



**UNIVERSITI PUTRA MALAYSIA**

***TPOLOGY OF TRADITIONAL COURTYARD HOUSES AS MUSLIM  
FUNCTIONAL SPACES IN LOW RISE RESIDENTIAL UNITS, IRAQ***

**HAYDER JAWAD SHAKIR HARATY**

**FRSB 2015 7**



**TYOLOGY OF TRADITIONAL COURTYARD HOUSES AS MUSLIM  
FUNCTIONAL SPACES IN LOW RISE RESIDENTIAL UNITS, IRAQ**

By

**HAYDER JAWAD SHAKIR HARATY**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra  
Malaysia, in Fulfilment of the Requirements of the Degree of Master of  
Science**

**December 2015**

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in  
fulfilment of the requirement for the Degree of Master of Science

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**December 2015**

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A courtyard is an important transitional functional space with unique aesthetic design element used for Islamic social and cultural activities in traditional Iraq's residential units and contributes to the Islamic identity of Iraq. However, their utilization is currently diminishing in Iraq's new residential development due to lack of understanding of its Islamic function. There is a need to analyze the manner the existing Iraq's traditional courtyards function as Islamic spaces and be integrated into the new residential development in Iraq. This study investigates how the traditional courtyards houses in Iraq embraces and enhances the relevant Islamic principles in relation to the overall residential unit layout and their potentials to be applied in the Iraqi new low rise residential units. Physical observations on the physical design characteristics and morphological studies on the form and planning on eight traditional Iraq's courtyards houses were conducted. Subsequently, photographic and morphological analysis were utilized in interpreting the data. The study concludes that the traditional courtyards do possess certain Islamic principles in the planning and design which were either spontaneously implemented or as initially intended by the residents. This is due to the fact that compliance to Islamic principles was not made compulsory by local building authority. This study significantly fills the gap in the design of new Islamic residential courtyard houses worldwide to integrate both the Islamic principles and lifestyles in more meaningful manners.

**Keywords:** Transitional Space, Iraq's Traditional Courtyards, Spatial Programming, Social and Cultural Activities, Islamic Design and Morphological Studies.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia  
sebagai memenuhi keperluan untuk Ijazah Master Sains

## **TIPOLOGI HALAMAN TRADISIONAL RUMAH SEBAGAI RUANG FUNGSI BAGI MUSLIM DI KEDIAMAN RUMAH KOS RENDAH DI IRAQ**

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Ruang laman adalah ruang transisi berfungsi yang penting dengan rekabentuk elemen estetik yang unik serta digunakan untuk aktiviti sosial dan budaya Islam di dalam unit residensi tradisional Iraq dan dengan tidak secara langsung membantu dalam membangunkan identiti islamik Iraq. Walaubagaimanapun, kegunaan mereka pada masa kini semakin berkurangan disebabkan kurang pemahaman mengenai fungsi islamik sebenar laman tersebut. Terdapat keperluan untuk menganalisa cara laman rumah tradisi Iraq yang sedia ada berfungsi sebagai ruang entiti Islam untuk di integrasikan di dalam pembangunan residensi baharu di Iraq. Kajian ini menyiasat bagaimana laman rumah tradisi dalaman mendokong dan meningkatkan prinsip-prinsip Islam yang relevan sehubungan dengan susunatur keseluruhan unit kediaman dan potensi mereka untuk diaplikasikan dalam unit-unit baru kediaman tingkat rendah di Iraq. Kaedah pemerhatian fizikal terhadap rekabentuk dan kajian morfologi keatas bentuk dan perancangan laman rumah laman tradisional Iraq telah dijalankan. Sejurus ini, analisis fotografi dan morfologi telah digunakan dalam mentafsirkan data. Kajian ini berkesimpulan bahawa laman-laman tersebut telah memiliki prinsip-prinsip Islam tertentu dalam perancangan dan rekabentuk sama ada di implimentasi secara spontan atau kerana pada mulanya dimaksudkan oleh penduduk. Ini adalah disebabkan pada hakikatnya, ia tidak diwajibkan oleh pihak berkuasa bangunan tempatan. Kajian ini penting bagi mengisi jurang dalam rekabentuk rumah halaman kediaman Islam baru di seluruh dunia untuk mengintegrasikan kedua-dua prinsip dan gaya hidup Islam dengan cara yang lebih bermakna.

Kata kunci: Ruang peralihan, Laman-laman dalaman Irak, Pengaturcaraan spasial, Aktiviti sosial dan budaya, Rekabentuk islam dan Kajian morfologi.

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## CHAPTER 1

### INTRODUCTION

#### 1.1 Introduction

This chapter primarily discusses the background and statement of problem of this study. It describes the definition and background of the traditional courtyard houses typologies and the Iraqi mass houses in general. The issues of contemporary housing design in Iraq and the role of Islam in influencing architecture the design are also introduced. The discussion subsequently leads to the problem identification on the manner the traditional courtyards embrace Islamic principles and lifestyles in relation to the total spatial programming of the specific residential unit. Finally, the second part of this chapter deliberates the research objectives and structure of thesis.

#### 1.2 Background of Study

The history of Iraq traditional courtyard houses can be traced from the Mesopotamian civilization more than 5000 years ago. The Sumerian courtyard house, with its indoor looking to the sky and the closed outdoors is notably identified as the most famous courtyard house in Mesopotamia (Al-Haidary, 2008). The courtyard houses in Iraq had undergone a lot of changes from the period of Sumerian domination until the appearances of Islam (Abu-Lughod, 2009). The courtyard traditional houses were popular until the 20th century but were later neglected due to the influence of the new design form in the urban design and regional wars which have affected the overall pattern of architecture in Iraq (Reuther, 1910). The courtyard house in Iraq has a huge eventful history and had lots of changes during the years, from the Sumerian domination till the Islam appearance.

People and tradition shaped every space and forms the design of the traditional Islamic courtyard house. Traditional courtyard house demonstrates many fundamental principles in term of construction that can be compared with contemporary modern house (Ibrahim, 2012). Traditional homes in Middle East emphasis on the need to separate male and female domains. Gender segregation is one of the main factors that effect and influenced when planning Muslim homes In this vein, the physical environment in the male and female relation was strictly defined by the particular role of every each (Farah, 2001). Furthermore, the man's domain is in public house area while the woman's domain is the private area. Parallel to this notion, it is also observed that the tradition of Muslim religion drew the house plan and privacy of the family inside and outside the home, which are classified as public, semi-public

and private areas. For instance, Spahic (2010) in discussing the role of Islam in housing design, stated that religion and culture emphasises the privacy where the house and its external walls likely to be inward looking to prevent the strangers' eyes to be looking to the family and the house.

Courtyard houses demonstrate a magnificent sustainability in adapting with environment and climate as well which is connected to the idea of privacy where the family preferred to look into the courtyard than rather than the street to get the necessary ventilation (Bekleyen & Dalkiliç, 2011). Both also contended that the most essential architectural elements in the traditional

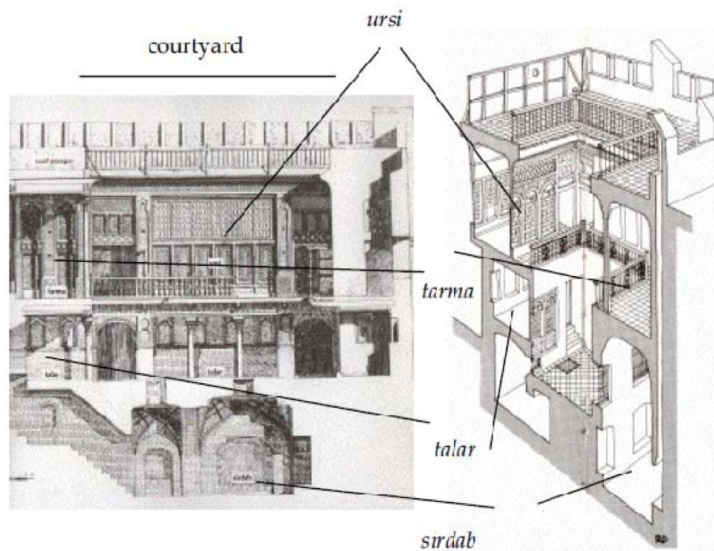


Figure 1.1: The Iraqi Traditional Courtyards House Elements  
(Source: Reuther, 1910)

Muslim courtyard house are: the entrance, courtyard and 'Shanasheel' or lattice windows. These are the main elements of the traditional house, and the other spaces in it are formed as transitional spaces and service rooms. The courtyard can also be open, semi-enclosed or fully enclosed with partitions and surrounded by walkways to deal with the climate considerations as demonstrated in Figure 1.1 below.

Meanwhile, unlike the revolution of houses, the culture of Iraqi people has not totally changed since decades, where people are still obsessive with the concept of segregation and the importance of the house privacy (Hussein, 2013). In line with this concept, women are not supposed to be seen by strangers inside the house and outside it without a veil, and meanwhile, the house spaces are divided to function based on the visitor's gender.

In Islamic architecture, both the residential unit and the environment are magnificently shaped and influenced by the impact of the Islamic culture (Itewi, 2007). This notion is supported in the Qur'an and Sunnah (the intimate presence of the prophet Mohammed), which described precisely the way of living appropriately as Muslim and the situation of housing and residence. The following verses from Qur'an and Hadith have been cited from various authors who have further explained the Islamic ideology and principles such as (Spahic, Rahim and Sharif), as follows:

*"Then is one who laid the foundation of his building on righteousness [with fear] from Allah and [seeking] His approval better or one who laid the foundation of his building on the edge of a bank about to collapse, so it collapsed with him into the fire of Hell? And Allah does not guide the wrongdoing people". (Tawba 9: 109).*

The privacy is the most important factor that effecting the layout while designing a Muslim house (Sharif, et al. 2010). It is stated in the Qur'an that:

*"When you ask of them (prophets wives) anything, ask I of them behind a curtain" (Al-Ahzab: 53)).*

The above surah confirmed the idea of how the Islam religion insisted of the privacy. The following Hadith stated that:

*"If anyone removes a curtain and looks into the house before receiving permission, and sees anything which should no be seen, he has committed a sin. But if a man passes a door which has no curtain, and is not shut and looks in, he has committed no sin, for the sin pertains to the people inside". (Mishkat Al Masabih, 3526)*

Spahic (2010) stated that houses are representing the background or framework of human existence. He further stressed that the Islamic-Arab house with its structural clarity and beauty can be conceived as being generated from the plan, which gave form and order to the space within as well as measured and scaled by the human body and its experience. The Islamic-Arab house was also established and based on a series of sustainable-oriented principles. It is within these principles, the design concept of the Islamic-Arab house, problems, and solutions can be traced in many of the existing traditional Arab architecture, in which forms and spaces were dictated by habits and traditions (Al-Haidary, 2008).

Despite the above advantages, the courtyard house is disappearing from many Muslim city neighborhoods including Nuevo-rich Arab countries (Nooraddin,

2012). The courtyard house should be a climatic solution to the hot arid countries, and model for controlling privacy and providing peaceful and comfortable environment (Al-Haidary, 2008). Meanwhile, Hamouche (1999) and Spahic (2010) have researched the study area of the traditional courtyards houses and the influence of their characteristics on the region. Since Iraq and the surrounding are Muslims majority, the courtyard house was the established and prevalent pattern of the Iraqi cities due to its satisfaction and magnificent part it did spiritually and functionally in that region. Both further discussed the role of Islam in shaping the city form and construction in which how it formed the physical appearance of the houses interior and exterior. Spahic (2008) described the features of the Iraqi traditional courtyards houses and other several Muslims cities. Moreover, in his study, Omer explained the essential of neighbors and privacy as well as segregation in the Muslims house. It is important to respect and preserve other people privacy when constructing a house especially in Muslims community; the arrangement of the house and organization of the spaces was also discussed in his study. Finally, the Iraqi traditional courtyards houses have magnificently succeeded in the Middle East region because of its solutions religiously and for climate purpose, its form was the reason to apply.

The issue of housing is universal one, but it is clearly epidemic in Iraq due to several reasons. Yu (1999) was studied the issue of the traditional courtyard house in term of form and culture misunderstanding. She stated that there is a lack consideration when it's related to the function and tradition as well, the contemporary housing has not been fully fulfilled people needs and it has design limitations. Memarian, et al., (2011) have described some of the missing elements in the Iraqi contemporary housing design and the effects of each missing space on the residents of the unit. They for example went through the private spaces between the guest's room and the family spaces and what were the neglected elements that should be available to create the best private environment. Amlashi et al., (2013) in this regard; talked about the failure generating spaces and suitable house that carry the social demand and the religion principles of Muslims, this might affect negatively on the residents and their daily activity. Meanwhile, Akbar (1981) has also examined the traditional courtyard house and has compared it with contemporary design housing. His comparison was between the high terraces that separate the private from the public space (street), and how the courtyard house managed to produce a private secure place in the appropriate manners. Furthermore, terraces on the first floor facing the street might lead to discomfort between neighbors in Muslims community; the courtyards house managed to solve this issue by its enclosed form.

The modern design does not hold the principles of Islam built roles, especially the foreign one that implied from western world. In this regard, Sidawi (2013) mentioned the issue with contemporary housing design in Iraq and how

architects and designers have neglected and misunderstood the concept of integrating the Islam values into modern applications. The house in Islam should be able to respond to the people beliefs and carry the spiritual meaning to them. Sidawi further discussed the elements of the courtyards house in Muslim city and the elements of it that function materially and culturally to serve its residents.

Designing a house does not necessary be able to create exterior form rich in elements without understand the really matter interior. Karimi (2012) have mentioned the real problem in Iraq and the Middle-East region and what seems to be the essentials to the people there. He further explained the new demand of people and the rapid growth can be one of the major issue of misunderstanding to the house design, due to this demand; people tried to search for alternatives ways to accomplish their design forgetting about what the house really represents in their life.

### **1.3 Problem Statement**

The research background identified the advantages of the courtyard house to control privacy and provides peaceful and comfortable environment in Iraq. It also hinted that the local culture of Iraqis has significantly influenced the form design of the courtyard traditional house. The site planning of the courtyard indicates that it has met the requirements of the room's layout and spaces use (Edwards, 2006). Spahic (2010) on the other hand conferred that a home is an embodiment of human privacy, apart from providing shelter, security and several other functions. This privacy is intended to protect the female members of the family from strangers, especially while entertaining guests at home. Housing is a major problem in Iraq (Mohammed, 2013).

Despite its advantages, the courtyard houses start disappearing from several Muslim countries especially from the new cities where architects and designers have failed to generate an architectural identity in the modern constructs of Iraq (Nooraddin, 2012). It seems conclusive that most Architects have neglected the concept of Islamic guidance in the new modern developments in Iraq (Al-Haidary, 2008) Many of architects and planners have neglected the idea of designing the modern house based on the traditional and cultural needs of Iraqi Muslim's people (Ani, 1994). The issue mainly appeared because of the misbehavior of the Iraqi heritage after the many wars that happened during the last decades. Building regulation is neglected and rules to preserve these magnificent monuments have not been set (Nooraddin, 2012). He further explained, people in Iraq start to be obsessed in aesthetic of the house form instead of the real function of it. That was reflected on the overall houses form picture of the city when it can be seen the careful details of the exterior facades decorated with multiple elements that are far away from any Islamic

architecture details. Although some of the units have applied few Islamic elements, there still a gap between the main concept of the Iraqi traditional courtyards house and the modern one. Al-Haidary (2008) mentioned that one of the main different between new and old house is the high fence of the house that almost cover the façade with the garden between. This idea was solved in the form of the Iraqi courtyards house by the enclosed design which reflected on the privacy of the house overall.

In spite of the western design thoughts invasion of the new housing forms in Iraq, many still think and prefer the Islamic traditional courtyard house (Al-Haidary, 2008). Furthermore, whilst the traditional courtyard is used for social and cultural activities, it is not normally designed holistically for Islamic purposes (Grube & Michell, 1995). Moreover, those form have effected the people privacy considerations and have neglected the culture and religion norm of them (Surf, 2012). Multiples issues have floated between residents and revived the awareness of asking to reconsider their needs and respect the house form base on the Islamic principles and Qur'an message (Spahic, 2010). Moreover, Omer stated that the housing design in Muslims community should be corresponded to the residents needs culturally, religiously and environmentally. In fact the traditional courtyard house was adapted in this region due to its level of satisfaction and was proved for many years till its disappearance. This is the main reason why designers and architects should try to think back about how the courtyards house function and tries to apply it on their current design. It does not mean that the modern form of housing is not functionally accepted, but Islamic values should be appeared as the Qur'an and Hadith insisted on (Spahic, 2010). It is necessary to appreciate what learned from the Qur'an and Hadith by Applying the guidance ad the essential of Muslims residential (Surf, 2012). However, there is a need to find the solutions for the current issue to insure helpful recommendations and encourage designers for activating the concept of the Islamic house for future design.

**The use of courtyard to enhance Islamic functions or principles is diminishing in Iraq. The courtyard while serving social cultural activities has not design holistically for Islamic principles and no proper research of its function were introduced. There is a need to understand how the traditional courtyards embraces and enhances the Islamic principles and contribute as Islamic space in the overall low rise residential planning and design by investigating its current design and planning form and characteristics; and it's potential to be applied in new residential development in Iraq. There are multiple ways to apply that but the Iraqi traditional courtyards house should be further analyzed to understand the characteristics and the elements of it.**

## 1.4 Research Objective

The aim of this study is to investigate to what extent has the Iraq's traditional courtyard house in low rise residential units' function as Islamic space in term of their physical design and planning and its general potential to be applied in the modern low rise residential units in Iraq.

**The objectives of the research are as follow:**

1. **Research objective 1:** To identify and record the physical planning and design characteristics of existing traditional courtyards in Iraq.
2. **Research objective 2:** To analyze how the courtyard can be integrated into the new low-rise residential development layout based on the Quran verses and the Hadith.
3. **Research objective 3:** To propose strategies to integrate the courtyard in the new low-rise development in Iraq based on the investigation of existing courtyard.

The Islamic features of the Iraqi traditional courtyard house will further contribute to a better Islamic living lifestyle community.

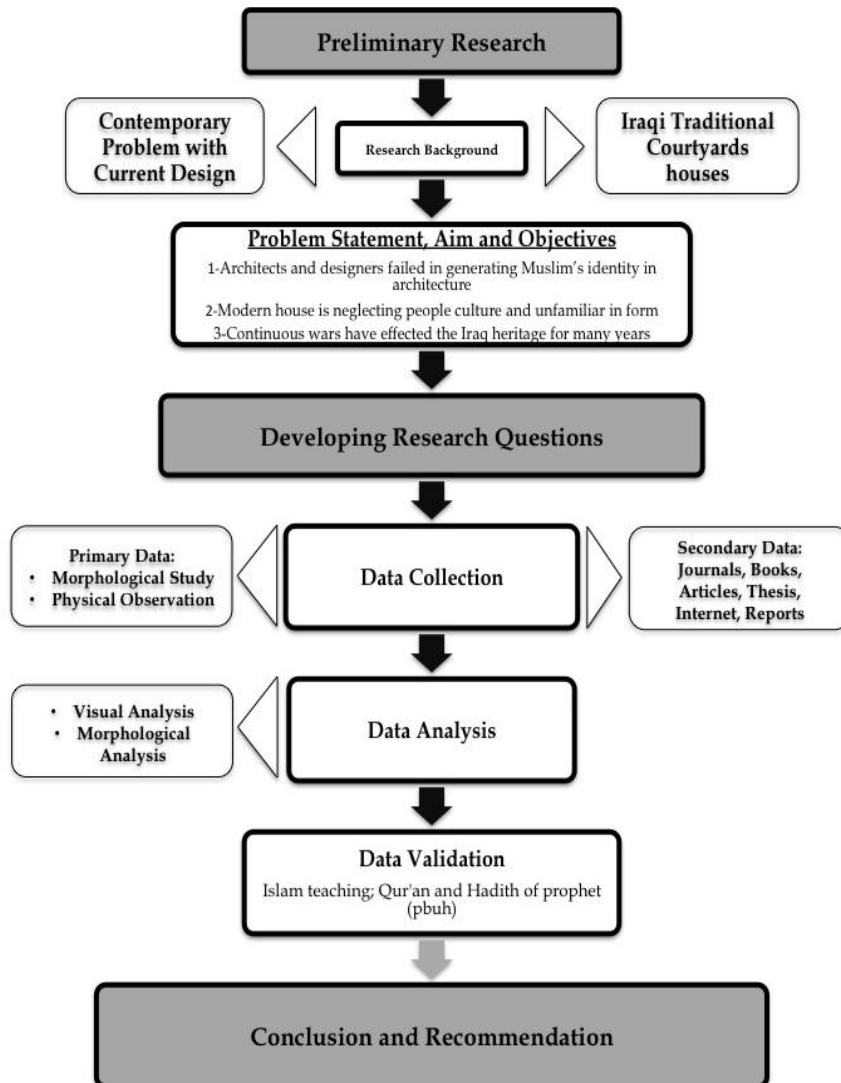
## 1.5 Research Methodology

The research method was designed to provide the basic guidelines of how the data was collected in a systematic manner. The method of systematic data gathering basically will be determined based on the research objectives of the study, and from there the structure will be clear to start the study (Mitra & Lankford, 1999). In a nutshell, this research is designed based on the aim of the study and a case study method was selected.

Figure 1.2 describes the research framework of this study. This research starts with review of literature regarding the Iraq's traditional courtyard houses based on the secondary data from books and the guidelines of the Ministry of Heritage in Iraq. Extensive data from different media resources such as books, articles, Internet were conducted. Problem statement of this research was then formulated and also mentioned in the first chapter. It clarified the contemporary problem persists in the construction and low-rise residential buildings in Iraq where the integration of the Islamic function through the new courtyard is found lacking. Meanwhile, the data collection stage focused deeply on the typology of Iraqi traditional courtyards house physical planning and design.

Based on the problem identification from literature review, researcher developed the research questions and the parameters that will be used in

methodology for further knowledge contribution. Finally, the results from the data analysis were compared to the Islamic built laws in table last chapter. The findings from all case studies were compared with and analyzed to ascertain if they are built according the Islamic principles or functions. In the morphological study, the drawings drawn in AutoCAD and 3ds Max software applications on computer based on the analysis on the secondary data. Meanwhile, the physical observation includes photographs of various Iraqi traditional courtyards houses from different cities. The pictures physical design state of the traditional courtyard houses was then analyzed based on the Islamic built laws factors such as privacy regulations, modesty, spiritual, and non-harm principles. Tables been used to describe each example characteristics and features. further explanation about the method of study and strategies can be found in chapter three.



**Figure 1.2: Research Framework.**  
(Source: Author, 2015)

## 1.6 Limitations and Delimitations of Study

**The study was conducted with certain limitation and delimitations. In terms of limitation the study has identified the following factors:**

1. There are obstacles in interaction with Iraqis females when conducting fieldworks. The Iraqi females, being regarded, as the main users of the courtyard houses are not encouraged to be exposed to the public especially in rural areas. This might bring an issue while capturing the photographs for the physical observation part of study.
2. Complications in collecting primary data due to most of courtyards houses are facing extinction and the rest in unstable construction. The remaining structures of the Iraqi traditional courtyards houses are damaged or threatened and it is dangerous to observe them; this leads to insufficient data to the existing courtyards.
3. Lack of statistics on current courtyards. Most of the current statistics are in Arabic language and not accessible online. Furthermore, the statistics are olds and unreliable.
4. Security concerns. Several traditional courtyards houses are under government jurisdiction. It is unsafe to conduct the physical observation while these houses are inside governmental zones.

Meanwhile the delimitations of this study are summarized as follows:

1. Appropriate time duration when conducting fieldworks for more interaction with the household. There should be a specific time to conduct the observation, this might be during the afternoon time to avoid the direct interactions with people.
2. Using secondary resources for maps, floor plans and information on extinct courtyards. The data was collected from some libraries in Iraq as printed copies since there is no enough data online.
3. Zoning the courtyards case studies area to be more representative in this study.
4. Getting approval from the authority before the actual fieldwork.

### **1.7 Significance of Research**

The study is significant to the followings:

1. The study will significantly fill design and planning gap towards more Islamic functional spaces in the new low-rise residential development in Iraq.
2. Provide more meaningful and functional Islamic transitional space in Islamic residential development worldwide.

### **1.8 Expected Knowledge Contribution**

This study contributes to the followings:

1. Understand and documentation of that how the traditional courtyard house serving the modern Muslim community.
2. Provide deep insight of the variety of traditional courtyards in Iraq.
3. Increase awareness between residents about the important of these types of houses and how it can preserve the Muslim's culture.

### **1.9 Structure of Thesis**

This thesis contains five chapters. This chapter provides the background of the study along with its problem statement as well. It also elaborates on the relevant research aim and objectives. Chapter two presents an overview of the documented literature and the related knowledge. A summary of literature review was also prepared to identify key issues that support the needs of conducting this study. The following Chapter Three discusses the appropriate research questions, method and strategies including data collection and analysis plan based on qualitative methods. It also describes the case studies demographics. Meanwhile, Chapter Four describes the analysis output and the obtained data explanations. Finally, the final chapter (five) discusses the findings and concludes by discussing the implications, conclusion, recommendations, and direction for the future studies.

## REFERENCES

- Abdelmonem, M. (2012). The Practice of Home in Old Cairo Towards Socio-Spatial Models of Sustainable Living. *Traditional Dwellings and Settlements Review*, 23(2): 35–50. Retrieved from <http://www.jstor.org/stable/41758894>
- Abu Dawud, 5023. Hadith. (1992). Compiled by Abu Dawood, Winhadith Version 0.1b, Islamic Computing Center, London.
- Abu-Lughod, J. L. (2009). The Islamic City-Historic Islamic Essence, and Contemporary Relevance. *International Journal of Middle East Studies*, 19(2): 155–176. DOI: <http://dx.doi.org/10.1017/S0020743800031822>
- Ahmed, K. G. (2003). User-Controlled Housing Processes: Towards Socio-Culturally Responsive Low-Income Housing in Cairo. Welsh School of Architecture Cardiff University, Egypt.
- Akbar, J. A. (1981). *Support for Court-Yard Houses*. Saudi Arabia: Riyadh.
- Al Hafith, O. A. (2010). *Model for multifamily courtyard Housing*. Mosul university, Iraq.
- Al Quran, (33:52, 49:10, 4:38). (1991). Translated by Abdullah Yusuf Ali in the Meaning of the Holy Quran. Brentwood, MO, Amana Corporation.
- Al-Azzawi, S. (1969). Oriental Houses in Iraq. In Oliver, P. (Ed.), *Shelter and Society*, London: Barrie & Jenkins Limited.
- Al-Azzawi, S. (1994). Indigenous Courtyard Houses. *Renewable Energy*, 5(2): 1099–1123. DOI: 10.1016/0960-1481(94)90137-6
- Al-Beirouty (1992). *The Evolution of the House in Baghdad during the 20<sup>th</sup> Century with Special Emphasis to Cultural and Social Influences*. University of Baghdad.
- Al-Haidary, A. (2008). *The Baghdad House*. Al-Mada P.C.
- Al-Hemaidi, W. (2001). The Metamorphosis of the Urban Fabric in Arab-Muslim City: Riyadh, Saudi Arabia. *Journal of Housing and the Built Environment*, 16: 179–201. Retrieved from <http://link.springer.com/article/10.1023/A:1017908616597>
- Al-Ibrabim, M. H. (2003). The Criticism of Modern Architecture in Saudi Arabia. *Journal of King Saud University: Architecture and Planning*, 2: 63–80.
- Al-MullaKhalaf, M. (1974). Iraq - UNESCO World Heritage Centre.

*International Coordination Committee for the Safeguarding of the Cultural Heritage of Iraq.* Retrieved March 27, 2015, from <http://whc.unesco.org/en/statesparties/iq>

Al-Nijaidi, H. R. (1985). *Flexibility in the design of building*. PhD Thesis: Department of architecture, Oxford Polytechnic, London, UK.

Al-Taie, E., Al-Ansari, N., & Knutsson, S. (2012). Materials and the Style of Buildings Used in Iraq During the Islamic Period. *Journal of Earth Sciences and Geotechnical Engineering*, 2(2): 69-97. Retrieved from [http://pure.ltu.se/portal/files/40091442/Entidhar\\_2.pdf](http://pure.ltu.se/portal/files/40091442/Entidhar_2.pdf)

Alchalabi, O. (2011). Genetic Shape Plan of the Traditional Ottoman's Style House. *Al-Rafidain Engineering*, 20(5): 148-164. Retrieved from <http://www.alrafidain.engineering-collmosul.com/files/2012/no5/E/FE-13-5-2012.pdf>

Alhusban, A., & Al-Shorman, A. (2011). The Social, Political and Economic Functions of Courtyard Houses in Umm Qais, Northern Jordan. *International Journal of Historical Archaeol*, 15: 1-9. DOI:10.1007/s10761-010-0126-6

Amlashi, A. P., Mousavi, S. Y., & Falakian, A. (2013). The Characteristics of Suitable Home from Islam Point of View in Comparison with Modern Architecture. *International Research Journal of Applied and Basic Sciences*, 4(5): 1312-1318.

Ani, R. H. (1994). *In the Shadow of Segregation: Women's Identity in the Modern Iraqi House*. Massachusetts Institute of Technology. Retrieved from <http://hdl.handle.net/1721.1/63203>

Balbas, L. T. (1942). Les Villes Musulmanes d' eane et leur Urbanization. *Annales de l'institut d'etudes Orientates*, vol. 7.

Bekleyen, A., & Dalkiliç, N. (2011). The Influence of Climate and Privacy on Indigenous Courtyard Houses in Diyarbakır, Turkey. *Scientific Research and Essays*, 6(4): 908-922. DOI: 10.5897/SRE10.958

Bianca, S. (2000). Basic Principles of Islam and their Social, Spatial and Artistic Implications. In *Urban Form in the Arab World: Past and Present* (pp. 22-47). London; New York: Thames and Hudson.

Burckhardt, T. (2009). *Art of Islam: Language and Meaning*. World Wisdom.

Burckhart T. (1976). *Muslim Town Planning; in The Art of Islam: Language and meaning*. World Wisdom.

Critchlow, K. (1988). Astronomical and Cosmological Symbolism in Islamic Patterns: The Objectivity of Sacred Geometry. In Sevcenko, Margret

(Ed.), *Theories and principles of design in the Architecture of Islamic Societies*, 1st Edition. (pp. 47- 56). The Agha Khan Program for Islamic Architecture, Cambridge, Massachusetts.

Ealiwa, M.A., & Taki A.H. (2001). An Investigation into Thermal Comfort in the Summer Season of Ghadames, Libya. *Building and Environment*, 36(2): 231- 237.

Eben Saleh, M. A. (1997). Privacy and Communal Socialization: The Role of Space in the Security of Traditional and Contemporary Neighborhoods in Saudi Arabia. *Habitat International*, 21(2): 167-184. DOI: 10.1016/S0197- 3975(96)00055-0

Edwards, B. (2006). *Courtyard Housing: Past, Present and Future*. Taylor & Francis. Retrieved from <http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Courtyard+Housing+:+Past+,+Present+and+Future#0>  
<http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Courtyard+housing:+past,+present+and+future#0>

Edwards, B., Sibley, M., Hakmi, M., & Land, P. (2005). *Courtyard housing past, present and future*. Taylor & Francis e-Library.

El-Shorbagy, A. (2010). Traditional Islamic-Arab House: Vocabulary and Syntax. *International Journal of Civil & Environmental Engineering*, 10(4): 15-20. Retrieved from <http://ijens.org/104104-3838/IJCEE-IJENS.pdf>

Errington, S. (1979). The Cosmic House of the Buginese. *Asia*, 1(5): 8-14. Farah, E. A. (2001). Gender Zones in the Arab Muslim House. In *Proceedings*, 3rd

Germeraad, P. (1990). *Open space in human settlements: the lesson from Islamic tradition*. Retrieved from [http://www.researchgate.net/publication/40178264\\_Open\\_space\\_in\\_human\\_settlements\\_the\\_lesson\\_from\\_the\\_Islamic\\_tradition](http://www.researchgate.net/publication/40178264_Open_space_in_human_settlements_the_lesson_from_the_Islamic_tradition)

Ghareeb, E. A., & Dougherty, B. (2004). *Historical Dictionary of Iraq (Historical Dictionaries of Asia, Oceania, and the Middle East)*. In J. Woronoff (Ed.), (1st ed.). The Scarecrow Press, Inc. Retrieved from [www.scarecrowpress.com](http://www.scarecrowpress.com)

Grube, E. J., & Michell, G. (1995). *Architecture of the Islamic World: Its History and Social Meaning: With a Complete Survey of Key Monuments and 758 Illustrations, 112 in Colour*. Thames and Hudson. Retrieved from <http://books.google.com.my/books?id=puiFQgAACAAJ>

Grunebaum, G. E. Von. (1955). *Islam Essays in the Nature and Growth of a Cultural Tradition*. Memoir of The American Anthropological Association, London: Routledge and Kegan Paul.

- Gu, P., Xue, D., & Nee, A. (2009, May 28). Adaptable design: concepts, methods, and applications. *Journal of Engineering Manufacture*, 11: 1367-1378.
- Hakim, B. (1986). *Arabic-Islamic Cities: Building and Planning Principles*. London; New York: RoMEO.
- Hammad, R. N. (1997). Islamic Legislation in Land Use and Planning and Its Effect on Architectural Style. *Open House International*, 22(2): 54-60.
- Hamouche, M. Ben. (1999). Sight Restrictions in Maghrib Muslim Architecture. *Intellectual Discours*, 7(2): 133-154.
- Haraty, H., Raschid, M. and Yunos, M. (2015, April 28). Traditional Iraqi Courtyard Houses Morphology: An Islamic Point of View. In Aniza Abu Bakar (Ed.). *A Vision of Establishing Green Built Environment*. Paper presented at UMRAN 2015 Landscape Seminar, Kulliyyah OF Architecture and Environmental Design, IIUM (pp. 231-245), The Department of Landscape and Architecture: International Islamic University Malaysia.
- Hashemain, M. (2005). *Design for adaptability*. PhD Thesis. Saskatoon: Department of mechanical engineering, University of Saskatchewan.
- Hillier B. (2007). *Space is the machine*. London, United Kingdom: Space Syntax.
- Hussein, M. (2013). From Courtyard to Monument: Effect of Changing Social Values on Spatial Configuration of "The Cities of the Holy Shrines" in Iraq. In Y. O. Kim, H. T. Park, & K. W. Seo (Eds.), *Proceedings of Ninth International Space Syntax Symposium* (pp. 038:2-038:23). Seoul: Sejong University Press 2013. Retrieved from [http://sss9.or.kr/proceedings/proceedings\\_1.asp](http://sss9.or.kr/proceedings/proceedings_1.asp) International Space Syntax Symposium. Atlanta, May 2001 (pp. 42.1 - 42.15).
- Ishteeaque, E. M., & AlSaid, F. A. (2003). The Story of the Courtyard House Middle Eastern-Arab Case Study. *International Journal for Housing Science and Its Applications*, 27: 213-224.
- Itewi, M. (2007). Towards a Modern Theory of Islamic Architecture. *Australian Journal of Basic and Applied Sciences*, 1(2): 153-156.
- Jovanović, G. (2007). Flexible organization of floor composition and flexible organization of dwelling space as a response to contemporary market demands. *The scientific Journal: Architecture and Civil Engineering*, Vol. 5 (No. 1), pp. 33-47.
- Kaptan, K. (2013). Early Islamic Architecture and Structural Configurations. *International Journal of Architecture and Urban Development*, 3(2): 5-12.

- Karimi, A., & Hosseini, B. (2012). The Influence of Iranian Islamic Architecture on Traditional Houses of Kashan. In *2nd International Conference on Archi- Cultural Translations through the Silk Road* (pp. 81-86). Nishinomiya. Retrieved from [http://www.mukogawau.ac.jp/~iasu2012/pdf/iaSU2012\\_Proceedings\\_204.pdf](http://www.mukogawau.ac.jp/~iasu2012/pdf/iaSU2012_Proceedings_204.pdf)
- Kodmany, K. Al. (1999). Residential Visual Privacy: Traditional and Modern Architecture and Urban Design. *Journal of Urban Design*, 4(3): 283-311. DOI: 10.1080/13574809908724452
- Lapidus I. M. (1970). Muslim Urban Society in Mamluk Syria. In A. H. Hourani & S. M. Stern (Eds.), *The Islamic City* (pp. 195-205). Oxford.
- Lindburg, A., Howe, J., Bowyer, J., & Fernholz, K. (2007). *Combining Green Building Innovations with Affordable Housing Needs*. Retrieved 9 10, 2011, from Dovetail Partners, INC.: <http://www.dovetailinc.org/files/DovetailEcoAfford0807ol.pdf>
- Lubell, J., Crain, R., & Cohen, R. (2007, 7). *Center for housing policy*. Retrieved 9 7, 2011, from The positive impacts of affordable housing on health: [http://www.nhc.org/media/documents/FramingIssues\\_Heath.pdf](http://www.nhc.org/media/documents/FramingIssues_Heath.pdf)
- Lynch, K. (1956). Environmental adaptability. *Journal of the American Institute of Planners*, pp. 16-24.
- Marcais, G. (1940). "L'urbanisme Musulman." In *Congres de la federation des Societes Savantes d'Afrique du Nord*, Alger, 13-34.
- Mazumdar, S. (1997). Religious Traditions and Domestic Architecture: A Comparative Analysis of Zoroastrian and Islamic Houses in Iran. *Journal of Achitectural and Planning Research*, 14(3): 181-207.
- Mazumdar, S., & Mazumdar S. (1989). The Zoroastrian House and the Islamic House: A Comparative Cultural Analysis. In *Changing Paradigms* (pp. 51- 59).
- Memarian, G. H., Oljerdi, S., & Kermani, A. (2011). Privacy of House in Islamic Culture: A Comparative Study of Pattern of Privacy in Houses in Kerman. *International Journal of Architectural Engineering & Urban Planning Privacy*, 21(2): 69-77.
- Mishkat Al Masabih, 3526. Hadith Winhadih Version 0.1b, Islamic Computing Center, London.
- Mitchell, W. J., Steadman J. P., & Liggett R. S. (1976). Synthesis and Optimization of Small Rectangular Floor Plans. *Environment and Planning B: Planning and Design*, 3(1): 37-70.
- Mitra, A., & Lankford, S. (1999). *Research Methods in Park, Recreation, and Leisure*

Services. Sagamore Publishing Inc.

- Mohammed, S. A. (1989). *Design parameters for providing flexibility in low-rise multifamily housing*. Baghdad: Baghdad University.
- Moshaver, S. (2009). *Flexible Housing: Incorporating Working Space Within the Living Space*. M.Sc. Thesis, Sheffield: School of Architecture, Sheffield University.
- Murray, S., & Graham, C. (1995). Practice-Based Health Needs Assessment: Use of Four Methods in a Small Neighbourhood. *British Medical Journal*, 310: 1443-1448.
- Noor, M. (1991). *The Function and Form of Courtyard in the Arab House*, University of Newcastle upon Tyne, School of Architecture, Center for Architectural research and Department Overseas, pp: 61-72.
- Nooraddin, H. (2012). Architectural Identity in an Era of Change. *IISTE*, 2(10): 81-96.
- Oikonomou, A. (2008). Bioclimatic Elements and Design Principles of the Traditional Architecture in Northern Greece. In *25th Conference on Passive and Low Energy Architecture* (Vol. 269, pp. 25-29). Retrieved from [http://architecture.ucd.ie/Paul/PLEA2008/content/papers/poster/PLEA\\_FinalPaper\\_ref\\_269.pdf](http://architecture.ucd.ie/Paul/PLEA2008/content/papers/poster/PLEA_FinalPaper_ref_269.pdf)
- Othman, Z., Buys, L., & Aird, R. (2013). Home and the Embodiment of Privacy. In TS+B1 (Time, Space and Body) *Global Conference*, 12-13 February 2013. Mercure Hotel, Sydney, Australia.
- Payne, G., & Payne, J. (2004). *Key Concepts in Social Research*. SAGE Key Concepts.
- Planhol, X. (1957). The Geographical Mark of Islam. In *The World of Islam*. Cornell University Press, Ithaca, N. Y.; Oxford University Press, London, New York, Toronto.
- Polgar, S. and Thomas, S. (1991). *Introduction to Research in Health Sciences* (2nd edn). Harlow: Churchill Livingstone.
- Poulsen, L., & Silverman, M. (2005). *Design Strategies for the Densification of Low Income Housing*. Retrieved 6 12, 2011, from University of Pretoria: <http://137.215.9.22/bitstream/handle/2263/10323/Design%20Strategies%20for%20the%20Densification%20of%20Low%20Income%20Housin.pdf?sequence=1>
- Queensland government - Department of housing. (2004). *Affordable housing design guidelines*. Retrieved 2011, from Queensland community housing coalition:

- Rahim, A. A. (2005). Housing from an Islamic Perspective. Islamic Industrial Design Workshop Working Paper Majlis Ilmu. *Celebration of the 59th Birthday of His Majesty Sultan Haji Hassanal Bolkiah Mu 'izzaddin Waddaulah Sultan and Yang Di-Pertuan of Brunei Darussalam*. Retrieved from <http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:No+Title#0>
- Rahim, A., & Hassan, F. (2012). Study on Space Configuration and its Effect on Privacy Provision in Traditional Malay and Iranian Courtyard House. *International Proceedings of Economics Development & Research*, 42: 115–119. Retrieved from <http://www.ipedr.net/vol42/023-ICKCS2012-K10013.pdf>
- Rao, P. (2010). Multiple Uses of Spaces in architectural design. *Architecture - Time Space & People*, pp. 36-40.
- Rapoport, A. (1982). *The Meaning of the Built Environment: A Nonverbal Communication Approach*. University of Arizona Press. Retrieved from [https://books.google.com.my/books?id=bn\\_7\\_UFABdUC](https://books.google.com.my/books?id=bn_7_UFABdUC)
- Raymond, A. (1984). *The great Arab Cities in the 16th and 18th Centuries*. New York: University Press.
- Reuther, O. (1910). *Das Wohnhaus in Bagdad und anderen Städten des Irak*. Berlin: Wasmuth.
- Russel, P., & Moffat, S. (2001, 11). *Assessing The Adaptability of Buildings*. Retrieved 8 12, 2011, from Annex 31: <http://annex31.wiwi.uni-karlsruhe.de/pdf/PDF%20version%20%20Background%20Reports%20Annex%2031%20Assessing%20Building.pdf>
- Sayyed, W. Al. (2012). Contemporary Arab Architecture: Space, Form, and Function. *Lonaard Magazine Is a Peer-Reviewed Periodical*, 2(7): 49–75.
- Sharif, S. M., Zain, M. F. M., & Surat, M. (2010). Concurrence of Thermal Comfort of Courtyard Housing and Privacy in the Traditional Arab House in Middle East. *Australian Journal of Basic and Applied Sciences*, 4(8): 4029– 4037.
- Sidawi, B. (2013). Understanding the Vocabulary of the Islamic Architectural Heritage. *Global Built Environment Review*, 8(2): 26–39.
- Silverman, D. (1997). *Interpreting Qualitative Data*. London: Sage. Slamet, Y. (1993). *Analisis Kuantitatif Untuk Data Sosial*. Solo: Dabara Publisher.
- Sobh, R., & Belk, R. (2011). Domains of Privacy and Hospitality in Arab Gulf Homes. *Journal of Islamic Marketing*, 2(2): 125-137.
- Spahic, O. (2008). *Islam, Architecture & Urban Planning*. Arah Pendidikan Sdn

Bhd. Retrieved from [https://books.google.com.my/books?id=gGo\\_CfinNS0C](https://books.google.com.my/books?id=gGo_CfinNS0C)

Spahic, O. (2008). *The Origins and Functions of Islamic Domestic Courtyards*. First edit., Research Center, International Islamic University Malaysia. Available at: <http://rms.research.iium.edu.my/bookstore/Products/140- www.googlecom.aspx>.

Spahic, O. (2008). Towards Understanding Islamic Architecture. *Islamic Studies*, 47(4): 483–510.

Spahic, O. (2010). *Islam & housing*. Malaysia A.S. Noordeen. Retrieved from <http://irep.iium.edu.my/id/eprint/53>

Surf, M. Al. (2012). Analyzing the Literature for the Link between the Conservative Islamic Culture of Saudi Arabia and the Design of Sustainable Housing. In *Proceedings of 2nd International Conference Socio-Political and Technological Dimensions of Climate Change* (pp. 3–16). Retrieved from <http://eprints.qut.edu.au/55235/>

Susilo, I. W. (1969). *The Living Culture and Typo-Morphology of Vernacular-Traditional Houses in Kerala*. Manohar Publishers. Retrieved from [http://www.asianscholarship.org/asf/ejournal/articles/indah\\_w.pdf](http://www.asianscholarship.org/asf/ejournal/articles/indah_w.pdf)

The Holy Qur'an, Translated by Yusuf Ali, Pickthal and Shakir.

Traditions (*hadiths*) from 2 to 9: Ahmad Sa'duddin, Da'if al-Targhib wa al-Tarhib li al-Mundhiri.

Wazeri, Y. (2002). *Environment Architecture Application*. Cairo: Madboli library for publishing.

Wikipedia, the free encyclopedia. (n.d.). Retrieved May 23, 2015, from [http://en.wikipedia.org/wiki/Main\\_Page](http://en.wikipedia.org/wiki/Main_Page)

World Book, I. (1993). *The World Book encyclopedia*. Chicago: World Book. Retrieved from <http://catalog.hathitrust.org/api/volumes/oclc/27195833.html>

Yu, N. (1999). *The Urban Courtyard Housing form as a Response to Human Needs, Culture and Environment*. The University of Guelph, Canada.