight, and that Historic Cairo is one of Distinguished cities that contain a set of environmental and climatic solutions, making their urban and architectural fabric capable of interacting efficiently with the local climate and the environment. [2].

In the research, the concept of alienation and its aspects were clarified, and how architecture became alienated. This research studied the contradictions and alienation of architecture, the construction according to human needs, and the humanization of architecture. The reconfiguration of engineering according to the concept of reconfiguration, as German architecture respected the human dimensions and the interaction between the social environment, values, and principles, requires an explanation of the implementation of meeting human needs through architecture [3].

In the research entitled "The Impact of Human Values on Islamic Architecture", which is related to the impact of human values on architecture and urbanism, an emphasis on the value of privacy and neighborhood rights, especially among the prevailing human values in the public. And that the dwelling in the architecture of Mesopotamia and Greek architecture uses the courtyard, which allows an openness to the interior instead of the exterior, which increases privacy. And that coexistence in an urban and architectural environment that does not respect privacy and the right of neighborliness leads to the gradual extinction of these values with the passage of time in society, which negatively affects the architectural product to become unsuitable for society. [4].

“The Sustainability Principals of Traditional Architecture in Islamic”, This research aims to study the possibility of sustainability in traditional architecture in the Emirates, and to study environmental solutions in the traditional dwelling from the point of view of sustainability. The research confirms that Islam contains many indicators of sustainability and environmental preservation and is integrated with the social values and human behavior of the Muslim community. This view is embodied at various levels both in the city's planning and in the architectural design that was shaped by the beliefs and actions of the population who embraced Islam as a way of life with social [5].

Spike Omar emphasized two concepts that form the nucleus of the conceptual framework for sustainability in Islamic architecture. 1) Islamic (sustainable) architecture and coexistence with the environment, 2) the concepts of human and environmental compatibility. The research aims to raise awareness of the importance of the issue of sustainability in Islamic architecture, by presenting the paper with some general principles and ideas around which sustainability revolves in Islamic architecture, in line with the needs of users in different circumstances, environments, and cultures, as Islamic architecture is always sustainable in function. In all its dimensions: physical, mental, and spiritual, it aims to preserve the human being [6].

## 3. HUMAN ARCHITECTURE

The primitive man has begun to develop his dwelling and progressed from caves to stacked stones, then to design a dwelling made of tree branches and straw, and then build a clay dwelling. The history of architecture cannot be separated from the history of human evolution, the evolution of his thought and awareness, so the architecture is the story of humans because it records the civilizational evolution of humans and their skills in using stones and forming clay with regular geometric forms, metal tools making, and then the building design that he builds, which will be a safe and comfortable place, and develop it in the future to be more comfortable and secure.

Gordon Graham (Director of the Centre for Scottish Philosophy Studies in the UK) says: “A building that is merely decorative and built with the sole purpose of admiration and enjoyment, may thus be closer to the sculpture) [7].

Admiration and pleasure are not useful objects, so is architecture like other arts just for pleasure? It's rare to build a building just for fun. This case is about humans and their needs. This issue concerns human needs in fact, not a philosophical one.

John Ruskin was an English writer, philosopher, and art critic, He made detailed sketches and paintings of rocks, plants, landscapes, architectural structures, and ornamentation [8]. In all, John Ruskin emphasizes his belief that we can live without architecture as well as we can worship without it, but we cannot remember without architecture. Ruskin's developing interest in architecture led to his first work, the Seven Lamps of Architecture (1849). According to Ruskin's book, the architect's design must be immortal and durable (Fig. 2).

Society must build its buildings with precision, care, and beauty to survive for a long time and serve as the living architectural record for future generations. This view includes the importance of the historical dimension in architectural work and refers to two realities. Seeing history through architecture and the second that architectural proposals contain characteristics that qualify them to be immortal (historical). writing, he emphasized the connections between nature, art, and society [9].

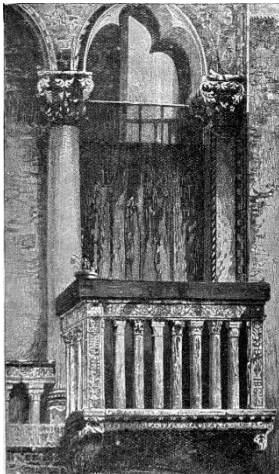


Fig. 2. Balcony in the Campo St Benedetto, Venice Building on the built This extract from John Ruskin's <https://archive.org/details/1920sevenlamps00ruskuoft> The Seven Lamps of Architecture (1880) [10].

Le Corbusier, the great pioneer of Modernism in architecture, has created impressive buildings all over the world. His architecture is the elaborate play of perspective blocks under the light. He believed that architecture was working to achieve human comfort. Le Corbusier succeeded in turning a building into an expressionist function by transforming it from a technical to an architectural system to meet human needs (Fig. 3) [11].



Fig .3. The Pavillon Le Corbusier 1967 (<https://arquitecturaviva.com>)

Le Corbusier, Villa Savoye, Poissy, France, 1929 (photo: Renato Saboya, CC BY-NC-SA 2.0)

- Le Corbusier used rooftop gardens for comfort and to take off more privacy.
- The columns were used to raise the level of construction above ground level.
- "The use of rock, wood, and concrete to build buildings and palaces, this is creation and creativity at work, but also when construction affects the heart and makes people enjoy, this is architecture [12]"

As for Mies Van Der Rohe architecture must be born from the dynamic forces of human civilization, and the essence of civilization is not simple. It belongs to both the past and the present and the future and it is difficult to recognize and define it.

The architect, Mies Van Der Rohe, had his own philosophy of understanding architecture and the architectural design process, he crystallized this philosophy in his words and concepts. He said, "Architecture is a poem with iron and glass," and he has a famous verse, which is "less is more" This phrase represents the idea of creating something so beautiful it cannot be further reduced, which explains his style of design (Fig. 4) [13].



(a)



(b)

Fig. 4. (a) The Seagram Building Park Avenue, New York City, 1954-58 (b) Barcelona Pavilion 1986  
(<https://www.architecturaldigest.com>)

The urban designer aims to meet the living, psychological and spiritual needs of the human being. His design of urban spaces is based on the study of the different human needs for the space to become successful and appropriate for human behaviors.

#### 4. REASONS FOR CHOOSING THE CASE STUDY

The Dwelling of Zaynab Khatun is an interesting case study to examine the harmony of human needs and sustainability in Islamic architecture because of its architectural value and historical relevance. Several factors led to the selection of this case study:

- **Architectural Legacy:** The Dwelling of Zaynab Khatun is recognized for its distinctive architectural elements and style, making it an excellent example of the inventiveness and adaptation of Islamic architecture.
- **Cultural Importance:** This home has cultural significance within the neighborhood and is a representation of the ideals and way of life at the period, demonstrating how human needs were met through sustainable design.
- **Well-documented History:** The Dwelling of Zaynab Khatun has extensive historical documents and architectural documentation, which offer a wealth of data for a thorough examination and comprehension of its sustainable design components.
- **Architectural Legacy:** The Dwelling of Zaynab Khatun is recognized for its distinctive architectural elements and design, serving as an excellent example of the inventiveness and adaptation of Islamic construction.
- **Cultural Importance:** This home has cultural significance within the neighborhood and is a representation of the ideals and way of life at the period, demonstrating how human needs were met through sustainable design.
- **Well-documented History:** Rich historical archives and architectural documentation concerning the Zaynab Khatun residence offer a wealth of data for a thorough examination and comprehension of its sustainable design components.

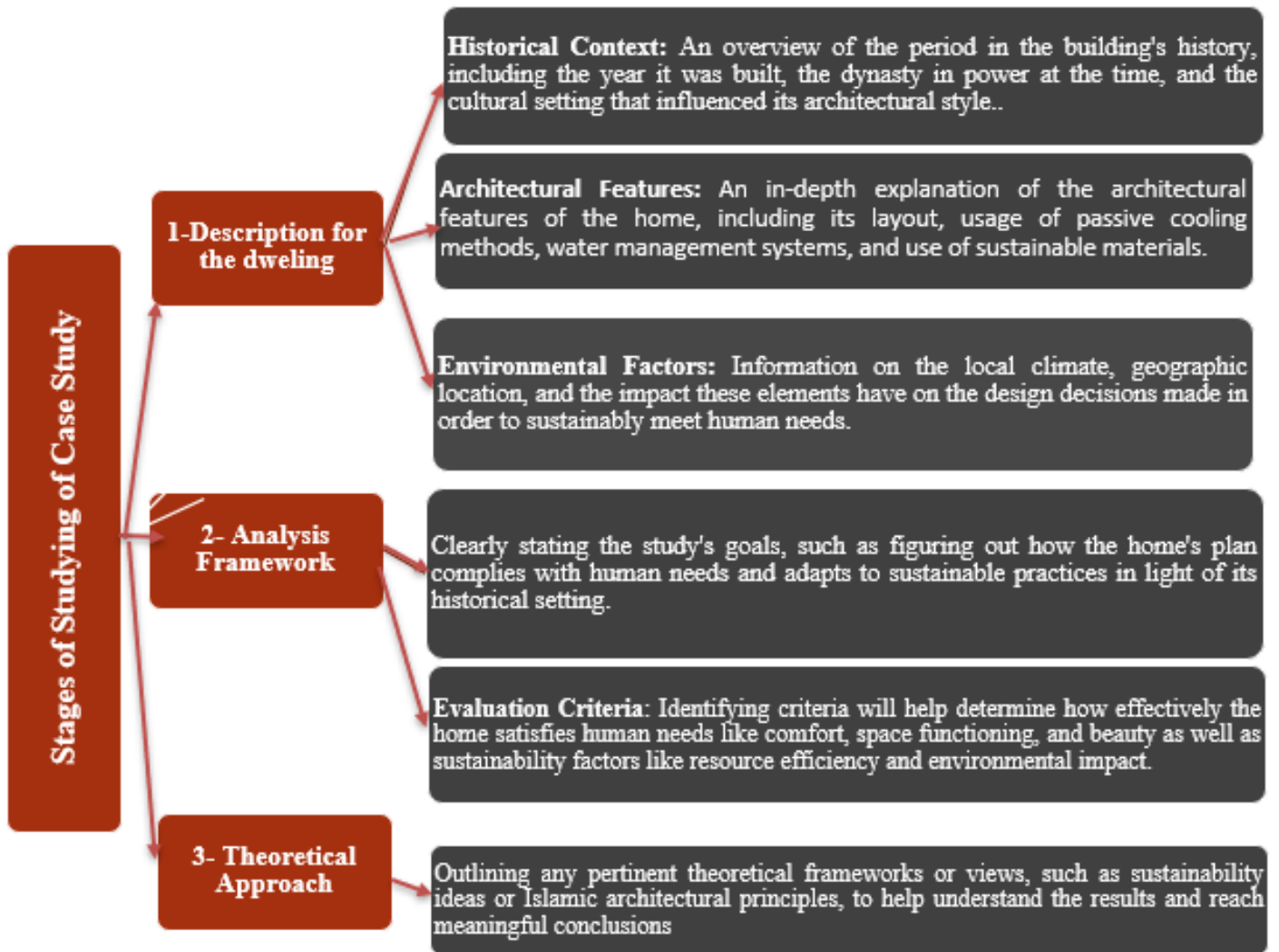


Fig5. Stages of Studying of Case Study [ Author]

## 5. CASE STUDY: THE DWELLING OF ZAYNAB KHATUN

The front yard of Zainab Khatoun's dwelling has been transformed into an Egyptian café. Where the café was designed compatible with the character of the beautiful surroundings to serve beautiful Egyptian drinks and listen to beautiful national songs.

Zainab Khatoun's dwelling and the area are characterized by the Islamic character, and the area contains a group of Mamluk and Ottoman mosques and the most famous mosques in the world such as Al-Azhar Mosque and Al-Hussein Mosque. And Khan El Khalili, an old market located near the dwelling. It includes many wonderful souvenirs [14].

### 5.1. The Aim of Choosing the Dwelling of Zaynab Khatun:

The dwelling of "Zainab Khatun" is a unique example of Islamic architecture in the Mamluk era. The dwelling of Zeinab Khatun was constructed in 1468, with later 1713 additions. It is in Old Cairo, near Al-Azhar Mosque. The dwelling was renovated in 1996, and the renovation work included strengthening the structural walls and waterproofing the ceilings [15].

### 5.2. The Location:

Zainab Khatoun's dwelling is located behind Al-Azhar Mosque in Cairo. It was built by Princess Shakra Hanim, who is the granddaughter of Sultan Al-Nasir Hassan bin Qalawun in 1486, and it is a model of Mamluk architecture until 1517 when the Ottomans entered Egypt. Zainab Khatun's husband, who is the wife of Prince Sharif Hamza al-Kharboutli, bought the dwelling and named it after her. The entrance was designed so that the

guest could not see who was inside the "broken entrance". After the entrance, we find the "dwelling court", which helps in the access of light and air to all parts of the dwelling [16].

The old dwelling is located dwelling behind the Al-Azhar Mosque in Cairo. Amidst a wonderful group of Islamic monuments, including, (see Fig.6).

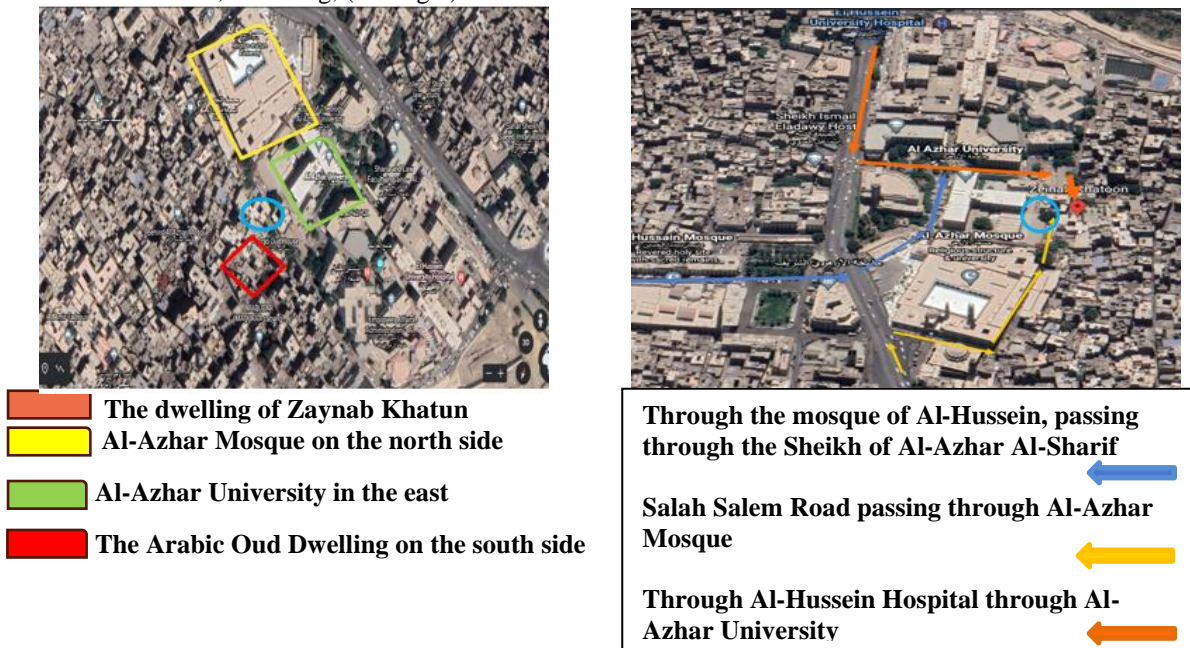


Fig.6. A map showing the location of the dwelling, and access roads.

5.3. Architectural Components of Zeinab Khatoun Dwelling.

It consists of two floors, ground, first, second, and roof. The second floor contains the main hall. The ground floor was built entirely of clean-cut stones, while the upper floors were built of bricks, and consisted of three sections, the "Duraqa" with two unequal Ewans on each side at a higher level. In the center is an octagonal mosaic fountain. The dwelling has been repurposed as a cultural center where various cultural events are held [17].

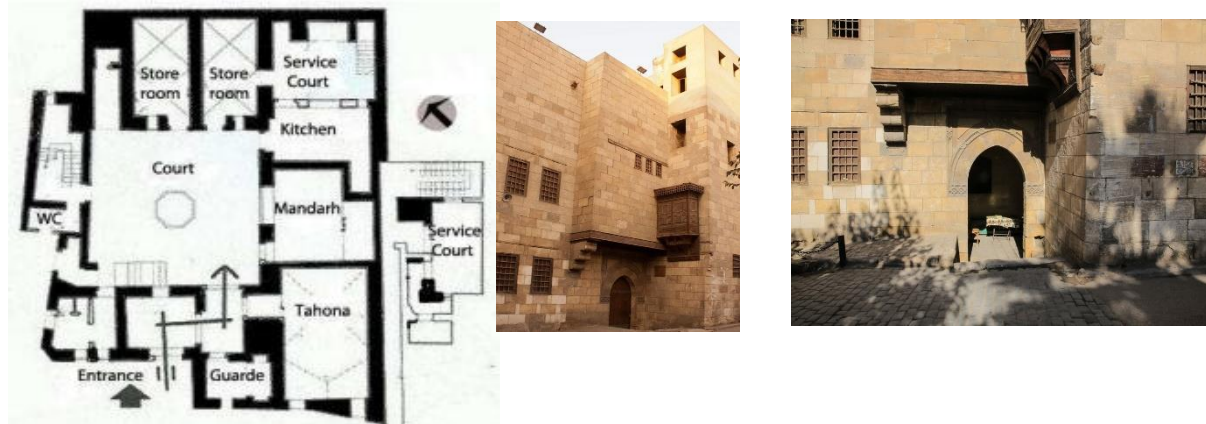


Fig.7. Ground floor Plan for Zaynab Khatun, and The Main Entrance of the Dwelling [15].

5.3.1. Ground floor components:

The first floor of Zainab Khatun's dwelling is used to receive guests, and it contains a place for purebred Arabian horses. It also contains such important rooms as the mill and the kitchen, as well as a place for spoiling crops used to make bread [18] (Fig.7).

- **The Entrance:** The dwelling entrance is designed so that the guest cannot see who is inside, which is what was called in Islamic architecture the "broken entrance", which is what was called in Islamic architecture (almdkhal almunkaser).
- **Mandarh Room (Salamlek)** For men, the "Salamlek" is adjacent to it at the northern end of the same side by a door leading to the stairs leading to the upper floor (Fig.8).

- **The Courtyard:** A large courtyard surrounds the four corners of the dwelling, which is what has been termed in Islamic architecture as the “dwelling court” The aim of designing the dwelling in this way is to ensure that light and air reach the facades of the dwelling and the rooms it contains [19].
- **El Tahona:** To the right of the entrance is a room where grain is ground.
- **Horse Stable:** It is usual for the stable to be attached to the dwelling and not within the boundaries of the dwelling.



Fig.8. North Elevation of the Internal Courtyard, Mandarh Room, and Horse Stable.

5.3.2. *First -floor components:*

- **Main Hall:** A rectangular void covered by a wooden ceiling decorated with squares and a hall whose floor was covered with colored marble on the north and south, two Ewans whose floor was covered with tiles of contemporary stone, and in the north several walls’ cupboards with wooden shelves, and on the left a door leading to a staircase descending from it to the court of the dwelling. The great hall overlooks the court with a Mashrabiya of Geometric wood (Fig.9) [8,19].
- **Summer Maqaed:** A rectangular space overlooking the court with a pediment with two vaults in the middle of which is a marble column. Several cupboards on the walls with wooden shutters.
- **Small Hall (Harmlek):** It is a rectangle, and next to it are two small Ewans that overlook the court with wooden Mashrabiya topped with windows of stucco and stained glass.

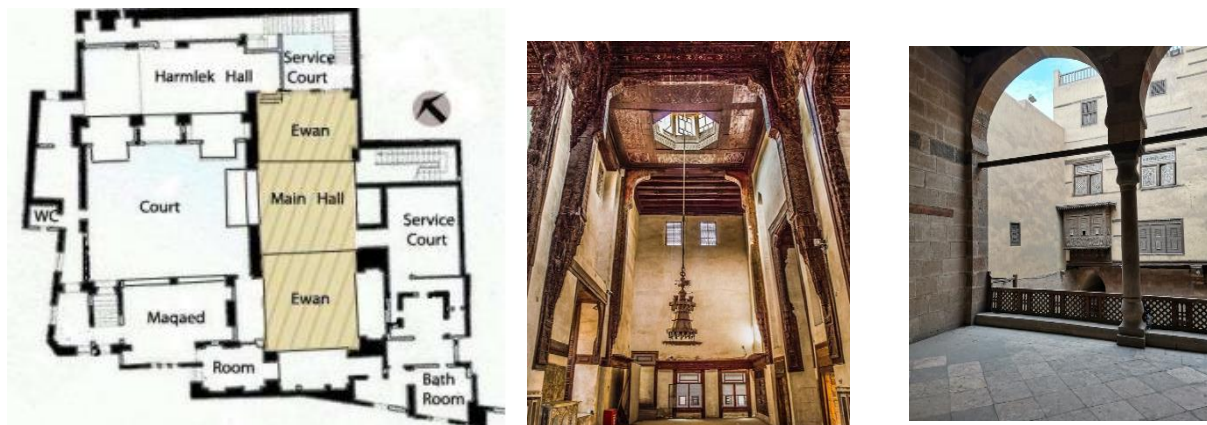


Fig.9. First Floor Plan of Zaynab Khatun’s Dwelling, Main Hall External View, A picture from inside the Summer Maqaed [15].

5.3.3. *The Roof Floor:*

It includes two Shokhshekha above the large hall, the small hall, and the birthing room, which is the corner for childbirth. On the left side of the room, there is a door that leads to “Sandala”, and it includes an upper bed in which the woman used to stay after giving birth [8,20].

**6. ISLAMIC ARCHITECTURE AND SUSTAINABILITY**

In Islamic architecture, the idea of sustainability is not new, as it formed a framework for adapting to the environment, biodiversity, and communication with the surrounding nature (Fig. 10) [21].



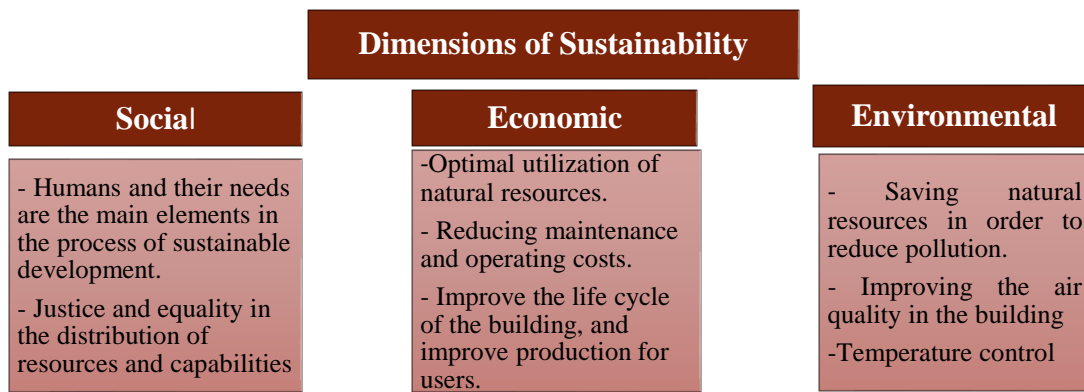


Fig. 10. The Dimensions of Sustainability [Author].

The idea of sustainability in Islamic architecture includes meeting human, social, and economic needs that achieve linking to man and his environment; Environmental diversity and values of benefit to humanity as a spiritual essence and material resources, which are applied in both urban space design and home design [22].

The design of the dwelling is sustainable architecture, in terms of the unique design and organization of the dwelling that meets ethical and social principles, and religious traditions. And the elements of architectural design, the inner courtyard, the Mashrabiya, the windbreak, and the Shokhshekha achieve human comfort and reduce energy consumption.

6.1. The Sustainability in Islamic Dwelling:

There are many basic principles on which the architecture of traditional housing was based, which can, with some modification and development, be indicative of the design of contemporary sustainable housing:

6.1.1. Integration with the Natural Environment:

Islamic architecture seeks harmony with the natural surroundings. Buildings are designed to blend with the surroundings and landscape, using locally available materials. This integration results in reducing the environmental footprint of the structures and enhancing their sustainability [22,23].

6.1.2. Use of Local and Sustainable Materials:

Islamic architecture favors the use of sustainable and locally sourced materials.

**-Building with mud or bricks:**

The materials surrounding the occupants of the building are very important to protect from external conditions and great care must be taken in choosing them so that this is commensurate with their physical properties in terms of thermal conductivity, thermal resistance, thermal transmittance, and light reflectivity. It is also responsible for determining the time for heat transfer to and from the building.

Mud or brick is the best natural building material, as it can provide thermal insulation for the building, and helps to reduce vital natural resources and carbon emissions. It is used in the construction of load-bearing walls, as shoulders, and in the construction of vaults, when it is built with a large thickness, it helps to provide good thermal insulation for the internal spaces of the building [24].

6.1.3. Environmental Dimension:

**Achieving thermal comfort:** Daylight is an essential element in achieving energy efficiency, as studies and scientific research have emphasized the importance of natural light in human life and its biological and physiological impact in terms of feeling spaces. A tank for drinking water is available in most dwellings of Islamic architecture (Table 1) [25].

TABLE 1: CONSTRUCTION SYSTEM & BUILDING MATERIALS OF ZAYNAB KHATUN.

The Dwelling	Construction System & Building Materials					The Dwelling Elements					
	Construction System		Building Materials			Courtyard/ Upper terrace		Mashrabiya		Wind Catchers	
	Bearing Walls	Other System	Stone	Mud Brick	Wood Ceiling	yes	No	yes	No	yes	No
The Islamic Dwelling in Old Fatimid Cairo City	X		X		X	X		X		X	

**1- Thermal comfort:**

The design thought of the traditional dwelling was based on the use of the central courtyard as a central point to achieve the principle of orientation towards the interior, and it served as the main lung and outlet for the dwelling, as it acts as a thermoregulator taking advantage of the great fluctuation between temperatures between day and night, and the formation of varying pressure places between the narrow shaded streets and the courtyard open medial.

In general, the inner courtyard was often mediated by a fountain or Salsabil, and it was furnished with fruit trees. Together, these elements moisturize and reduce their temperature [25,32].

Some modifications have been made to the concept of the courtyard to ensure airflow, including:

Ewans: designed to contain a measure of shade throughout the day, the Ewan opens to the entire courtyard, and the dwellings include two Ewans, one summer facing the north, and the other winter facing the south.

Al-Takhtbush: It is a room completely open to the courtyard, its floor rises from the courtyard, and it was special for receiving guests in the summer.

El Maqaed: It is often located on top of Takhtbush, its façade is carried on pillars and overlooks the courtyard. It is exposed to the least number of hours of sun exposure with the least possible amount of solar energy compared to other façades.

**2- Natural Ventilation:**

One of the most important principles of sustainable design in the Islamic dwelling is to provide natural ventilation, as natural ventilation works to cool the human body, the rate of heat transfer from the body to the surrounding environment increases with the increase in air velocity, which helps to get rid of moisture and cool the building.

Windbreaks (Shokhshekha): are one of the most important distinctive elements in Islamic architecture, as it is a means of catching the wind and introducing it into the spaces of the dwelling. They are also useful for reducing wind-borne sand and dust in hot and dry regions, as they accumulate at the bottom of the vent (Fig. 11) [25, 27].

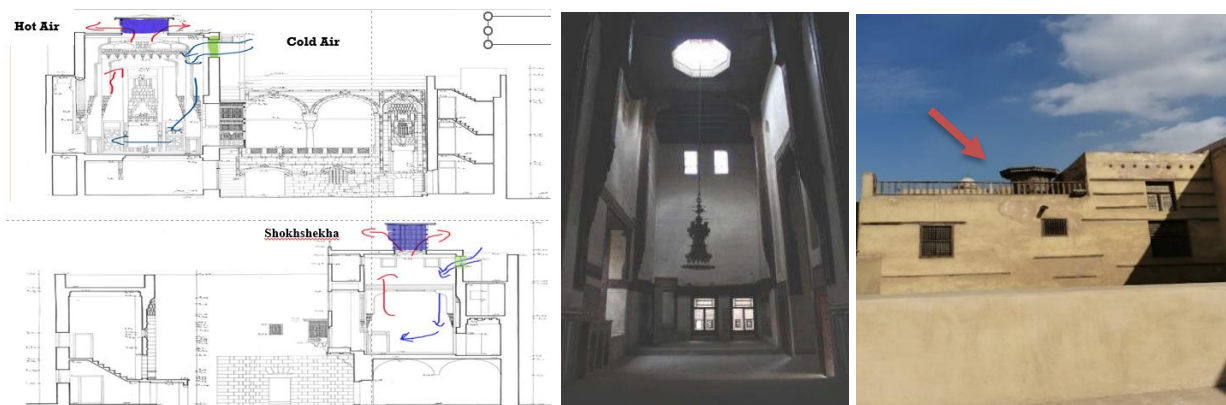


Fig.11. Zaynab Khatun - Main Hall's Shokhshekha .

**3-Natural lighting:**

Natural lighting is one of the most important human needs in housing, and the sustainable housing strategy relies on natural lighting to reduce the heat burden, and thus provide a comfortable environment for the population. It was found that natural lighting from windows is three times better at improving vision than equivalent artificial lighting.

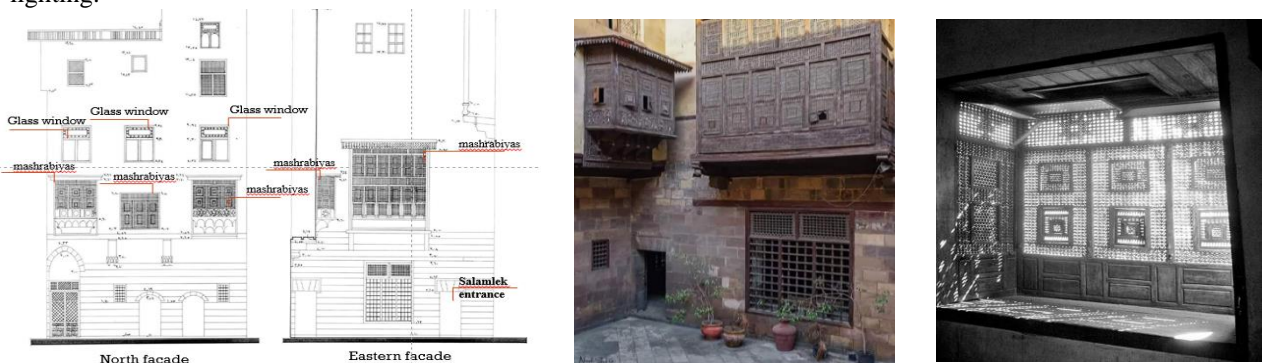


Fig.12. Zaynab Khatun's dwelling façade, Main Hall Mashrabeya [16].

The windows are a major source of heat penetration into the building, as Islamic architecture has developed innovative ways to obtain natural lighting and expel direct sunlight, the most important of which are the Mashrabiyas, which are architectural treatments that allow the entry of calming winds, and do not allow direct sunlight to enter, the Mashrabiyas adjust the passage of light and airflow, It covers the outer surface of windows and balconies ( Fig.12)[25].

## 7. HUMAN NEEDS AND SUSTAINABILITY IN THE THOUGHT OF THE HUMAN MIND:

Achieving human needs in architecture or making architecture capable of making people happy. It must be provided to humans; In this field, a large number of thinkers, researchers, and authors divide needs and trace their source to the sociologist Abraham Maslow, who developed the basic hierarchy of human needs, starting with basic physiological needs, which is the need for water and food, the need to achieve privacy for users, the need for security and safety, The need for belonging, which includes interrelationships between people and achieving social status, then amounts to the need for aesthetics and self-realization(Fig.13) [27].

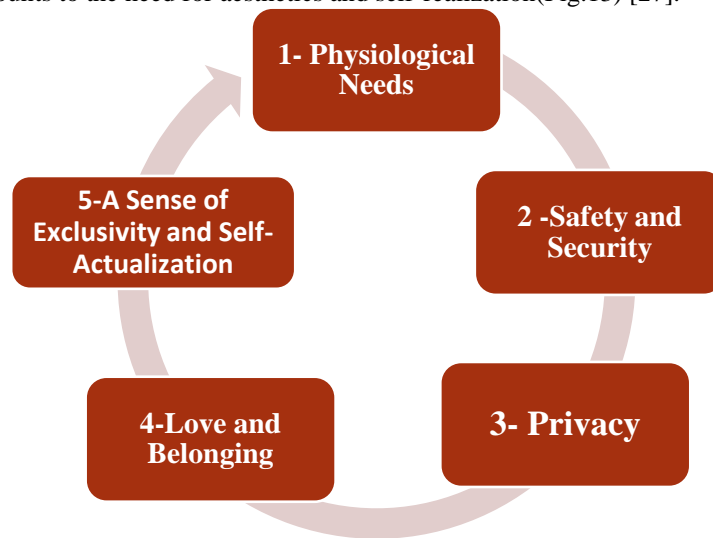


Fig.13. The Following Chart Shows the Five Basic Human Needs [Author].

### 7.1. Physiological Needs

Food, water, clothing, sleep, and shelter are the bare necessities for anyone's survival [28].

### 7.2. Safety and Security

Once a person's basic needs are satisfied, the want for order and predictability sets in.

**1-Architectural Harmony Around Zeinab Khatun Dwelling:** The architectural harmony with the prevailing Islamic thought achieved by this building is evident through its harmony with the neighboring buildings. In terms of height, consistency, building materials, colors, and their local sources, as well as in terms of the coherent architectural fabric in the same neighborhood, which leads to achieving comprehensive harmony with the urban surroundings (Fig.14) [29].



Fig.14. The Street has a Harmonious Character and Texture.

7.3. Privacy

Privacy is a person's ability to control the social interaction between himself and others, and it is important to humans. There are a group of functions that a person cannot perform unless there is privacy, such as vital functions (rest - thinking - meditation - innovation) [29].

**1- The Recessed Entrance:** The recessed entrance helps provide shelter that gives protection from weather factors. Also, the entrance is depressed which helps in maintaining privacy.

The locations of the door openings are chosen in a way that preserves the sanctity of the home and achieves the utmost privacy. Since the entrance represents the first space in the design of the dwelling and leads to the rest of the elements of the dwelling, the need arose to place Organized relations of the entrances' relationship with the rest of the elements of the dwelling and its relationship with the outside of the dwelling so that it does not lead to encroachment in view of the internal space of the dwelling. The relationship of the dwelling with the street It is not permissible in any situation to open the door of the dwelling in front of another door [24].



Fig.15. The Recessed Entrance [24].

**2- Openings and windows:** When regulating the relationship of adjacent dwellings in Islamic architecture and designing windows in the façades to obtain light and ventilation, Islamic architecture paid attention to regulating the heights of windows to ensure that the privacy of the dwelling is not hurt, whether from passers-by outside or from dwellings adjacent to each other. The basis here is not to build external openings that lead to hurting the privacy of the neighbor, and this is reflected in the external appearance of the openings, so it was covered in the form of external Mashrabiyas, to achieve external visual privacy from passers-by as well as with raising the level of the window session to achieve the required privacy (Fig.16) [5,31].

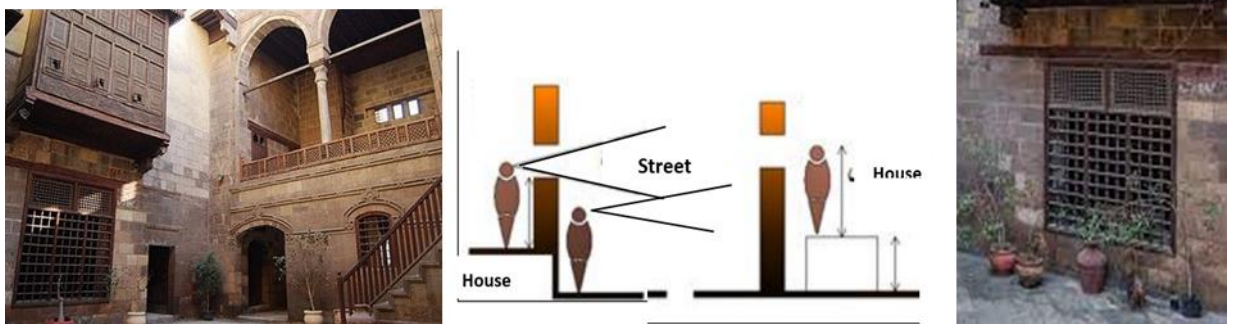


Fig.16. Ground Window is Significant for Dominance. Mashrabiya Made of Carved Wood, Provides Privacy and Good Ventilation.

**3- Courtyard:** The dwelling contains a courtyard that the rooms of the dwelling overlook in a special way so that visitors cannot see the residents of the dwelling, and these windows are covered with Mashrabiyas to achieve privacy for humans, The inner courtyard is an architectural element not to infringe on your privacy and the privacy of the neighbor(TABLE 2), (Fig.17.18) [2,31].

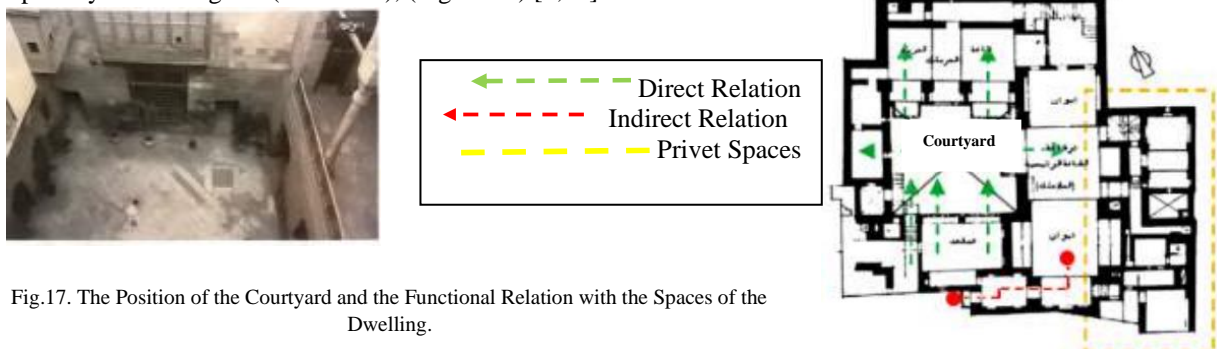


Fig.17. The Position of the Courtyard and the Functional Relation with the Spaces of the Dwelling.

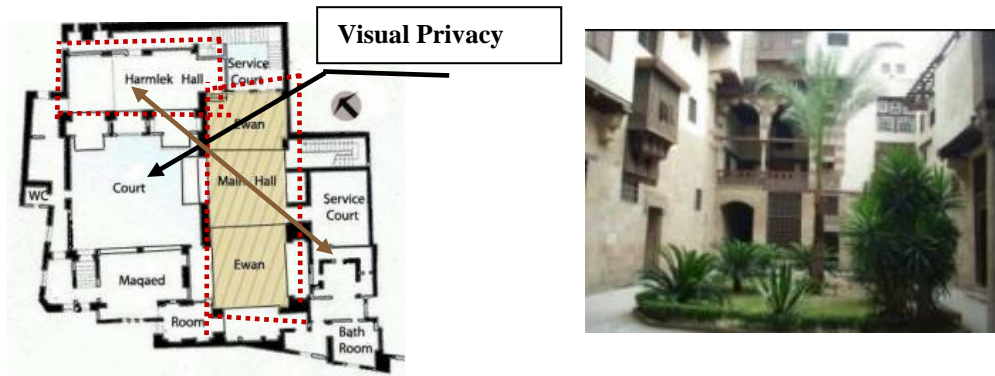
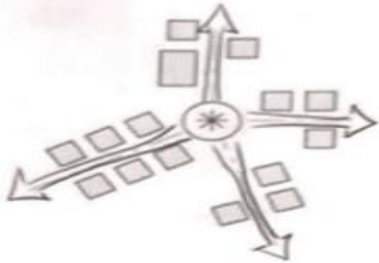
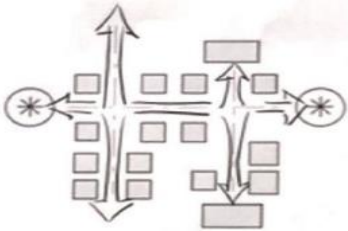

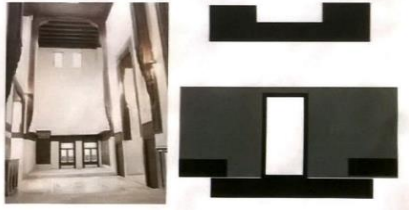


Fig.18. Achieving Visual Privacy and Separating the Salamlik and the Haramlik by Placing the Courtyard Between Them.

TABLE 2: THE CIRCULATION BETWEEN THE DWELLING SPACES.

Circulation	
Horizontal	Vertical
<p><b>Radial:</b></p> <p>Radial circulation creates importance to the central area which was the courtyard of the dwelling.</p>  <p><b>Liner:</b></p> <p>Haramlek and Salamlek have linear and parallel paths between and inside them.</p> 	<p><b>Stairs:</b></p> <p>U-shaped stairs were built to give a pathway to the second floor.</p>  <p><b>L-SHAPED</b>      <b>U-SHAPED</b></p> <p><b>Space Leveling:</b></p> <p>Leveling in Haramlek ground.</p> 

**4- The Hierarchy of Spaces and their Relationship to the Dwelling:** Hierarchy of spaces A sequence in which there are four types of spaces found in the "traditional Islamic dwelling", (private-semi-private-semi-public-

public), is one of the main characteristics of the dwelling concept and to achieve privacy and security, And comfort in terms of noise, in the project (Fig19) [30,32].



Fig.19. Achieving The Hierarchy of Spaces [26].

#### 7.4. Love and Belonging

One of the humans needs to be met is to reach a successful architectural design both humanly and architecturally. The sense of belonging is the only guarantee for the progress and development of society, the maintenance and preservation of the place and its public property, and even the defense and even self-sacrifice if necessary. For the individual to feel belonging, he must feel happy in the place in which he is and in harmony with his environment, as the human sense of security in his environment is an effective factor in building society. social and enhance it, as it strives to engage with the environment surrounding it [2,23,33].

Good natural lighting in the dwelling leads to providing the appropriate atmosphere for dialogue and intimacy. The designer was able to provide lighting through internal views, as well as by manipulating the types of lighting using Mashrabiyas, wooden covers, Shokhshekha, and balconies overlooking the courtyard. Thus, the design of the dwelling constitutes independent communication and dialogue that calls for reassurance and a sense of security (Fig.20,21).

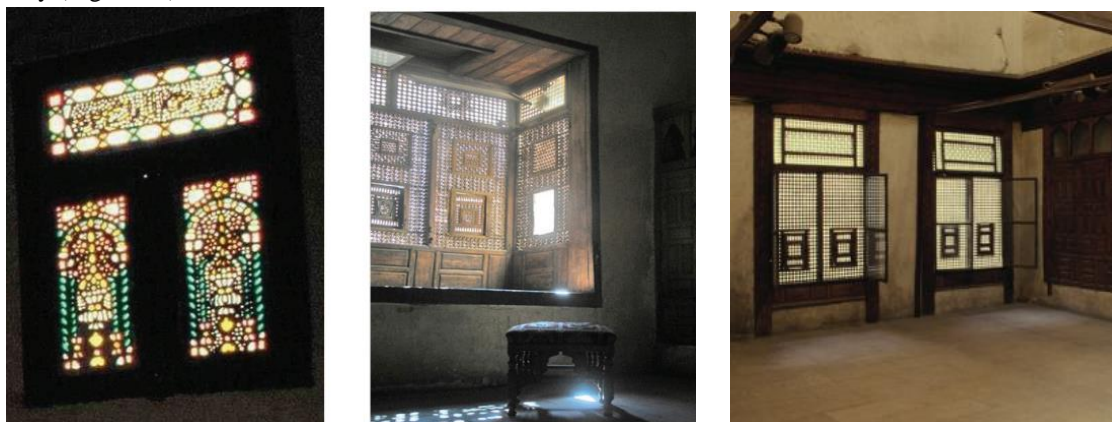


Fig. 20. Achieve Calm and Relaxation by Manipulating Light and Shadows.



Fig.21. The Aesthetic Dimension is One of the Dimensions Achieved by the Dwelling.

### 7.5. A Sense of Exclusivity and Self-Actualization

It is represented in the user's sense of the quality of life in the area in which he lives through several studies that were carried out in the field of human perception of the quality of life in the region. Pollution, cost of residence, occupancy rates, visual aesthetic values, employment opportunities and income levels, local climate, distance to work, availability of gathering spaces, and urban spaces in the region that achieve a high level of awareness of the sense of the quality of life and self-fulfillment by providing suitable activities for users. Therefore, we find that urban spaces are considered a factor influencing the human sense of quality of life [ 23,34].

## 8. SURVEY

A questionnaire was conducted to verify the sustainability of Islamic housing and to meet human needs. A questionnaire was prepared to consist of a set of questions. The questionnaire was conducted on a random sample of 50 individuals from different age groups, including residents, workers, visitors, and occupants. The purpose of the questionnaire was to collect information and ideas regarding the following aspects (Fig.22,23):

First basic information such as age, gender, and occupation are collected, and the participants' understanding and awareness of sustainability in the context of Islamic housing is assessed. Their knowledge of sustainable design principles, environmental considerations, and resource use are explored. They are also inquired about the specific needs and requirements of individuals in relation to their housing, from physical comfort, social interactions, cultural practices, ventilation, privacy, and public spaces. They measure their level of satisfaction with their current housing in terms of meeting their needs and promoting sustainability. Do they wish to live in a model like the Islamic dwelling? They were asked to identify suggestions and recommendations on how to improve sustainability in housing and to express their preferences for specific sustainable features or design elements.

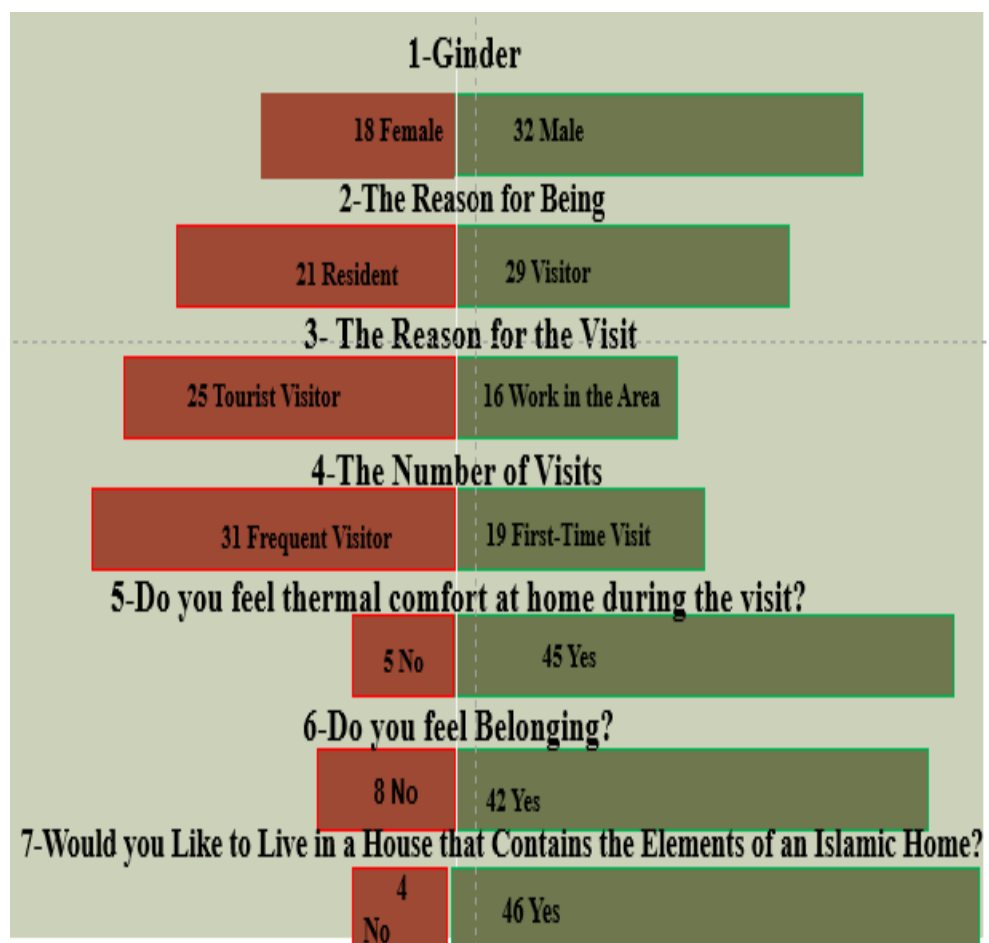


Fig.22.This chart shows the percentage of responses to the survey questions [ Author].

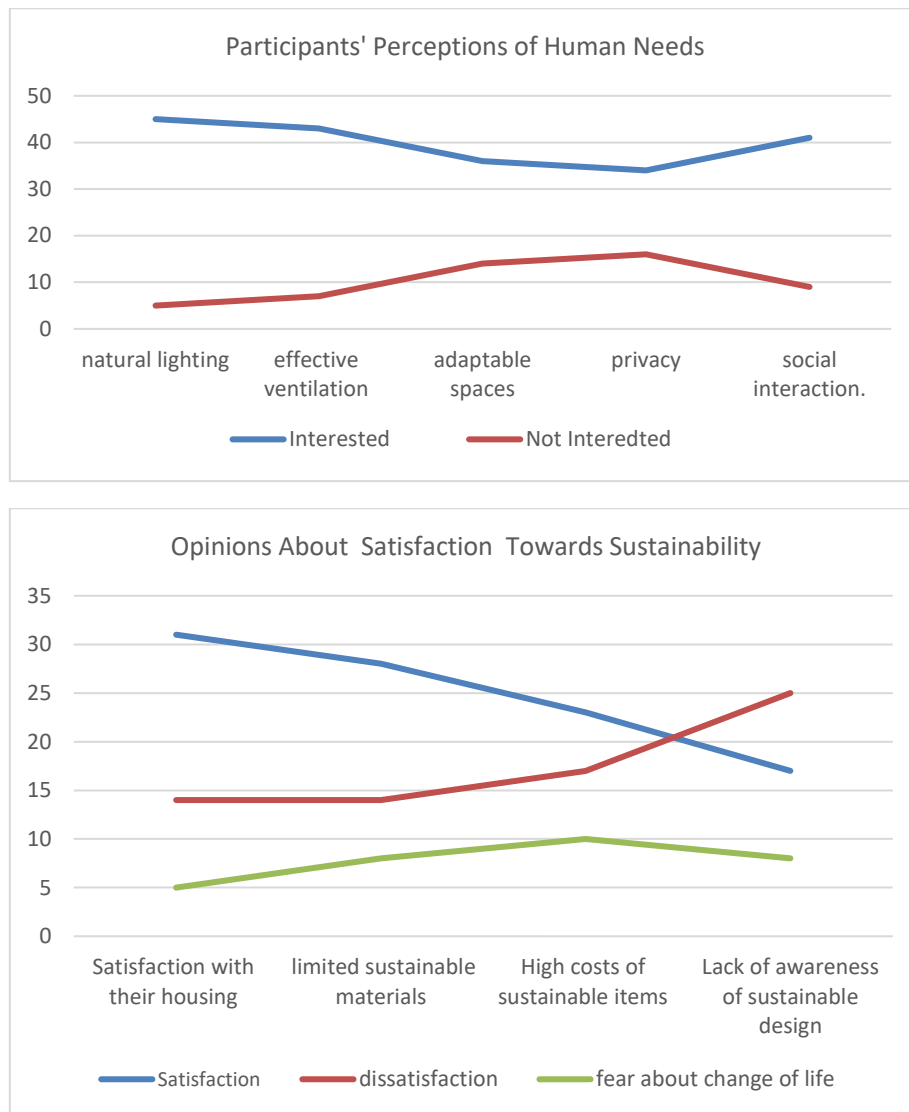


Fig. 23. Samples of survey results [Author]

### 8.1. Survey results

The results of the questionnaire provide insights into the participants' perceptions and preferences regarding sustainable design in Islamic housing (Fig. 23).

- Sustainability awareness: (80%) of the respondents understood and understood sustainability in the context of Islamic housing. They understand the importance of environmental compatibility, resource use, and social considerations in achieving sustainable home design.
- When asked about their needs and preferences in the Islamic dwelling, (90%) of the participants expressed their main priorities as adequate natural lighting, (86%) effective ventilation systems, (72%) flexible and adaptable spaces, and (68%) privacy. In addition, open spaces for gathering and social interaction. (82%).
- (62%) of the participants showed satisfaction with their housing in relation to sustainability and meeting their human needs, while 28% indicated dissatisfaction. The main challenges they faced were limited sustainable materials (56%), high costs of sustainable items (46%), and lack of awareness of sustainable design (34%).
- suggestions of the participants to enhance the sustainability of the dwelling. The first is promoting awareness and education about sustainable design principles (72%), stimulating the use of environmentally friendly materials (64%), and integrating traditional design elements with modern sustainable technologies (58%). They also emphasized the importance of community participation in decision-making processes related to housing design (68%).



## 9. SUGGESTED SOLUTIONS TO DESIGN SUSTAINABLE DEWILLING THAT MEETS HUMAN NEEDS

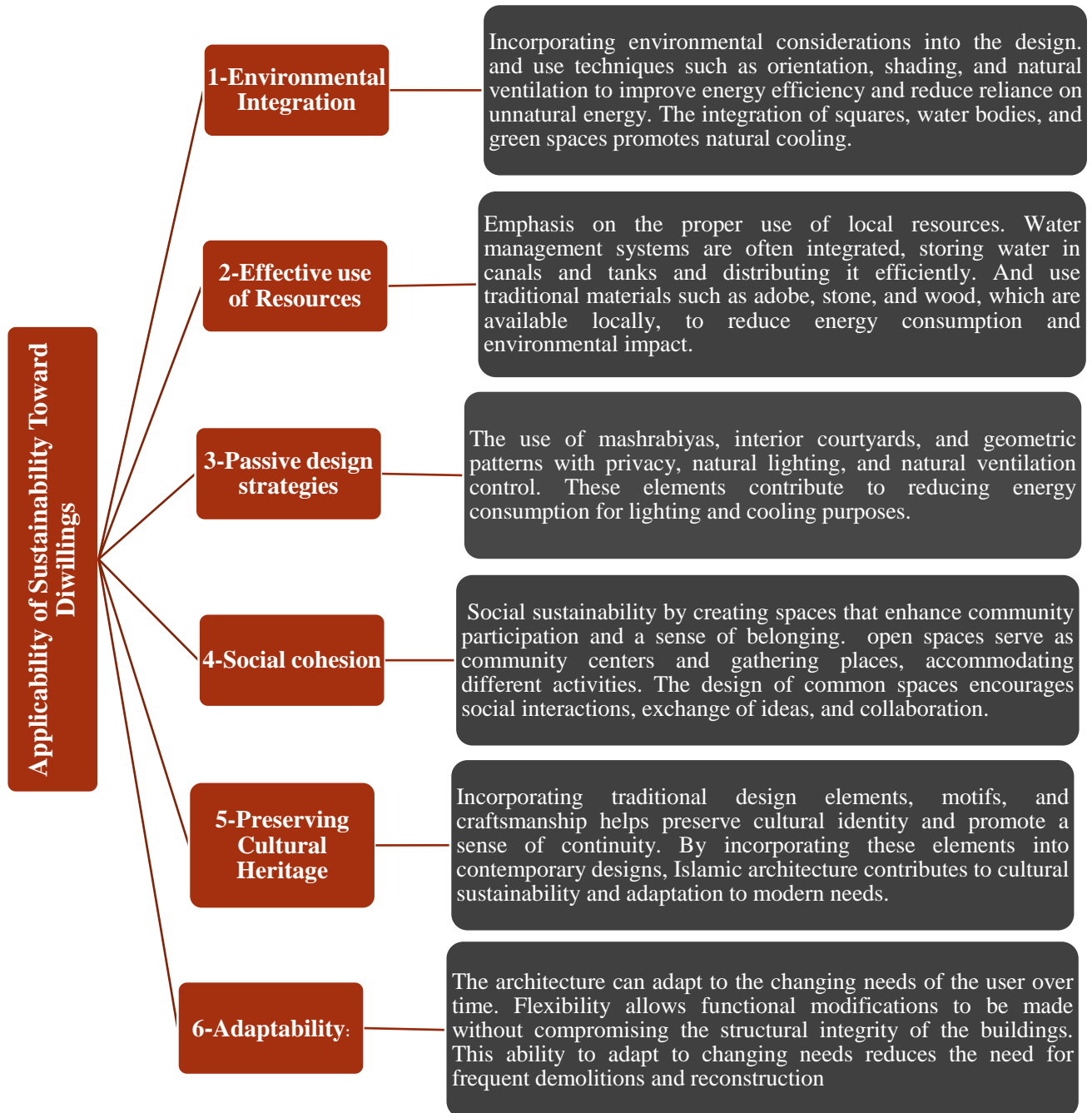


Fig. 24. Suggested solution strategy [ Author]

## 10. CONCLUSION

After conducting a study on sustainability and human needs in the Islamic dwelling, it can be concluded that Islamic architecture is one of the most successful methods of architecture in integrating sustainable elements and meeting the needs of its inhabitants. Architectural styles and practices can also vary across different regions and cultures.

### Several key conclusions:

- **Human-Centered Design:** Islamic Architecture is strong emphasis on the comfort and well-being of its inhabitants. A great grasp of human requirements is demonstrated by the incorporation of courtyards, water features, and passive cooling methods, creating comfortable and useful living areas.
- **Sustainable Building Techniques:** Utilizing easily available and environmentally friendly native materials like adobe, mud brick, and stone, traditional Islamic design integrates ecological techniques. The

environmentally sustainable approach to building is also demonstrated by elements like wind towers, which are built to harness natural ventilation.

- **Cultural Adaptation:** Islamic architecture reflects a strong reverence for nature and a desire to coexist peacefully with the environment by adapting to local environmental constraints. Buildings can resist climate difficulties and save resources thanks to these modifications.
- **Water Management:** Intricate water management systems, such qanats and water canals, are frequently used in Islamic design. These systems not only offer a necessary resource but also help to cool and humidify interiors.
- **Sustainable Urban Planning:** Islamic cities have historically used compact designs that promote commuting by foot, social interaction, and the effective use of resources. These designs adhere to sustainable urban planning principles

## 11. RECOMMENDATIONS

- Architects should prioritize the integration of sustainable design principles into architecture, the integration of energy-saving systems and materials, and the promotion of renewable energy sources.
- Priority to use local and sustainable materials, this not only reduces environmental pollution associated with transportation but also promotes local identity and craftsmanship.
- Raising awareness and education through workshops, seminars, and educational programs on sustainable practices and design principles that focus on highlighting the benefits and technologies of sustainable design.
- Collaborate and conduct research on innovative materials and technologies and establish guiding principles for sustainable design.
- Community participation in the design and decision-making processes helps in understanding their needs and cultural values, which will enable the designer to create more sustainable housing that meets the needs of the residents.
- Governments should provide support and incentives for sustainable design practices in architecture. This could include incorporating sustainability requirements into building codes and providing grants or tax breaks for sustainable projects.
- Monitoring and regular evaluation of sustainable projects, especially evaluating their performance after the operation and identifying areas for improvement. Can contribute to continuous improvement and promotion of sustainable design practices.

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