

Identity of the Courtyard in Traditional and Contemporary Erbil City Houses

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Abstract: The most significant element of architectural design across various cultures is our courtyard; the ongoing debate in contemporary architectural design is identity. It acknowledges the role of space as the most important standard to measure the human identity of a building is shaped by specific climate, place, and time. The problem articulates within human thoughts and technological progression; this evolving courtyard is an opportunity for exploration and redefinition of courtyards, depending on social and cultural changes among the Kurdish people. The research focus and purpose are well defined and centered around comparing the courtyard identity in both traditional and contemporary Kurdish houses to understand the factors influencing courtyard identity by including comfort, privacy level, and aesthetics to achieve a sophisticated understanding of human necessities in the context of courtyard design. This study resulted from comprehensive prior studies. The survey involves a group of questionnaires designed to gather specific information from designers about courtyard design in traditional and contemporary houses. This study highlights the significant differences between courtyard designs in Kurdish towns and urban houses. In traditional homes, courtyards play a crucial role in ensuring privacy, comfort, and functionality, shaped by human behavior and influenced by religious and cultural norms. These spaces are designed with flexibility, catering to a variety of household needs. In contrast, courtyards in contemporary urban homes are often designed with a focus on aesthetics, losing much of the functional and cultural significance found in their traditional counterparts.

Keywords: Identity, Courtyards, Courtyard Features, House Designs

1. Introduction

Identity is the more controversial matter affecting architectural thinking in the architectural state [1].

Courtyard is the most essential architectural elements throughout history in different civilizations, especially for architectural residents. Courtyard has been the central core for both Islamic and Non-Islamic houses [2]. Courtyards have been used in both urban and rural places and existed commonly in Iraq, Iran, and Jordan. The idea of a courtyard was reused by Muslims because of the social and religious necessity. Courtyards in architecture are significantly interrelated to functional, aesthetic, and environmental Considerations. The main role of the courtyard in organizing space is deeply associated with Islamic civilization, which is found in architecture, and this is obvious in traditional Kurdish houses [1]. Absolutely, the identity of the courtyard is not a straight-for substance, but its periods return to different historical classifications according to the time and place. Factors of identity courtyard such as personal identity, life spiritual identity, and physical identity have great roles in the improvement of architectural identity [3]. Islamic modern Architecture has displayed several variations to the reuse of traditional courtyards in contemporary design with the greatest technological, intellectual, and social changes that take place in societies. Architectural elements, walls, and rooms around it are defined courtyard. It's an open space which is located in the center of the house. The terms "Sana'a," "sahn," or "host" are called courtyard in Arabic, which is especially used in front of the houses, which residents

use for daily gathering places [4]. Furthermore, placing and utilizing human spaces are important aspects for regulating and enhancing experiences for their region based on the desired level of privacy. The courtyard has been designed as a space of privacy and meditation, which is composed of garden characteristics and water. Therefore, the organization of courtyard privacy is the limitation of the popular hearing and viewing of any actions preventing the unauthorized observation of family activities through design aspects and arrangement to reach the desirable and predictable level of privacy. In relative to social, religious, and cultural acceptance and adaptability [5]. The evolution of housing design in Kurdistan, driven by technological advancements and changing human perspectives, has brought about notable changes, especially regarding the identity of courtyards within Kurdish social and cultural frameworks. This study aims to investigate the identity of courtyards in both traditional and contemporary Kurdish towns and urban houses, focusing on key factors such as comfort, privacy, aesthetics, and the accommodation of evolving human needs. By understanding these influences, the research provides valuable insights for the design and development of future housing projects in Kurdistan, preserving cultural integrity while embracing modern advancements.

2. Literature review

The Studies aim to deepen understanding of identity for courtyard design in town and urban housing designs; this will be summarized below:

- A study that emphasizes a dynamic relationship between family Attribution, cultural aspects of typology, and architectural typology highlighted the significance of courtyard design as a central point and has a direct connection with most of the rooms [6].
- Courtyards are identified as "... special places that are outside yet almost inside, open to the sky, usually in contact with the earth, and surrounded by rooms" [7]. This characterization emphasizes their unique and multifaceted nature and serves as transitional spaces between the exterior and interior environments.
- Analysis of Beijing's traditional courtyard designs, focusing on Space, Form, Construction, Material, and construction techniques. The motivation behind the study stemmed from a recognized lack of fundamental information on the historical architecture focus on Integration of Privacy and Modern Facilities and Architectural Sustainability of Chinese houses. Research aimed to contribute a deeper understanding of the historical and cultural aspects of traditional courtyard houses in Beijing [8].
- Traditional house identity in Tripoli and Libya, emphasizing their responsiveness to environmental factors and physical characteristics. The research highlighted the importance of these Physical Characteristics and Privacy, Courtyard Constructions, Thermal Comfort, and gender-specific privacy in forming the identity of the houses, particularly in relation to the cultural and social context [9].
- Research which focuses on privacy and courtyard history across various cultures. The study investigated different of courtyards, considering their historical background, forms, evolution, benefits, and physical characteristics of elements [10].
- Historical and cultural preservation in Beijing, China, that specifically explores spatial modifications in various aspects such as form, layout, size, and living conditions. The study suggests that the modification of courtyards is influenced by changes in traditional culture and residential patterns, ultimately contributing to the evolution of a distinct cultural identity [11].
- The symbolic and physical functions of traditional Arab houses, study indicated that Courtyards, often being central open spaces within a dwelling, may play a crucial role in providing comfort and emotional well-being for the residents, and offering a degree of privacy and protection from uncomfortable external situations [12].

Table 1: List of Variants Courtyard Design (Author)

Study/Research Focus	Country/ Region	Factors	Characteristics	Methodology
Courtyard Housing as a Subtropical Urban Design Model [6]	Austria	Family Attribution, Cultural Aspects	Courtyard as a central point connecting rooms	Emphasis on dynamic relationships between culture, family, and architectural typology
Courtyards: Aesthetic, Social, and Thermal Delight” [7]	America	Courtyard Identity, Spatial Transition	The unique, multifaceted nature of courtyards as transitional	Descriptive analysis of the role of courtyards as both exterior and interior spaces
Courtyard Housing and Cultural Sustainability: Theory, Practice, and Product [8]	Beijing, China	Space, Form, Privacy, Sustainability	Focus on privacy, integration of modern facilities.	Historical analysis of traditional architecture with a focus on form, space, and construction
Concurrence of Thermal Comfort of Courtyard Housing and Privacy [9]	Tripoli, Libya	Physical Characteristics, Privacy	courtyard construction, thermal comfort, gender privacy	physical and environmental factors influencing house design
A Review Of Courtyard House: History Evolution 18 Forms, And Functions” [10]	Various Cultures	Privacy, Evolution of Courtyards	Historical background, forms, evolution, benefits	Cross-cultural historical study on the evolution of courtyards and their privacy functions
The Spatial Factors of Cultural Identity[11]	Beijing, China	Form, Layout, Living Conditions	Modifications influenced by cultural and residential pattern changes	Spatial and cultural analysis of evolving courtyard forms and their impact on cultural identity
Concurrence of Thermal Comfort of Courtyard Housing and Privacy in the Traditional Arab House in the Middle East [12]	Arab House in Middle East	Comfort, Privacy, Emotional Well-being	Courtyards provide protection and privacy from external discomforts	Analysis of courtyard as a source of emotional well-being and protection within traditional Arab houses

As mentioned above, the previous researchers have focused on the courtyard as a crucial element in the context of Social, cultural, and environmental. Culturally, the courtyard is devoted to providing outdoor privacy, particularly for the relaxation of women and children. Some of the researchers have emphasized the role of courtyards as an essential physical factor influencing the usage and configuration in contemporary and traditional house design, as in (fig .1).

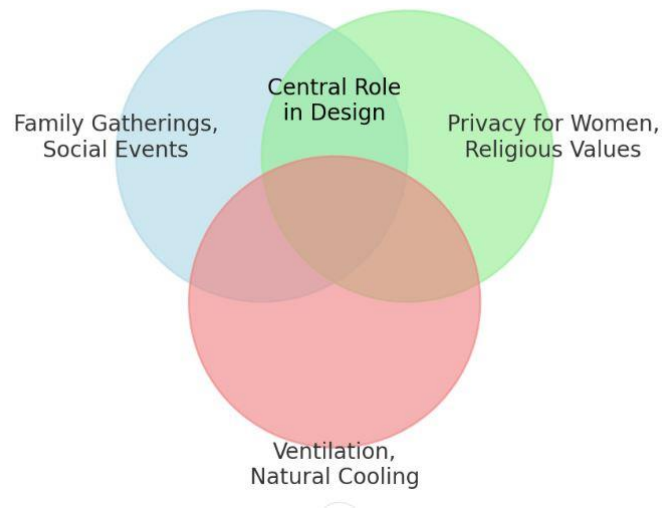


Figure 1: Illustrating the intersection of the social, cultural, and environmental roles of courtyards (author)

2.1 Identity

Identity is a process rather than an immediately perceivable characteristic during the history of civilization. Identity can be viewed as a series of steps. It is the same identity or culture of human development (2).

Identity is not something that is immediately formed or developed in a short period; it is created by humans because of a continuous process that influences actual experiences and observations [14].

2.1.1 Identity and architecture

In this context, the identity of courtyards is specifically determined by regional materials, native architectural styles, and decorative elements across different cities, dimensions of courtyards are specified based on the available space and the climatic local situation [13].

2.2 Traditional courtyard

Courtyards are mostly one of the significant features in houses across various ancient cultures, including Roman, Persian, Greek, and Egyptian architecture. Courtyard emphasizes the essential role in identifying social and environmental factors within the context of architectural design. In Islamic architecture, courtyards are particularly distinguished by urban fabric, marked by high solid walls notable for their distinguishing features. Which serves multiple activities, including showcasing a commitment to the preservation of neighbors and contributing to a sense of homogeneity in the cityscape (Fig. 1) [16]. The courtyards' role in traditional Kurdish houses before the influence of modernism in the 1930s. In the Citadel, which is composed of over 500 traditional houses, the centrality of courtyards in defining the living spaces. That is surrounded by rooms or continuous or semi-continuous walls constructed with bricks (Fig. 2,3) [18].



Figure 2: Assehemi house in old Islamic Cairo. Figure 3: Erbil citadel showing courtyard house.

2.3 Contemporary courtyard

The design of courtyards in contemporary houses does not rely on a replication of old courtyards in terms of construction materials, measurements, and elements [18].

Architects in contemporary are sometimes influenced by Western styles without considering regional traditional courtyards. In the current courtyards are emerging as stylistic elements, providing aesthetic for homes. These courtyards can serve as either connectors or separate entities between different spaces in various parts, that enhancing accessibility [9].

2.4 Identity Factors Affecting Courtyard Properties:

The diversity in courtyard plans indicates that there is no has not constant plan or standardized layout. regarding history, the primary plans for courtyards are commonly rectangular or square shapes, while variations can include curvilinear or circular forms [19]. Courtyard plans have evolved to accommodate numerous environmental factors such as topography, site restrictions, and functional requirements, which led to the creation of different courtyard shapes like L-shaped, U-shaped, Y-shaped, or T-shaped designs (Fig. 4) [17].

The architectural features discussed above are influenced by several key factors that shape the evolution and development of human settlements. These factors include:

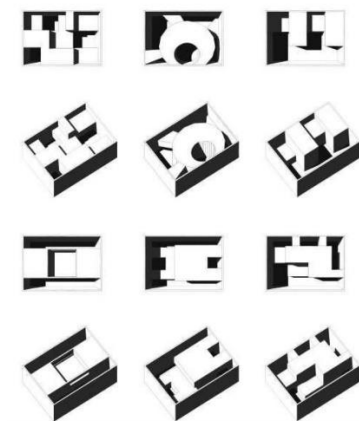


Figure 4: Different possible forms for a courtyard of house design. (Ming Tong)

2.4.1 Courtyards Privacy:

Courtyards are a main versatile feature in architecture across different cultures and time periods. Courtyards serve as central open spaces and can be used for a multifunctional purpose (Fig.5) [16] Courtyards also emphasize the functional spaces for different activities and contribute to the overall architectural design principles.

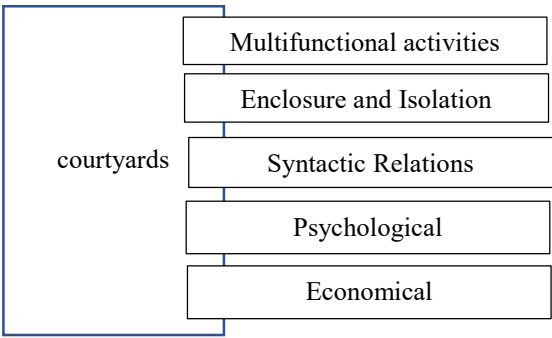


Figure 5: Different attributes of the courtyard. (author)

2.4.2 Courtyard Aesthetic factors:

The significance of aesthetic identity in architecture emphasizes the holistic approach, where aesthetic identity is not only about visual elements but also encompasses social, economic, public, and environmental considerations (Fig. 6) [15].

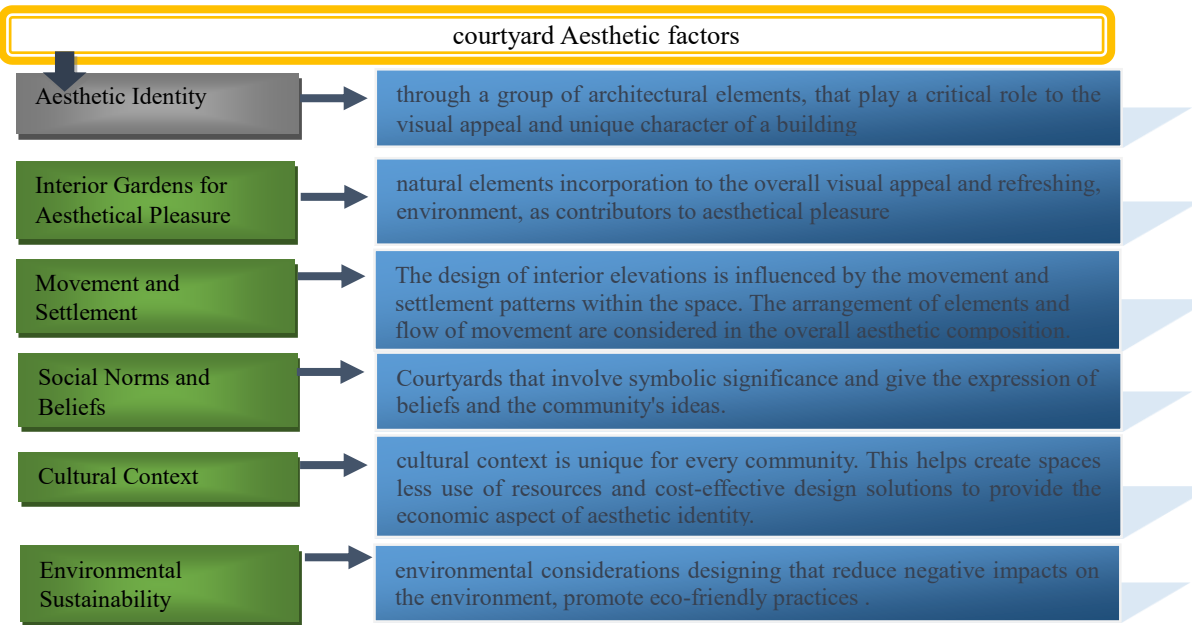


Figure 6: Model of courtyard Aesthetic factors. (Zhenyu, Chang, and Dong)

3. Study Area

The structure deals with various aspects of architectural adaptations because of cultural, social, and economic factors in Erbil city's courtyard houses. Erbil city is the capital of Kurdistan region, one of the historical cities and is located in the north of Iraq. This study analyzes and explains traditional courtyard houses in the citadel with various sizes and contemporary houses (2010 to 2018), which include:

1. A comprehensive of courtyard identity and features of the courtyard that result from the study of the literature review (table.1).
2. The Comparison and analysis of traditional and contemporary courtyard house designs.

The methods used for analysis data collection, such as site visits, field surveys, observations, and photographs of several houses in Erbil city involving traditional and contemporary houses, were possessed through the formation of features identity of courtyard houses, focusing on changes in configuration, area and size, height, shading devices, Vegetation, fountain usage, and materials.

Interviewing face to face for the residents, an architect was chosen to fill the questionnaire and checklist to find the effect of identity of courtyard factors by creating comfortable, level of privacy, pleasant, and aesthetics to obtain sophisticated human needs (Fig.7).

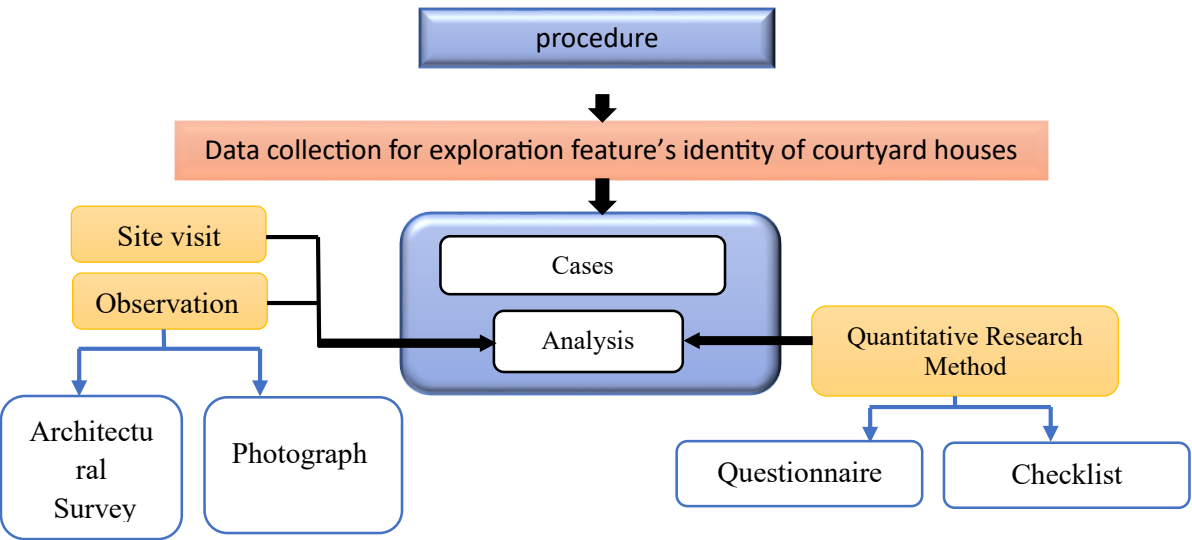
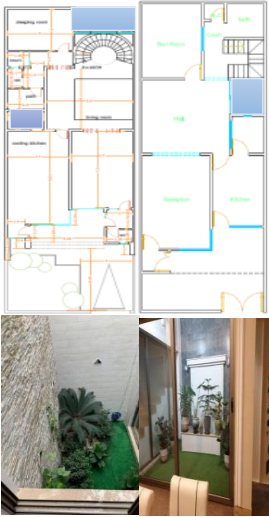



Figure 7: Methodology (Author)

3.1 Courtyard variant samples

The analysis of both traditional and contemporary courtyards was conducted based on specific features and parameters in a detailed inventory of 12 Kurdish houses. The data evaluated by the observation in the filled which made by behavior and perception of humans, colors symbols specify those specific characteristics that are essential in the courtyard house as shown in (table 2).

Table 2: Features List of Variants Courtyard Design and samples

Courtyard Features	Contemporary Courtyard Houses	Traditional Courtyard houses
Architectural Elements <ul style="list-style-type: none">• Colonnades• Arcades, or verandas• Ornament• Entrance		
Area and Size		
Landscaping and greenery <ul style="list-style-type: none">• Vegetation• plants• fountain• Shading Devices		
Privacy <ul style="list-style-type: none">• Enclosure and Isolation• Psychological• Connectivity		
Functional Adaptations <ul style="list-style-type: none">• dining• religious practices• socializing• Cooking• Working• Playing• Sleeping		

Configuration

- Semi-enclose
- Fully-enclose

Form

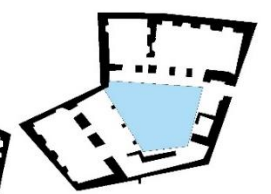
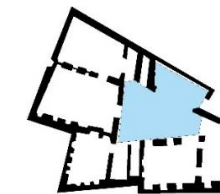
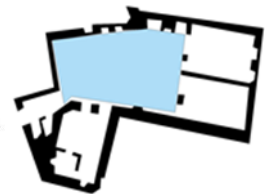
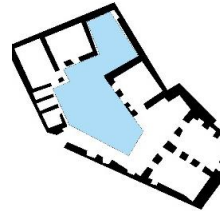
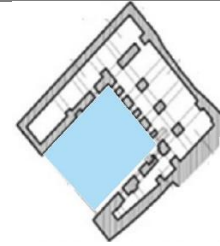
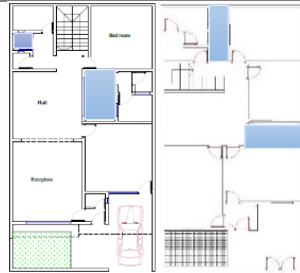
- Regular form
- Irregular form

Material

- Brick,
- Glass,
- Tiles,
- curtains and etc.

Aesthetic

- Movement and Settlement,
- Gardens for Aesthetical Pleasure,
- Social Norms and Belies.

**3.1.1 Finding and Result**

Site survey recorded data by analyzing the courtyard features in both contemporary and traditional houses in Erbil city. A questionnaire self-reported used for data collection that improves a subjective dimension to the study. The outcomes indicate various in functional adaptations, privacy, architectural elements, and material between contemporary and traditional courtyards.

3.1.2 Checklist and Observation Analysis

- In traditional courtyard houses, architectural elements such as colonnades, arcades, and ornamental features are highly prominent. A well-defined entrance provides a direct passageway or access to the courtyard, contributing to a strong sense of privacy and spatial hierarchy. In contrast, contemporary courtyard designs often lack these essential architectural features, with weaker or less distinct entrances. This shift results in a reduced emphasis on privacy and a simplification of architectural detailing, reflecting changes in both aesthetic and functional priorities in modern residential design.
- The surveyed shows the apportionment of variety courtyard sizes, between contemporary and traditional courtyards. It illustrated that traditional courtyards sizes between 50 to 100, which have low ratio with an area 100 m². In contrast, area of contemporary courtyards mostly has the high ratio of 4 m². The trends and spatial characteristics in courtyard design, specifically in contemporary courtyards the shift towards smaller sizes.
- The outcomes provide insights into contemporary and traditional courtyards combined into the design elements. The prevalence of plants in contemporary designs has a medium ratio and may reflect a deliberate effort to create aesthetically comfortable and pleasing indoor spaces. Remarkably, fountains and vegetation are commonly less used, and there is a high ratio of courtyards, including shading devices. This highlights the essential of shading device in the

overall courtyard in contemporary design, perhaps signifying a prioritization of functionality in interior spaces. In contrast, traditional courtyard illustrates a high ratio of plant and fountain and a low ratio of shading device, emphasizing a diverse approach with an emphasis on various design elements.

- Privacy is a crucial factor that is indicated in traditional courtyards in Erbil city, with a strong emphasis on enclosure and isolation. Traditional courtyards are noted for providing psychological aspects that affect human behavior and environmental comfort. Moreover, connectivity has a high ratio that highlights integration or connection with space surroundings. Additionally, contemporary courtyards have medium ratios for both factors related to connectivity and enclosure and isolation and have a lower prominence on privacy than traditional courtyards.
- The study identified that traditional courtyards have a medium ratio for all usage, which is considered a multi-functional space, making them adaptable and versatile to various activities. While contemporary seems to have specific functions, with a higher emphasis on activities such as cooking and ventilation. The adaptation to the preferences and changing needs of residents in Erbil city provides valued visions into the evolving nature of courtyard design.
- It founded that courtyard forms have variances distribution between traditional and contemporary houses. Regular forms are more dominant in contemporary houses, probably influenced by factors such as the size and plan configuration, technological advancements, and modern lifestyle requirements or societal trends. In contrast, both regular and irregular forms are used in traditional houses. Understanding these styles provides insights into the design selections in contemporary and traditional courtyard layouts because of human society on architectural preferences, which is an essential aspect to consider.
- It's displayed that the majority of both traditional and contemporary courtyards have a high ratio for fully enclosed shapes, with courtyards that are fully enclosed being more dominant than semi-enclosed. In both traditional and contemporary courtyards, the preference for fully enclosed might be affected by factors like privacy concerns, climate considerations, and individual resident choices. Fully enclosed courtyards can supply sheltered and more private space, the preferences of residents, and potentially meet their needs.
- It shows the material choices made in contemporary and traditional courtyard house design. Traditional courtyards mostly use brick, which reflects a connection to local materials. Whereas, in contemporary courtyards, the dominance of glass and tiles is used, which aligns with modern design aesthetics and a desire for natural light and transparency.
- All aesthetic factors, movement and settlement, gardens for aesthetical pleasure, and social norms and beliefs highly apparent in traditional courtyard houses that make the functionality of the space and aesthetic appeal. Most contemporary houses integrate gardens or indoor spaces designed for aesthetic pleasure and improving visual appeal.

Table 3: Checklist for courtyard features

Courtyard Houses	Architectural Elements				
	Colonnades	Arcades, or verandas	Ornament	Entrance	
				Direct	Indirect
C					
T					
	Area and Size				
	≤ 4 m2	≤ 20 m2	≤ 50 m2	≤ 100 m2	
C					
T					
	Landscaping				
	Vegetation	fountain	Shading Devices	plants	

C							
T							
	Privacy						
	Enclosure and Isolation			Psychological		Connectivity	
C							
T							
	Functional Adaptations						
	Dining	Religious practices	Socializing	Cooking	Working	Playing	Sleeping
C							
T							
	Configuration						
	Semi-enclose				Fully-enclose		
C							
T							
	Form						
	Regular form				Irregular form		
C							
T							
	Material						
	Brick		Glass		Tiles		
C							
T							
	Aesthetic						
	Movement and Settlement		Gardens for Aesthetical Pleasure			Social Norms and Beliefs	
C							
T							

The above table compares the characteristics of contemporary (C) and traditional (T) courtyard houses using a courtyard identifier checklist, where different architectural elements and functions are evaluated. The black, white, and half-black/half-white shading indicates the prominence or frequency of specific features in each type of courtyard:

- Black: Indicates a high ratio or frequent presence of the element.
- White: Indicates a low ratio or rare presence of the element.
- Half-black/half-white: Indicates a medium ratio or moderate presence of the element.

3.2 Questionnaire

The second instrument for collecting data surveys which designed regarding to architectural features in courtyards design. Various kinds of questionnaire are used for a different reason, and diverse information's used for analysis. In surveys, the eight features of courtyard for contemporary and traditional houses design are divided into various sub-variables (fig.8).

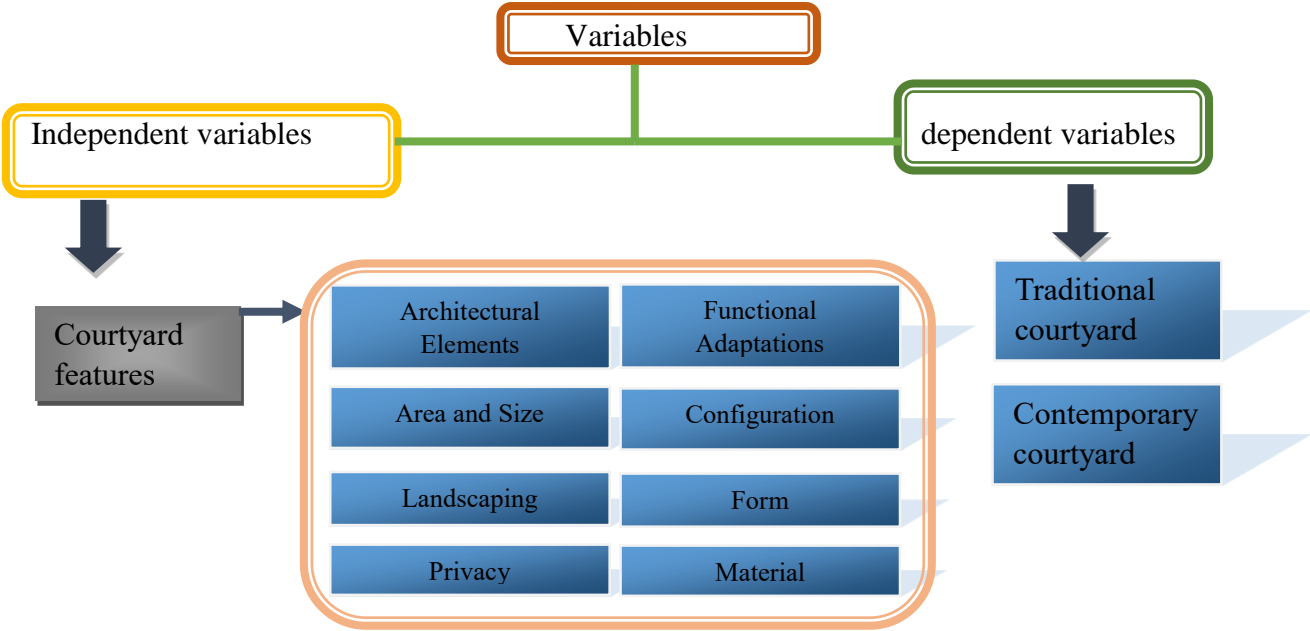


Figure 8: Model of features of courtyard for contemporary and traditional house design (author)

The questioners dispersed arbitrarily to architects who work in various sectors, as consultant architects, private sector, governmental sector, and engineering teaching staff at Tishk International University and other universities, who they have an alternate scholarly capability; the study shows the data collected analysis about comparison in traditional and contemporary courtyard for 30 designers. Which contributes to a deeper understanding of architectural design considerations in Erbil city. (fig.8) (Table 3).

3.2.1 Analysis of Interview Data

Traditional courtyards exhibit a higher degree of efficiency compared to contemporary courtyards, particularly when evaluated through different features.

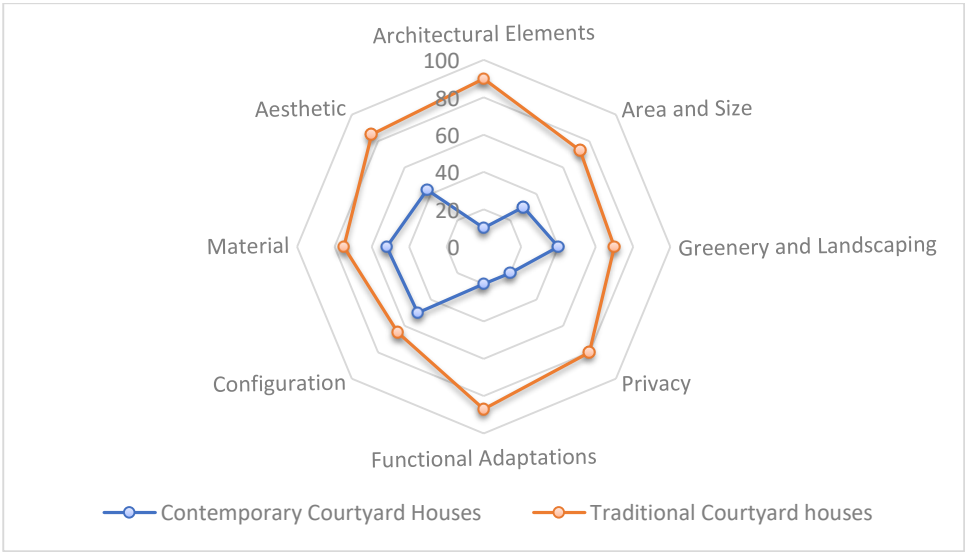


Figure 9: Correlation of courtyard features in traditional and contemporary houses. (author)

Table 4: The features of the courtyard that influence the Contemporary and Traditional house design.
(author)

Features of courtyard	Responses			
	N		Percent	
	Contemporary	Traditional	Contemporary	Traditional
Architectural Elements	10	90	3.7 %	14.6 %
Area and Size	30	73	11 %	11.8 %
Landscaping	40	70	14.8 %	11.3 %
Privacy	20	80	7.4 %	12.9 %
Functional Adaptations	20	87	7.4%	14.1 %
Configuration	50	65	18.5%	10.5 %
Form	48	77	17.7%	12.5 %
Material	52	75	19.2 %	12.1 %
Total	270	617	100.0%	100.0%

As revealed in a table (4), based on responses from architects in various sectors the most beneficial factor of courtyard features for contemporary house design is given to material with a percentage of 19.2 % (n=52). On the other hand, for traditional house design is given to Architectural Elements with a percentage of 14.6 % (n=90).

4. Conclusion

The study contributes to realizing the distinctive characteristics and roles of courtyards in both traditional and contemporary house design in Erbil city, highlighting the privacy, materials, landscaping, form, functions, configuration, and cultural significance associated with each. Traditional courtyards are typically constructed using brick, reflecting the natural materials and culture of Erbil city. These courtyards prioritize privacy, often featuring enclosed or semi-enclosed spaces conducive to family gatherings and everyday activities. While, in contemporary design, courtyards may depart from traditional materials and construction techniques such as using Glass, certain features remain consistent across both traditional and contemporary courtyards. Gardens or vegetation are commonly integrated into both types of courtyard design. According to the majority of designers who prefer the traditional mostly have architectural elements such as colonnades, arcades, and ornamental features that show a direct passageway or access to the courtyard, it also contributes to a sense of privacy. While in contemporary courtyards are characterized by the lack of essential architectural elements and weaker entrances, with possibly less prominence on privacy and architectural detailing. Whereas, contemporary house design is given a high percentage to materials, the dominance of glass and tiles used which aligns with modern design aesthetics and a desire for natural light and transparency.

5. Authors' Contribution

Rawaz Abdullah: Conceptualization, Conducted the research, assessed the results and wrote the original draft. Aisha Saied: Conducted the research, assessed the results, and wrote the original draft. Dlman Azeez: Review editing and visualization of the manuscript.

6. Data Availability

Data generated or analyzed during this study are available from the corresponding author upon reasonable request.

7. Conflict of Interest

The authors declare there are no competing interests.

8. Acknowledgment

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