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The Role of the Saudi Arabian Mosque in Preserving Culture and Enhancing Community Connectedness

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FLORIDA STATE UNIVERSITY
COLLEGE OF FINE ARTS

THE ROLE OF THE SAUDI ARABIAN MOSQUE IN PRESERVING CULTURE AND
ENHANCING COMMUNITY CONNECTEDNESS

By

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To my husband, Sultan, for his love, patience, and belief in me
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ABSTRACT

Globalization and modernization since the discovery of oil have greatly affected the built environment of the twenty-first century Saudi Arabian city. These changes span all aspects of life and impact the social structure of residential communities. The design of cities, towns, and the buildings within them has been influenced by greater exposure to non-Saudi building types that came as a result of greater affluence and globalization. This study addressed changes in the design of the congregational mosque in Saudi Arabia after the discovery of oil in the 1930s. It explored the role of the congregational mosque in the twenty-first century Saudi Arabia, and its influence on residents' attachment to their neighborhoods and sense of community respective to design.

Feelings of connectedness to the community at large and attachment to residential neighborhoods are essential for the wellbeing of residents. Identifying with a place plays an important role in helping people attach meaning to places and forming emotional connections to them. Cities with places where socialization between community members occurs can support strong attachment to place. Prior to the discover of oil in Saudi Arabia, the congregational mosque served as the main community gathering place. Much of the communal activity, both religious and social, occurred in the mosque. Following the discovery of oil and changes in building types, communities changed.

To better understand the impact of the changes in the design and role of the mosque, a survey was sent to 3000 employees of the Royal Commission for Jubail with 325 completed responses received. In addition to surveys, interviews were conducted with eight mosque attendees and the Imam (the leader of the mosque) to further understand the phenomenon of the

mosque as a communal place. A case study of the Farouq congregational mosque in Jubail Industrial city was conducted and analyzed using spatial syntax methodology.

The study revealed six themes related to the research questions including: social interaction between residents of the local neighborhood, neighborhood attachment, the use of the current-day mosque, the mosque as a social gathering place, the mosque as a community influencer, and the mosque's architecture. Findings indicated the presence of a small community formed around the congregational mosque. However, results showed a decrease in the use of the mosque as a community gathering place when compared to mosques prior to the discovery of oil. Survey results indicated an interest in the mosque as a place to gather for prayer, as well as activities other than prayer. Therefore, findings suggest more efforts should be made to utilize the mosque facility as a place to help strengthen the social relationships between residents. More connection among residents has the potential to promote a stronger sense of community and attachment to residential environments.

CHAPTER 1

INTRODUCTION

Background to the Problem

Globalization is a phenomenon that has affected most aspects of modern life including architecture and the built environment. The globalization of Saudi Arabia's cities following the discovery of oil in the 1930s has led to massive urban modernization and standardization of the built environment (Eldemery, 2009; Eben-Saleh, 1997). The impact of modernization on Saudi Arabia's cities can be seen in the design of buildings that take on foreign (primarily Western) forms that carry no regional characters or cultural distinctiveness (Al-Naim, 2008). Many scholars argue that modernization created contemporary cities, which lack architectural identity and fail to meet social values and cultural needs (Eben-Saleh, 1989). As described by prominent Saudi architect Jamal Akbar (1988), the current Saudi architecture suffers "an environmental crisis" as it lacks values and principles found in the traditional architecture.

According to Eldemery (2009), a local building is considered successful only when it manages to incorporate local cultural qualities. From the early days of existence, people have longed to be part of a community (Eben-Saleh, 1989). As community identity evolves, it provides a connection to the culture. Place identity is an essential part in establishing a sense of belonging and bonds between a community and its residents (Proshansky, 1978). It aids people in attaching meaning to a place, forming emotional connections to it, and having a positive place experience (Aly, 2011; Steele, 1981). Failure to develop a connection to a place weakens its meaning and significance to users (Ujang, 2009). The loss of physical identity lessens people's attachment to the place (Ujang & Zakariya, 2015).

The ability of places to successfully promote socialization among people and their community can contribute to the formation of place attachment (Altman, 1992). Communities share similar goals and desires that can be fulfilled by providing a communal living environment with multipurpose spaces (Baharudin & Ismail, 2014). Having shared values, history, and common identity aid in the formation of a community where interaction and communication between members are less problematic (Gusfield, 1975). McMillan and Chavis (1986) reported studies on residents' sense of attachment and sense of community in which they concluded that neighborhoods that have strong social fabric tend to have socially active members who invest more in their community.

In the case of Saudi Arabia, the congregational mosque was formerly acting as the main community center in residential neighborhoods prior to the discovery of oil. Rasdi (1999) indicated that the purpose of the congregational mosque is to accommodate ritual prayers as well as provide a gathering place for the residents of the Muslim community. He advised designers to design for community interaction and social activities. Societal needs of the community must be identified and met in the design of the congregational mosque in order for it to function as a communal place (Gabr & AbdelGalil, 2016). The importance of the congregational mosque depends not only on fulfilling the need for worship, but also on residents' needs for social interaction and social bonds (Saphire, 2002). The planning of traditional cities of Saudi Arabia reinforced the significance of the mosque by centralizing its location within the heart of the city (Thaqafan, 1999). As a result of modernization, the congregational mosque design and function has changed the twenty-first century Saudi cities (AlSoliman, 1991). The new planning of the modern cities led to a decrease in the opportunities for social interaction among residents of the residential neighborhoods (Eben-Saleh, 1997).

Problem Statement

Previous research has shown the impact of globalization and modernization trends on the twenty-first century Saudi Arabian built environment. Some scholars have identified the impacts of these trends on the social structure of the residential communities. The need for strong social bonds and community cultures is essential for the well-being and protection of residents (McMillan & Chavis, 1986). Literature indicated the active social role of the congregational mosque in the traditional settlements of Saudi Arabia but there is no literature on the current conditions of the twenty-first century mosque in terms of societal use. Further research investigating the effect through actual case studies would shed light on the impact of these changes. This study will address that gap in the existing literature by exploring whether the congregational mosque still performs the same functions as it formerly did and its influence on residents' attachment to their neighborhoods and sense of community.

Purpose of the Research

The goal of this research is to evaluate residents' sense of attachment and sense of community among neighborhood members in the twenty-first century residential districts of Saudi Arabia. It will investigate the impact of the congregational mosque in influencing the sense of community in residential locales. Detailed information regarding the changes that have taken place in the design of the congregational mosque in terms of its design and function as a communal place will be gathered. The effects of the mosque's change on residential communities and social relationships between members will be examined.

Justification of the Research

The research will provide an evaluation of the current residential neighborhoods in Jubail Industrial city, with specific focus on the role of the mosque. The mosque is the only social building required to be present in each district of Saudi Arabia by the Ministry of Municipality & Rural

Affairs. As an existing communal place open for the use of residents, it might offer insights on the community structure in which it is located. At the time of this research, there are limited studies available that focus on the sense of community and community attachment as it relates to the mosque in a Muslim country. The findings will be shared with Jubail Industrial city governing authority, the Royal Commission, which can influence the development of current and future city's projects.

It is intended that this research will assess residents' use of the congregational mosque in residential districts and its role as a community gathering place in establishing a sense of community and belonging within residents, therefore contributing to the body of knowledge in mosque design and architecture. The research can also be part of the ongoing studies in the allied field of urban planning, which studies planning of the towns of Saudi Arabia. Moreover, it aims to provide insights on the architecture and design aspects and the human interaction with place.

The research will offer a follow up on previous literature and studies that claim the change in the planning of the Saudi Arabian towns in the twenty-first century led to a loss of cultural and urban identity and a change in social structure and values. Although the study will focus on the congregational mosque, the researcher will be open to learning more about other structures that may contribute to the sense of community.

Research Questions

Primary Question

- How have changes in the design of the Saudi Arabian congregational mosque following the discovery of oil influenced the sense of community in modern residential neighborhoods?

Secondary Questions

- How has the use of the mosque changed respective to the design changes that have occurred after the discovery of oil?

- What spatial features in the design of the mosque have played a part in the mosque's role as a community gathering space?
- What is the relationship between the socio-behavioral environment of the mosque and the Saudi citizens' attachment to their community?

An Overview of the Methodology

The research will consist of a phenomenological study using a mixed-method approach. It will use a survey to answer questions on existing residents' sense of attachment to their neighborhood, use of the congregational mosque as a communal place, and social relationships among neighbors around the mosque. Interviews will be used to collect information on the design of the congregational mosque, changes in the twenty-first century mosque, and users' experience with the place. These interviews will help in evaluating the effectiveness of the current mosque's design in providing a community gathering place. The study will examine the residential neighborhoods of Jubail Industrial city, Saudi Arabia. The survey sample will be employees of the Royal Commission for Jubail organization who are residents of the city and are 23 to 65-year-old males and females. The interviews will take place with the mosque Imam and eight members of the Farouq congregational mosque community. A case study of the Farouq congregational mosque and neighborhood will be conducted and analyzed using space syntax method. The analysis aims to investigate the role of space configuration to human use of the space.

Assumptions and Limitations, and Delimitations

The researcher assumes that participants will answer the survey and interview questions truthfully and accurately. It is expected that the instruments will capture honest responses based on participants' personal experiences. It is presumed that the majority of the targeted sample are

residents of Jubail Industrial city and do not commute to work from other neighboring cities. The research assumes that all participants will have access to at least one congregational mosque in their neighborhood as neighborhood mosques are required by planning regulations and standards in Saudi Arabia. It is expected that the survey will reach approximately 3000 potential respondents and the researcher will be able to receive at least 300 responses. Because Saudi Arabia is a predominately Muslim country, it is expected that the vast majority of respondents will have been in contact with a mosque.

The research will be limited to Jubail Industrial city's residents. The research will examine only the mosque as a building that might influence the community's sense of attachment and will not study other built environments or facilities. However, the researcher will be receptive to hearing of other structures that may be impacting residents' sense of community. It will only target the employees of the Royal Commission for Jubail as participants of the study and will not involve residents working in other organizations. The researcher will investigate residents' sense of attachment and community in newly established neighborhoods that have been built over the last 35 years, which might limit its external validity.

Researcher bias might be considered an issue in the qualitative portion of this study, as the researcher is part of the community. However, measures against researcher bias will be taken to maintain internal reliability and eliminate partiality. The researcher will share raw data with her directing professor and committee members to ensure that it is being interpreted in a way that achieves a neutral and an objective and assessment as possible. Although the researcher will have the opportunity to visit Saudi Arabia, take photos of the mosque, and interview the Imam (the leader of the mosque), and members of the mosque community, other portions of the study will need to take place from the United States where the researcher is a graduate student. This may limit the researcher's ability to observe the studied environment in depth in Saudi Arabia.

Summary

Design impacts human experiences and the well-being of users. Analyzing existing design projects regarding their efficiency in performing their intended functions and how they serve users is important. Findings of such analysis will provide beneficial information on how to design a better suited and functional built environment. Existing literature suggests that the built environment has the ability to impact people's lives and influences their living conditions. These research results may provide insights on the community's interaction within the congregational mosque in the cities of Saudi Arabia which might be valuable in designing facilities that support residents' attachment and sense of community.

Definition of Terms

Community: An interacting population of various kinds of individuals (as species) in a common location (Merriam-Webster, 2017).

Culture: Relating to the ideas, customs, and social behavior of a society (Oxford Dictionary, 2017).

Cultural Identity: Identification with, or sense of belonging to, a particular group based on various cultural categories, including nationality, ethnicity, race, gender, and religion. Cultural identity is constructed and maintained through the process of sharing collective knowledge such as traditions, heritage, language, aesthetics, norms and customs (Chen, 2014).

Identity: The characteristics determining who or what a person or thing is (Oxford Dictionary, 2017).

Jubail Industrial City (JIB): A city in the Eastern province of Saudi Arabia located on the Persian coast and the largest industrial city in the Middle East.

Mihrab: A niche in the wall of a mosque, at the point nearest to Mecca, towards which the congregation faces to pray (Oxford Dictionary, 2017).

Mosque: A Muslim place of worship (Oxford Dictionary, 2017).

Place: A particular position, point, or area in space; a location for a specified purpose or activity (Oxford Dictionary, 2017).

Place Identity: How people incorporate a place into the larger concept of their own identities or sense of self (Kopec, 2012).

Qibla: The direction of the Kaaba (the sacred building at Mecca), to which Muslims turn at prayer (Oxford Dictionary, 2017).

Royal Commission for Jubail (RCJ): An autonomous organization of the Saudi Arabian government and the governing authority of the Jubail Industrial city.

Sense of attachment: When individuals form an emotional bond with their immediate social and physical environment (Nussbaumer, 2009).

Sense of Community: Sense of community is a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together (McMillan & Chavis, 1986)

CHAPTER 2

LITERATURE REVIEW

Introduction

A community's sense of attachment to the neighborhoods' environment is a topic that has been discussed often in scholarly literature. Many scholars attribute well-being and feelings of security and protection to strong sense of community and attachment to the neighborhood. This review of literature investigates the impact of the design of residential neighborhoods on the social bonds between residents. It discusses the role of the congregational mosque as a communal place in residential neighborhoods of Saudi Arabia. The chapter begins with a discussion about the modernization of the Saudi Arabian built environment in the decades following the discovery of oil, and how it affected residential settings. It continues with an exploration of the traditional and the twenty-first century contemporary mosque's design and planning. The literature review highlights the links between cultural and urban identity, sense of place, and sense of community and belonging. The literature review references several Arabic resources in the discussion of the mosque in addition to the ones written in the English language.

Modernization of Saudi Arabia's Built Environment

Globalization in Saudi Arabia has caused urban modernization and standardization of the built environment, depriving human habitats of cultural and regional qualities (Eldemery, 2009). Encyclopedia Britannica defines globalization as a "phenomenon by which the experience of everyday life, as influenced by the diffusion of commodities and ideas, reflects a standardization of cultural expressions around the world." The globalization phenomenon has received much attention in the last decade as cities are confronting great challenges as a consequence of globalization (Eldemery, 2009). Globalization has provoked two opposing views on the benefits

and impact of globalization on the built environment. One view promotes invention, dissemination of new forms using new materials and technologies, and rewards systemization, flexibility, and interchangeability. The other view advocates indigenous architectural traditions, historical continuity, cultural diversity, and preservation of identity (Eldemery, 2009).

As reported by Al-Naim (2008), the architecture of Saudi Arabia today has an imported architectural language that is Western in character. For a long period of time, this Westernization has been perceived as an image of progress and prestige and has greatly influenced the local architectural values. To catch up with modernity many architectural projects have been exported to the region without considering that these alien forms have implied different codes of behavior and environmental conditions. With these newly introduced foreign forms, the contemporary city of the twenty-first century started to lose its local identity and the ability to meet its needs including traditions and customs of its inhabitants. As a result, some cities are now seeking architectural regionalism, some are trying to recover architectural traditionalism, and others are trying to construct traditional forms within their modern settings (Eldemery, 2009).

Saudi Arabia has experienced dramatic modernization movement resulting in drastic urban changes (Al-Naim, 2008). The changes in Saudi Arabian architecture can be dated back to the discovery of oil in the 1930s leading to a massive economic boom that directed the nation to new technological and resource opportunities (AlSoliman, 1991). According to Eben-Saleh (1997, 1998), the modern Saudi community started in the 1950s as the result of improvement in the economic conditions. Projects constructed since the 1970s are the least representative of the regional characteristics. The modernization process in Saudi Arabia was imitative of Western models as a consequence of the government's goal to create a modern country in a short period of time (Al-Naim, 2008). In 1960, the first building regulations were issued by the Deputy Ministry of Interior for Municipalities. These regulations are reflected in the first planned cities in Saudi Arabia, Dammam

and Khobar, which were constructed in the late 1940s after the discovery of oil. The construction of these cities was commissioned by the Saudi government and led by Aramco, Arabian-American Oil Company, which employed American engineers and surveyors. People started moving from their old neighborhoods and mud houses into modernized, grid planned districts with concrete houses that looked alien to the cities and were designed following the International style (Al-Naim, 2008).

Many scholars, including Eben-Saleh (1989) agreed that as a result of standardized models, contemporary cities represent no architectural identity or continuity of tradition and heritage. On the contrary, the contemporary city presents physical characteristics that are at odds with the social and cultural context in which it exists. Eben-Saleh suggests that harmony can be achieved by relating urban spaces to culture and connecting the contemporary with the traditional. As space use and quality are defined by social customs and traditions, architecture must be relevant to human needs in terms of function and symbolism (Eben-Saleh, 1989).

The Mosque as a Communal Place

The Islamic Institution of the Mosque

Much of the work documented by architectural historians on the mosque was subjected to their interpretation of it as a form of “architecture” focusing mainly on how the building represents and reflects the start of the Islamic architecture rather than discussing it as “a mere building” (Rasdi, 1999). Many historians reported the mosque as a religious place mainly for performing prayer rituals and recitals. However, observing the prophet’s mosque in AlMadinah, Saudi Arabia as an example of the earliest mosque in Islam shows that it has been used as a social, political, and religious center. It has also been documented that it was used as a shelter, educational institution, and a health care facility. Celebrations and recreational activities took place in and near the prophet’s mosque (Rasdi, 1999). To trace the necessity of the existence of the mosque as a place to perform prayer, one can refer to the prophet’s saying “*The earth has*

been made for me and my followers as a place for praying. Therefore, my followers can pray wherever the time of prayer is due” which means that prayers do not require the presence of any physical construction (Elbelkasy & Elemam, 2016). According to Elbelkasy and Elemam, the purpose of commissioning the construction of the mosque was used not only for the ritual prayers but also as a gathering place. Consequently, one can assume that the role of the congregational mosque is to foster the essence of the community and not to reserve its function only for the performance of prayer (Rasdi,1999). As Muslim prayer is meant to be performed in groups when held in the mosque, Rasdi (1999) contends that there is no reason to design the mosque with a “meditative expression”. Its importance as a social place comes from the fact that residents of the Islamic city, especially men, frequently gather in it to perform the congregational prayer five times a day and weekly for the Friday prayer (Thaqfan,1999). According to Rasdi (1999), designers should perceive the mosque as a bustling center of activities and a place for community interactions where it can act a “social workhouse” for Muslims to converge and fulfill their social obligations.

The sense of community has been an important concept in Muslim society reflected in the strong social bonds between residents through the active role of the mosque in the city. The mosque as a building in the early Islamic city lent itself to the community as a multifunctional place rather than a solely religious structure, centering itself in the midst of commercial activities such as shops and service retailers (Saad, 1999). As referenced by Azaam (2007), the congregational mosque is the ultimate mosque type as it is an embodiment of all possible spatial and social relations. Other mosques types include the small daily mosque, where the daily five prayers take place, and the Eid mosque, where the yearly Islamic holiday prayer takes place.

Gabr and AbdelGalil (2016) suggested that for the mosque to function as a communal place and the nucleus of the urban Islamic city, societal needs must be identified and met in the design of the mosque to ensure community well-being. Tangible needs are spatial and physical components that allow the mosque to serve its religious function such as the horizontal prayer space and ablution areas. On the other hand, intangible social needs are communal needs, which establish a sense of unity, identity, and social bonds, which can be evidenced by the interaction between people. Its importance depends on not only the need of worshipping but on individuals' tendency for social interaction and communal gatherings in which social bonds contribute to man's welfare (Spahic, 2002).

Mosque Design Elements

The traditional congregational mosque, also known as Friday's mosque, is a dual-purpose space acting as a place of worship and a communal space. The congregational mosque originated in the prophet's mosque, the second oldest mosque constructed in AlMadinah, Saudi Arabia in 622 C.E., and it has continued to serve its dual purpose in many parts of the world (see figure 2.1) (Azaam, 2007). The mosque's design criteria depend on its essential components such as the Qibla wall, prayer hall, and entrances. The design criteria of these elements are based essentially on religious requirements to support its spiritual function as well as environmental and cultural standards, which give diversity to the architectural design of these elements (Elbelkasy & Elemam, 2016). Because congregational prayers require worshipers to stand in horizontal rows oriented towards Qibla, the direction of prayer to Mecca city, the horizontal layout is the most essential element when designing the mosque. As a response to that, a rectangular floor plan is an ideal solution to serve the prayer ritual allowing worshippers to form equal rows. Such space is characterized by its simplicity, which allows it to hold various religious and social activities

effectively (Hassan, 2016). Side or back entrances prevent worshipers from crossing over or cutting the prayer rows, which reduces interruptions of the prayer ritual (Elbelkasy & Elemam, 2016).

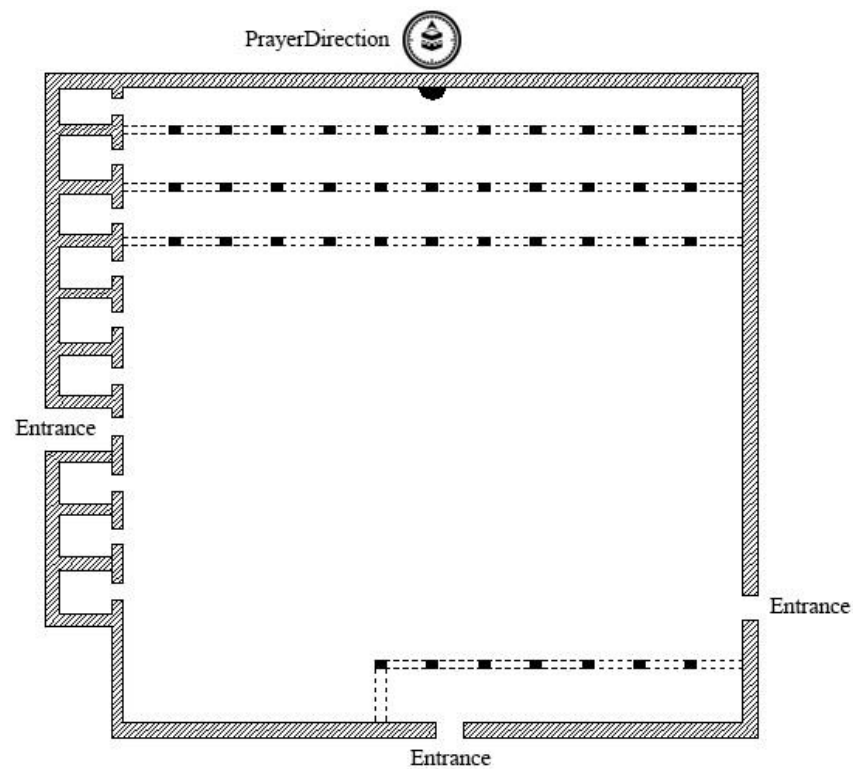


Figure 2.1. Prophet's Mosque, an early example of a mosque (Adapted from "Humanitarian considerations in the design of mosques,"(Al_Moqrin, 1991, p.34).

The general configuration of the mosque depends on a set of design elements such as the minarets, openings, and mihrab. These elements affect the mass formation of the mosque along with its interior space (Elbelkasy & Elemam, 2016). Architectural elements such as the minarets, mihrab, courtyard, and gates are all nonessential elements in the constitution of the mosque but rather symbolic features that have been added later to support its function and symbolism in the congregation (Azaam, 2007). The primary consideration of the mosque's design is to orient its horizontal space in Qibla direction. Emphasizing the Qibla wall becomes important when

designing the interior space of the prayer hall (Hassan, 2016). Projecting the mihrab, a niche in the Qibla wall in which the Imam stands and leads the prayer, is one way to emphasize it (see figure 2.2) (Azaam, 2007). Ceiling gradation towards the Qibla wall and the placement of minarets along the Qibla wall on the outside are other techniques to accentuate the Qibla direction. Window openings depend on the need for natural light and ventilation. However, it is not recommended to place windows on the sight level along the Qibla wall or side walls so that the act of prayer would not be disturbed. Flooring treatment should be soft, simple, and level to ensure equitable rows. When it comes to mosque design, focus is more on the interior rather than the exterior, and the design starts from inside out (Hassan, 2016).

Rituals and social functions of prayers and community gatherings usually take place in interior spaces, then the exterior shell can follow in form. There is no specific exterior elements or considerations that are essential in mosque designs. Simplicity is favorable in the mosque's interior and exterior treatments.

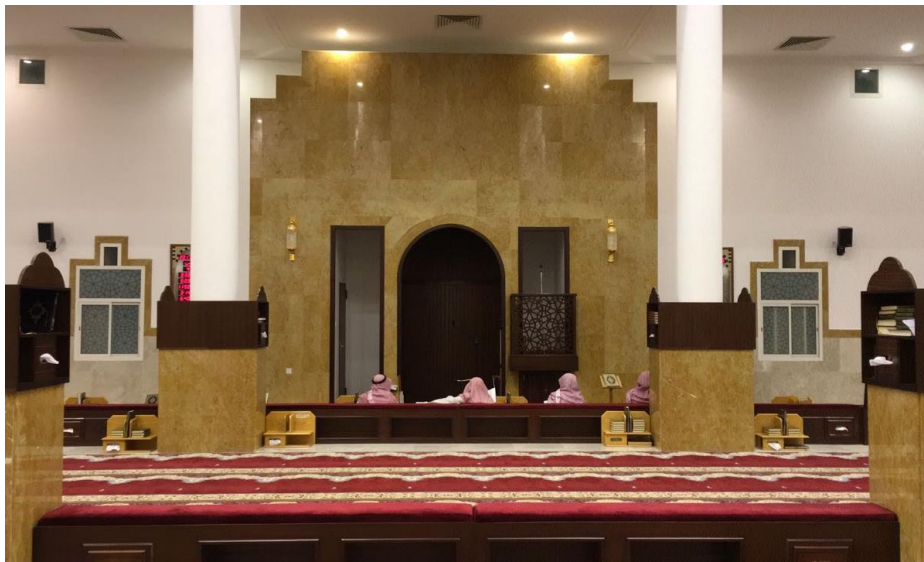


Figure 2.2. Qibla wall which worshippers face with a mihrab niche in the middle (Author, 2016).

The mosque's interior space is subject to change as new technologies emerge to match the needs and development of the new age (Hassan, 2016). In Rasdi's (1991) discussion regarding the architectural expression of the mosque, he suggests two purposes of architectural language concerning the mosque. First, the designer must use familiar architectural vocabulary in the culture where he or she is designing, to make the mosque clearly identified as one. The second purpose is to portray and design the mosque in such a manner that it projects the idea of a public facility inviting people in.

The mosque's square is an important transitional element that connects the mosque's structure with its surrounding environment. It gradually transfers visitors from the physical medium and into a spiritual space. It is an outdoor open courtyard attached to the mosque's building, which aids in identifying the mosque and its courtyard as a public place (see figure 2.3). It creates a vibrant and public space that can accommodate various activities of the communal mosque such as a family gathering area where adult residents and children can get together, socialize, and play (Othman, 2017).



Figure 2.3. Mosque's courtyard (Royal Commission for Jubail and Yanbu, 2015, p.19).

Congregational Mosques in Traditional Towns of Saudi Arabia

Traditional residential districts of Saudi Arabia were designed to promote social interaction and gathering of dwellers and to ensure the formation of strong social bonds between them (Eben-Saleh, 1997). Traditional settlements of Saudi Arabia differ in terms of their date of establishment and geographical location, which in turn might affect their architectural and urban structure. However, an outline of fundamental urban patterns can be established, which does not vary from most of the urban structures found in the Islamic and Arabic cities. These similar patterns are responses to the political, social, environmental, and economic circumstances of the city.

Traditional settlements of Saudi Arabia constructed before the 1950s typically contained residential quarters with markets, mosques, and cemeteries with a distinct hierarchy of public and private domains starting from the public leading to private spaces. The main central congregational area contained a mosque, market areas, and major circulation routes leading to semi-private spaces consisted of small yards and cul-de-sacs that were controlled by immediate neighbors (see figure 2.4). Private areas were formed by attached dwelling units (Eben-Saleh, 2002). These domains were clearly distinctive with their primary use and function. Alleys and pathways leading to the residential quarters were narrow and winding to slow intruders who were unfamiliar with the settlements (see figure 2.5). This enhanced the surveillance and security of the area. However, the mosque and the market had an open-door policy making them accessible to all. Traditional neighborhoods were characterized by a dense built form and physical cohesion of the housing fabric. This characteristic allowed social interaction and communal socialization at public and semi-private areas (Eben-Saleh, 1997). Saad Thaqfan (1999) outlined the Saudi Arabian traditional town urban structure as follows:

- Small area of traditional settlements.
- An urban fabric composed of organic structures built in an un-predetermined system responding to rapid needs.
- Construction of settlements around a central zone of a public square, a congregational mosque, and a market.
- Narrow and irregular alleys and roads gradually starting from enclosed and private alleys towards main roads leading to the public square.
- Unified building heights of two floors high in flat areas to four floors high in mountainous areas.

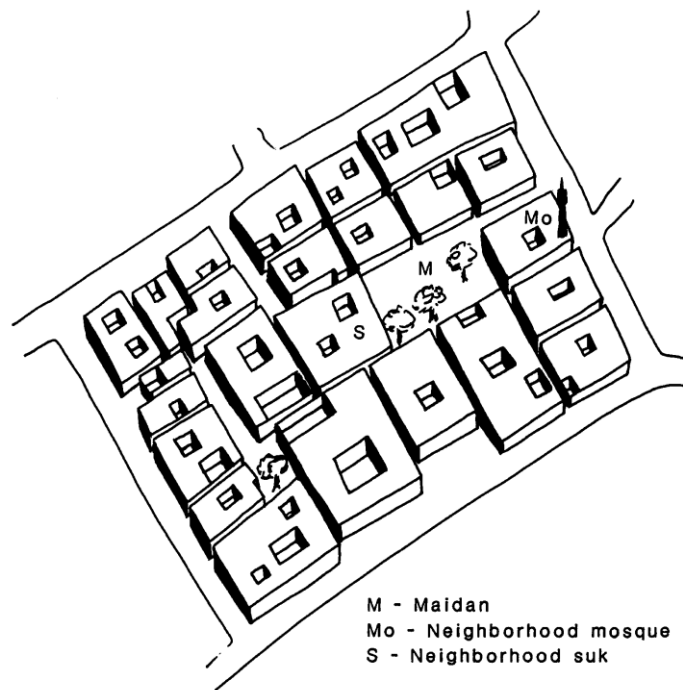


Figure 2.4. Illustration of traditional towns of Saudi Arabia (Costa & Noble, 1986).



Figure 2.5. Pre-oil traditional towns of Saudi Arabia (Saudi Commission for Tourism and Antiquities, 2010, p.18).

Mosques in the early Islamic cities were located in the center of the city where the mosque was built first then followed by the establishment of city's public and private facilities (AlShawish, 2014). This system is also found in most traditional cities of Saudi Arabia. Thaqfan (1999) has also identified three main urban features that supported the role of the mosque in traditional settlements: (a) the density in buildings was followed by density in population; (b) short walking distances within the town; (c) reliance on the centralized public squares which house the mosques. These features allowed the mosque to be perceived as a prominent landmark in the traditional towns by reinforcing its centralization (see figure 2.6). Centralization was achieved through, first, the ease of movement and accessibility to the mosque from any point within the settlement. Second, short walking distances to the mosque and the public square as a result of the densely-populated settlement around the central zone. Third strong spatial relationship between the mosque and the built settlement permitting its multiple uses through the centralization of social activities around the mosque (Thaqfan, 1999).



Figure 2.6. Congregational mosque at the center of pre-oil traditional towns (Ministry of Municipal and Rural Affairs, 2015, p. 22).

The Changes of the 21st Century Congregational Mosque

The change of the congregational mosque followed the modernization and shift of urban architecture that occurred in Saudi in the 1950s (AlSoliman, 1991). During this transitional phase, the urban environment was categorized into two major models: the restructured traditional urban environment and the planned residential neighborhoods (Thaqfan,1999). The restructured traditional urban environment is the traditional settlement that has been modified to keep pace with the recent technological changes including traffic roads and the automobile. Such changes affected not only the physical environment but were also followed by social and economic changes that impacted the traditional and vernacular architecture resulting in a loss of the basic essence of the community (Thaqfan,1999). The first planned residential neighborhoods marked the beginning of the grid planning system in Saudi towns. This was a response to the sweeping migration of population to major cities and an increase in the population as a whole. This new

model was constructed following the new building regulating systems and instructions concerned with roads and buildings planning and sizes (Thaqfan,1999).

Modernization has altered the existing built environment including houses, neighborhoods, cities, and mosques and introduced new building types and urban structures (AlSoliman, 1991). The transitional period had a great impact on the mosque architecture and its role in the neighborhood. The modern neighborhood sites built after the 1950s were lacking the central public area in which the mosque formerly functioned as the nucleus of the neighborhood. The new planning system prevented the distribution of commercial and public services around the mosque and assigned a separate commercial zone along the main roads of the districts limiting residents' interaction with the mosque. The new planning system also introduced a cross - network traffic system accommodating the vehicular movement while restricting pedestrians' free movement (see figure 2.7). Horizontal expansion of residential districts and complexes and the construction of the detached housing system (houses built with setbacks unlike traditional houses built wall-to-wall, as a result of the increase in land size and the use of cars) led to the increase in walking distance to the congregational mosque and an increase in the number of mosques in one neighborhood.

The absence of an open and public square leading to the mosque reduced the connection between the mosque and the community, which used to enhance the human perception when moving towards and around the structure. The twenty-first century urban environment is a continuation of the planned system with a more competent and well-established building codes and regulations. A gridiron network block system is being implemented with wide inner streets. Modern neighborhoods are characterized by a large land area per house, typically 600 to 900 m², as well as a decrease in population density. Land use is not always oriented towards a center but

to the surrounding streets. The random distribution of mosques without considering site accessibility and centralization is one of the main issues present in modern neighborhoods that has led to the decrease of the social role of the mosque (Thaqfan,1999). These changes resulted in the difficulty for pedestrians to walk around the neighborhood and a complete reliance on automobiles, consequently decreasing social interaction between residents and making access to the congregational mosque more difficult. The result has been an isolation of the mosque from its neighborhood and its context (see figure 2.8).

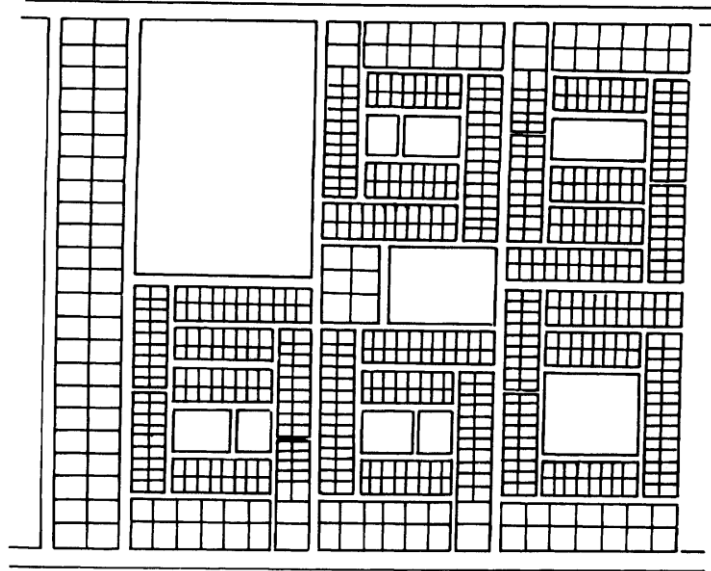


Figure 2.7. Layout of a modern subdivision according to Western- planning practice (Costa & Noble, 1986).

The development of government organizations concerned with social, economic, and educational functions that used to be dependent on the mosque limited its active role in the past. Formerly, the mosque was operated by the users and members of the community allowing it to serve as a community center; however, now it has been regulated by the ministry of Islamic

affairs. According to Saleh (1997), the poor planning of residential districts led to less secure neighborhoods and a loss of the meaning and belonging associated by dwellers for neighborhoods. Bahammam (1995) stated that many valued qualities of the tradition have been lost due to the dependence on automobiles. The major loss is the opportunity for social interaction among residents caused by the residents' necessity to drive rather than walk. The sense of community and belonging has been compromised in favor of vehicular access (Eben-Saleh, 1997).

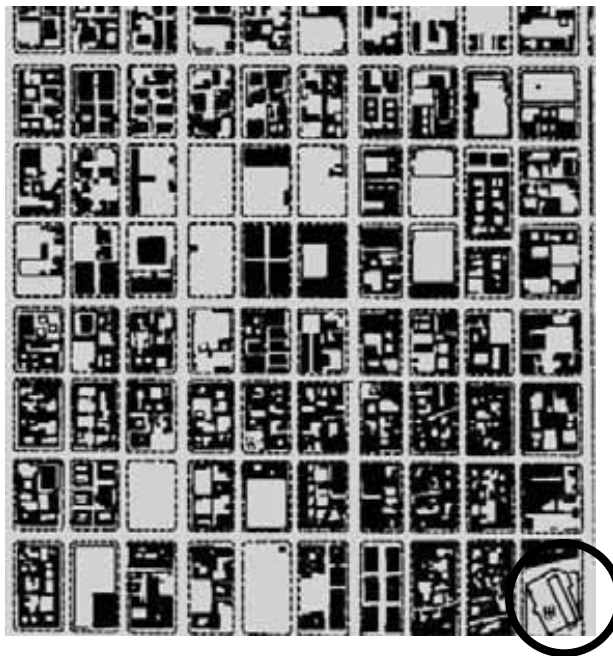


Figure 2.8. Planning of the new Khobar city, Saudi Arabia in 1950s showing the mosque on a corner block missing the town center (Al-Naim, 2008, p.129).

The Saudi Building Standards for Congregational Mosques

New building standards adopted for congregational mosques were published in 1979 by the Saudi Ministry of Municipal and Rural Affairs (Ibrahim, 1979). These standards dealt mainly

with the site use and building size. Below is a table summarizing the congregational mosque building requirements in residential areas.

Table 2.1

The Saudi Building Requirements for Congregational Mosques in Residential Areas

Element	Requirement
Location	Located in a central service zone with a walking distance of 250-300 m ² (see figure 2.9).
Capacity	Accommodate for 47% of neighborhood residents.
Prayer Area	Each user occupies a rectangular area of 1 m ² .
Service Area	30% to 40% service area is added from required for each user an equivalent of 1.30 to 1.40 m ² per user.
Courtyard	Courtyards are not required. In the case of a courtyard, the required area is equal to the entire covered hall + 1/2 the area of the courtyard.
Mosque Components	Prayer hall (male and female sections). Storage (13 to 28 m ²). Washing area. Restrooms. Library (16 m ²). Classroom (20 m ² with a capacity of 16 persons). Imam room (does not exceed 9 m ²).

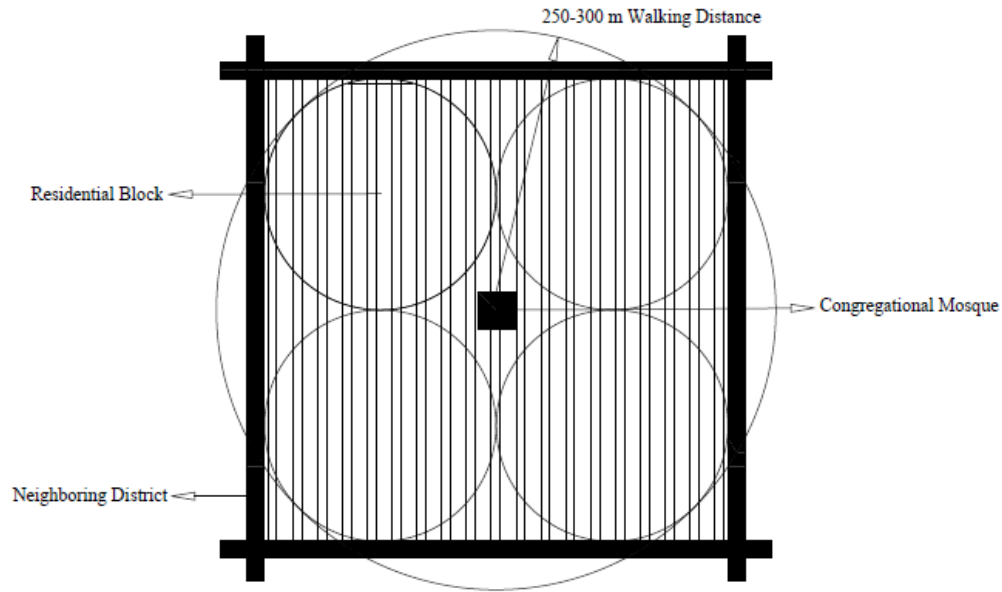


Figure 2.9. Congregational mosque location in Saudi Arabia’s residential districts. Adapted from “Design standards for mosques” (Khalouf, 1979, p. 29).

Royal Commission for Jubail Industrial City (RCJ) Building Standards for Congregational Mosques

The royal commission for Jubail Industrial city has established unique building codes for the city of Jubail Industrial city. Building requirements for congregational mosques have been specified in a published guide for planning and design standards (see table 4.2 for a table summary). Some standards have been adopted from the Saudi building codes and others are specific to the Industrial city of Jubail. General planning criteria for selecting the location of the mosque state that it must be located within five minutes of walking distance from any residential block and in the district’s commercial center (RCJY, 1999). The mosque exterior design must correspond to the districts’ commercial and service center to share the parking lot and the open square. The mosque and district center must be directly accessible through the main pedestrian walkways and accessible by people with disabilities. A public square must be provided with the congregational

mosque (RCJY, 1999). The RCJ follows the Saudi building codes in determining the assigned area per user in the congregational mosque of 1.4 m² per user for prayer area and services (see figure 2.10).

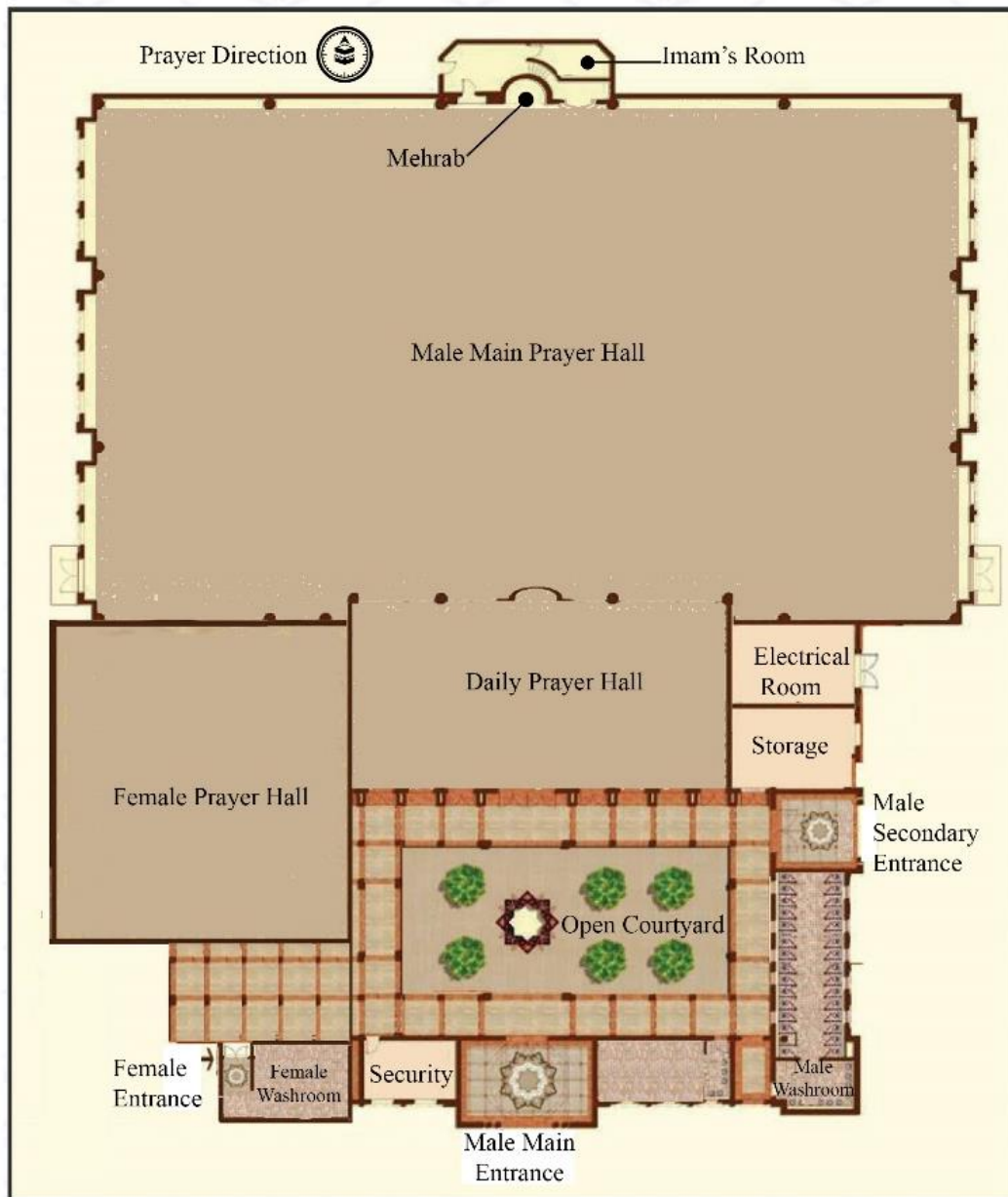


Figure 2.10. Standard floor plan for residential congregational mosques in Jubail Industrial city. Adapted from “Design and planning standards for mosques in Jubail Industrial city” (Royal Commission for Jubail and Yanbu, 2015, p.7).

Urban Identity

According to AlNaim (2008), identity constitutes a collection of cues recognized by a group of people at a specific time and place. Because people and spaces are subject to change over time, social and physical identity may change. However, communities might resist change at first, as they likely want to maintain a certain level of cultural continuity and attachment to history. People's desire for identity comes from the belief that to ensure the continuity of culture, it is necessary for people to feel connected to the past (Eben Saleh, 1998). People have always felt the need to be part of the community from the early days of existence. Quality of life is determined by relationships with others and those relationships take place within physical spaces. These relationships play a definite role in establishing the sense of community and forming traditions. Cultural identity is not something that can be given to a society but it emerges from people's interaction with each other and their surrounding physical environment (AlNaim, 2009). It is not a found object but rather a process which cannot be fabricated. Sherine Aly (2011), described identity as it relates to place as:

Neither an easily reducible, nor a separable quality of places—it is neither constant and absolute, nor is it constantly changing and variable. Identity is the glue which binds people together and connects them to place. It is the opposite of rootlessness. It brings a sense of belonging, a cohesive force which can be powerful enough to overcome some aspects of economic deprivation and physical decline (p. 505).

Proshanksy (1978) stated that, "there is no physical setting that is not also a social, cultural, and psychological setting" (p.152). He also relates place identity to the concept of belonging and the bonds between the community and its residents. Eldemery (2009) argued that place can be

defined in terms of physical and psychological environmental attributes. He defined place identity as:

an implicit psychological structure; it is also considered a cognitive structure that contributes to global self-categorization and social-identity processes which emerges from involvement between people and place. Place identity is also defined precisely as a set of cognitions about physical settings. The concept of place identity underpins the collective sense of cultural identification with a particular building and its design features (p. 346).

According to Eldemry's (2009) definition of place identity, the success of a local building is decisive based on a general consensus on its incorporation of vernacular architectural language. This includes the site, forms, and materials. As a concept, identity could mean the distinction between the 'self' and the 'other' but it could also indicate the relationship between the self and the other. It can also identify 'self-recognition' and assert the relationship to others (Cheshmehzangi & Heat, 2012).

Identity is the basis to form a sense of belonging and place attachment. It is a reflection of the community's beliefs, culture, tradition, and needs. Consequently, the local community in the past was an integral part of the design and building process (Aly, 2011). In order to distinguish one space from another, it must exhibit a special character that is commonly described as *identity* (Watson & Bentley, 2007). Designing for identity evokes the sensory experience of the space by which it builds feelings and emotions, and thus meaning. According to Aly (2011), the traditional architecture of the Arab city succeeded in expressing community's identity and preserving its distinction. Loss of identity can result from a change and transformation of buildings and spaces or a change of uses of these spaces. Sustaining urban identity and meaning

is essential because it contributes to a sense of community and sense of place (Ujang, & Zakariya, 2015). Failure in developing a connection to a place within a physical or cultural context weakens the meaning of such place and strips it away from any identity and diminishes place significance (Ujang, 2012). Places that embody an identity with consistent language of forms, materials, and symbolism are more likely to promote positive place experiences than a place with no identity (Steele, 1981). Structures are built in societies to satisfy the need for material production, in which forms and patterns organized by the society become a mode of social reproduction (Hillier & Hanson, 1988). The frequent production of uniformed concepts in today's built environment has led to the loss of vernacular identity and this loss of identity has the potential to cause irreversible effects on the society and its structure (Eben-Saleh, 1998). Identity in a place is achieved when the place succeeds in maintaining distinctive characteristics of unique artifacts and objects significant to its function. These objects become place's physical identity and traits of individuality. Objects' relationship and ties to the place and the larger culture are features of place identity (Eben-Saleh, 1989).

Prominent Saudi architect Jamel Akbar (1988) described the current case of Saudi architecture as "an environmental crisis" which lacks values and principles found in the architectural heritage. He stated that the traditional built environments were well-suited for the societal culture and clearly molded by the community's beliefs and practices. The loss of physical identity and character lessens people's attachment to the place. It weakens embedded meanings within it and fails to evoke people's emotional and behavioral responses (Ujang & Zakariya, 2015).

The Concept of Place

Place Meaning and Identity

A place has six major components including location, localization within a larger area, connection system to other places, cultural and natural elements that make it unique from other places, meaning, and history (Relph, 1976). Understanding a place is both a physical and a psychological process. It is important to address people's psychological connection with places as they cannot be separated from them. Places are embodiments of human cultures which are the result of social practices that create meanings and social identity (figure 2.11). A place becomes different than space when it successfully fuses physical and cultural characters and combines them with functional needs (Ujang & Zakariya, 2015).

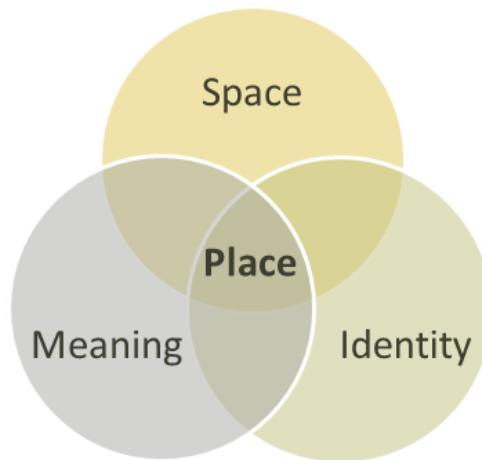


Figure 2.11. The concept of place.

Place meaning is derived from individual or group's experiences with the environment. Place meaning can be interpreted into a strong emotional attachment that affects behaviors and establishes social value to the place for its users. Meaning ensures the continuity of the place's cultural identity (Ujang & Zakariya, 2015). Proshansky (1983) defined place identity as "the

symbolic importance of place as a repository for emotions and relationships that give meaning and purpose to life, reflects a sense of belonging and important to a person's well-being." Place identity is comprised of three interrelated elements: the physical setting, the activities, and the meanings. Although meanings can be entrenched in the physical setting and the activities, they are still products of human experiences. Meaning is a complex concept in which it varies in essence and importance between individuals and cultures. Place identity is the uniqueness, individuality, and distinction from other places, which aid to identify it as a different entity (Relph, 1976). Another element that attributes to place identity but less tangible is *sense of place*.

Sense of Place

The sense of place refers to people's subjective reactions and perceptions towards their environmental and social settings (Steele, 1981). Such reactions include feelings, emotions, and behaviors as a result of interacting with the place. The sense of place involves the perception of the physical features of the place and the emotional reaction to it (Altman & Low, 1992).

Emotional components are more likely to influence sense of place as the perception of places is affected by one's personal values, meanings, and beliefs. Sense of place involves people's perception of social settings, which suggest its relation to a community's values and sense of community. An individual's sense of place can be influenced by the community in which he or she lives (Altman & Low, 1992).

Rootedness and sense of belonging are other elements of the sense of place. They refer to the unconscious sense of association to a place (Ujang & Zakariya, 2015). Rootedness can suggest a strong sense of attachment to the place. People are strongly attached to places where they have meaningful experiences due to long-time residence, frequent visits, or special events.

Social Space

Buttimer and Seamon (1980) explained the concept of social space as the initial guide for inspecting and analyzing lived experiences. An explanation of the concept of social space was offered as “the framework within which subjective evaluations and motivations can be related to overly expressed behavior and the external characteristics of the environment” (p.23). Social space is identified by two distinct components: the objective component and the subjective component. The objective component deals with the spatial framework in which social groups live and social structures are formed by environmental and cultural conditions. The subjective component is how specific members of the groups perceive the space. Another definition described social space as “psychological phenomenon that could be determined by the individual’s perception of his social world, and not by the objective description of his social relationship by any observer” (p.24). As stated by Buttimer and Seamon (1980), social spaces are analyzed through 5 levels:

1. Social-psychological level investigating person’s position within the society, known as sociological space.
2. Behavioral level investigating activity and circulation patterns, known as interaction space.
3. Symbolic level investigating images, cognition, and mental maps.
4. Effective level investigating patterns of identification with territory.
5. Purely morphological level in which population characteristics are factor-analyzed to yield homogeneous social area. (p.25)

Inquiry of the spatial expression of sociological spaces necessitates an inspection of spatial activity patterns produced by social interaction. Accessibility to social contacts voluntarily, as in

friends and relatives' houses or recreational centers, or involuntarily, as in shops or clinics, initiates a set of compatibility indicators between a person's socially dictated ambitions and his behaviors (Buttimer & Seamon, 1980). Shared social values indicate people's behaviors within social spaces. They control and influence people's usage of the space.

Sense of Community

Community is a formed social unit that shares common values and beliefs living in a common location (Baharudin & Ismail, 2014). Communities may share similar goals and desires that can be fulfilled by providing a communal living environment with multipurpose public spaces. These spaces are referred to as "communal architecture" where communal activities take place. The sense of attachment people exhibit towards a small-scale social entity that is bigger than the family but less impersonal than the bureaucracy, is known as "community spirit" (Cohen, 2015).

Communities are symbolically constructed with a system of principles, values, and ethical codes to develop meaning and identity. Symbolic construction involves generating and signifying the presence and character of a person or an object in reference to how people perceive and define them (Gusfield, 1975). These symbols provide a common meaning which bound a community and help its members to communicate with each other. In order to understand a community, we must study the members' experience of it, recognizing that members might hold different meanings of its symbols. Within a community, people learn to interact socially and experience non-kinship relationships (Cohen, 2015). Communal interaction is based on the belief and acceptance of a common identity of membership acknowledged by a community's members. Human beings opt to be involved in activities that meet their ordered patterns of perception and pertain to their interests and aspirations (Gusfield, 1975). The

existence of a homogenous culture with a common language, moralities, and history can suggest and aid in the formation of a community where communication and interaction between members are less problematic. Communal membership posits a communal consciousness stating that members of a community recognize a set of obligations towards individuals who are perceived as members of their community than those outside it. Communal consciousness demands members to act as part of a community and give high regards to its members by recognizing one's affiliation to the communal entity and common goals (Gusfield,1975).

Place Attachment

Place attachment entails an effective connection of people towards places. As suggested by Altman (1992), “the word attachment emphasizes affect; the word place focuses on the environmental setting to which people are emotionally and culturally attached” (p.5). Place indicates any space that embodies a meaning developed by individuals, group, or cultures. Many attribute attachment to place on its success to grant control, privacy, and creativity, while others claim that it is due to a space's ability to encourage social relations between people, family, and community that contribute to the formation of place attachment. Attachment is not associated only with the physical settings, but with the meanings spaces hold and experiences spaces encompass, which usually include social interactions with people (Altman & Low, 1992). Altman (1992) argued that attachment to place decreases when size, density, and diversity of urban environment increase as a consequence of the lack of common sentiments. Long-term residents usually exhibit a higher level of sentimental bonds to their neighborhoods because of the memories and experiences attached to the place, but mostly because of the social engagement and bonds developed. Length of residence, age, safety and security, and satisfaction with the environmental physical qualities are factors that may lead to increased attachment to the place

and the community. However, it is the social engagement that strongly affects individuals' sense of attachment to their neighborhoods (Altman & Low, 1992).

McMillan and Chavis (1986) reported different studies on residents' sense of attachment and sense of community in which they concluded that by understanding communities, designers will be able to create better residential projects that offer safety from crime, and better use of the area, such as streets and parks. They also concluded that neighborhoods that have strong social fabric tend to have socially active members who invest more in home developments such as renovating their houses rather than moving out to new ones. Another study conducted suggested two factors related to neighbors' sense of attachment, including (1) social bonding factors such as ability to identify neighbors and feeling part of the neighborhood, and (2) behavioral rootedness factors such as length of residency and if one's home is owned or rented (McMillan & Chavis, 1986). The use of local facilities can aid in the development of a sense of attachment to neighborhoods and opportunities to have social interactions.

Four Elements of the Sense of Community

Communities are formed around two usages: territorial or geographical use such as a neighborhood or a town's community, and relational around interests and skills such as professional or spiritual communities (Gusfield, 1975). McMillan and Chavis (1986) defined the sense of community with four elements: membership, influence, integration and fulfillment of needs, and shared emotional connection (figure 2.12). Membership is the feeling of belonging and has several contributing factors: boundaries, emotional safety, sense of belonging and identification, personal investment, and a common symbol system (McMillan & Chavis, 1986). Boundaries determine who is and who is not part of the community. Boundaries can be physical as in neighborhoods or nonphysical such as a language. They can establish emotional safety and

security for being part of the community and protect against threats. The sense of belonging and identification is the feeling of being accepted, having a place within the community. Personal investment is the belief that one's contribution to the community will increase his or her sense of membership. A common symbol system is what the community is constructed on. Examples of neighborhood symbols may include its name, a land mark, or a unique architectural style.

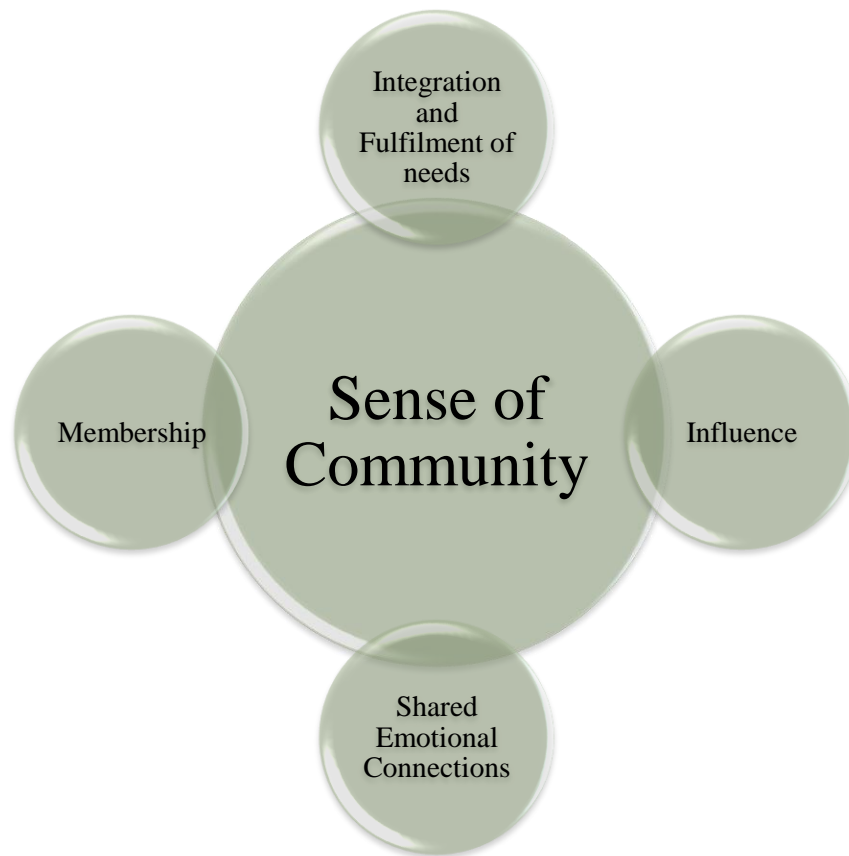


Figure 2.12. McMillan and Chavis's four elements of the sense of community (Adapted from McMillan & Chavis, 1986).

The second element of the sense of community is influence, which refers to one's ability to influence the group as well as the group's ability to influence its members, thereby achieving cohesiveness. People tend to be attracted more to communities where they feel influential.

Cohesiveness can imply conformity, which is bound to create consensus and uniformity within community's members. Integration and fulfillment of needs is the third element of the sense of community, which means reinforcement. People are attracted to a community that can offer them valuable rewards. Some reinforcers include the status of membership, the success of the community, competence of the community in which members can benefit from other member's skills, and shared values of similar needs, goals, and priorities. The last element is shared emotional connection. Successful communities provide opportunities for their members to interact within events, share experiences, and positively bond with each other (McMillan & Chavis, 1986).

The Sense of Community Elements and the Mosque

AlHalglala (2016) discussed McMillan and Chavis's four elements of the sense of the community in reference to the Mosque (Figure 2.13). The mosque offers membership to neighborhoods residents with clear boundaries of common spiritual rituals and a physical space. Formerly, the mosque functioned as a regulatory place where meetings and social issues were discussed and resolved. As a religious institute, the mosque fulfills spiritual needs of attendees. AlHagla (2016) reported religious scholars' interpretation on the mosque as a place where people are regarded as equal and hierarchy diminishes. Shared spiritual values are common between attendees. Social needs and the need for interaction are also met within the mosque space where people can meet five times a day for the daily prayers and once a week for the Friday ceremony. In the past, the mosque used to host social activities such as marriage ceremonies and annual Islamic festivals, which are now held in rented venues or family houses (AlHalglala, 2016).

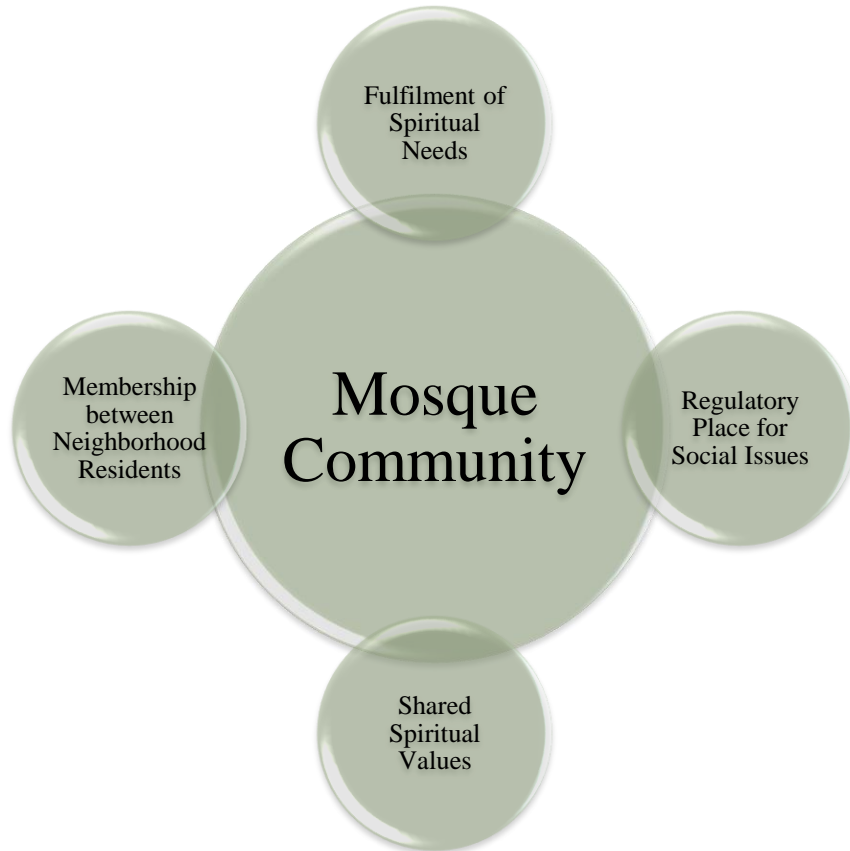


Figure 2.13. The four elements of the mosque sense of community (Adapted from AlHalga, 2016).

Summary

The review of literature suggests a strong relationship between place identity, place meaning, and sense of place. A place needs to exhibit a special identity for people to relate to it emotionally rather than only physically and assign meaning to the place. Meaning helps people connect to places and establish a sense of attachment and belonging to them. Sense of community between neighborhood's residents can be strengthened through thoughtful design and planning of the neighborhood's physical environment. It can also be argued that residents with a strong sense of attachment to their neighborhoods have a strong sense of place and clearly perceive and attach meaning to their residential settings. The literature review provides an overview of the changes of the Saudi residential environment and the design and role of the

mosque in that environment. The influence of this change on the social fabric and bonds between residents of the twenty-first century Saudi neighborhoods requires further investigation and analysis, which will be addressed in chapter 4.

CHAPTER 3

METHODS

Introduction and Purpose

The literature review in chapter two focused on the design and role of the congregational mosque in Saudi Arabia and traced its changes due to modernization. It discussed the influence of place meaning and identity in creating sense of place and belonging. It explained the significance of maintaining an individuals' sense of belonging and attachment to residential neighborhoods and a sense of community between residents.

To identify and evaluate the mosque's role in enhancing residents' attachment to the neighborhood and their community, a mixed method study consisting of a survey, interviews, and a case study was conducted. The main objective of the study was to trace the changes of the mosque's design over the last 75 years and explore the effectiveness of the current congregational mosque as an active communal center in residential neighborhoods of Saudi Arabia. The study examined if the congregational mosque, built after the discovery of oil and resulting modernization, maintains the same social role as in the past. The study assessed residents' attachment to their neighborhood's community, sense of community, and whether the congregational mosque influences this attachment.

Research Questions

The study has one primary question. The question aims to address the architectural changes in the congregational mosque design in Saudi Arabia over the last 75 years due to modernization following the discovery of oil and how it can aid in creating a sense of community and attachment for residents of modern Saudi Arabian neighborhoods. Secondary questions follow to identify the changes of the Saudi Arabian mosque architecture and design elements and spatial features. These questions are actionable and were answered through the analysis of

participants' responses to interview and survey questions as well as the spatial analysis of the case study were interviews were conducted.

Primary Question

1. How have changes in the design of the Saudi Arabian congregational mosque following the discovery of oil influenced the sense of community in modern residential neighborhoods?

Secondary Questions

1. How has the use of the mosque changed respective to the design changes over the last 75 years?
2. What spatial features have played a part in the mosque's role as a community gathering space throughout history?
3. What is the relationship between the socio-behavioral environment of the mosque and the Saudi citizens' attachment to their community?

Research Design and Instruments

This phenomenological study employed a mixed-methods approach for data collection and analysis. The mixed-methods approach combined qualitative and quantitative methods to obtain comprehensive data and strengthen the validity of research findings.

The quantitative portion on the study included a survey questionnaire that was used to collect information and explore the resident's perceptions towards the mosque. The survey started with multiple-choice questions to collect general information on subjects taking the survey. Likert scale questions then followed to assess subjects' sense of community and belonging to their residential neighborhoods and if and how they recognize the mosque as a communal place and a place to interact with others in their community. Open-ended questions were included to give respondents the

chance to elaborate and expand subjects' answers and responses to questions that aim to evaluate the architectural elements of the mosque. Qualtrics software that enables users to create and distribute surveys online was used to construct the questionnaire and the URL link was sent to subjects (see appendix E for survey). A pilot survey was sent to a small group of potential subjects, such as the researcher's former colleagues in the Royal Commission for Jubail, to validate its effectiveness of capturing responses and to assess ease of use. Feedback was used to revise the survey and pilot study findings were not used for final data analysis.

The qualitative study consisted of interviews in order to gain an understanding of the phenomenon of the mosque as a communal place. Interview questions aimed to capture richer responses from selected subjects that could help in obtaining deep analysis and understanding of the phenomenon. Questions focused on personal experience and use of the mosque space (see appendix C). Eight interviews were conducted with the Farouq congregational mosque regular attendees, and the Imam, the person who leads the Friday prayer at the Farouq mosque, which was used in this case study. Mosque attendees' interviews helped in providing in-depth information about the usage and the role of the existing mosque. The Imam interview aided the researcher in understanding how the mosque functions, operates, and how users interact with the space and with each other. Interviews were conducted by the researcher herself, a native of Saudi Arabia, and recorded and documented responses adhering to confidentiality guidelines.

In addition, a case study on the Farouq congregational and Farouq neighborhood was conducted. Architectural documents of the Farouq congregational mosque including floor plans and a site plan were obtained from the architectural and urban planning department in the Royal Commission for Jubail. Consent was obtained for the use and publishing of these documents (see appendix D). Photographs of the Farouq congregational mosque were taken during a site visit. The space syntax method was used to analyze the mosque's floor plan and the neighborhood site

plan. This analysis aimed to compare data gathered from the survey and interviews to an actual mosque building. The Farouq neighborhood was chosen as one of the oldest neighborhoods in Jubail Industrial city to which the researcher expects that residents of the neighborhood might have an extended length of residency which would allow them to form attachment and social bonds. The space syntax analysis graphs will provide insights on the humans' use and patterns of interaction with space. These graphs will be used to examine possible modes of social interaction and gathering in the mosque between attendees comparable to data findings.

Sample

The subjects of the study were Saudi and non-Saudi Arabian residents of Jubail Industrial city, Saudi Arabia. The target subjects for the surveys were 23 to 65-year-old males and females who work in the selected organization, Royal Commission for Jubail, and live in Jubail Industrial city or nearby cities. This age group was selected because they are of working age and are more likely to be settled in the city and can be considered part of the community of their neighborhoods. The Royal Commission for Jubail was selected due to the convenience in gaining permission to survey employees, as the researcher is an employee in the organization. The Royal Commission for Jubail is an autonomous organization of the Saudi Arabian Government and the governing authority of the Jubail Industrial city. The city was chosen because it is one of the modern cities of Saudi Arabia built in the 1970s, following the discovery of oil. Jubail Industrial city is similar to many other modern residential districts that were built following the new urban planning and building codes established by the Saudi government in the mid-1970s and its construction was managed by the US company Bechtel following a Western model. The city can support the aim of the study by providing a modern setting in which the twenty-first century design and culture can be reflected.

Data Collection and Analysis

Prior to data collection, permission was obtained from the Florida State University Institutional Review Board. An application was submitted during the 2017 summer semester. Approval forms can be found in Appendix A. All data was collected with confidentiality and subjects were granted anonymity. A disclosure of the study objectives and a clear purpose of research methods were given to participants before survey administration or interviews (see consent form in appendix B).

Surveys were sent to three thousand of the Royal Commission for Jubail employees directly through their institution emails. The researcher contacted the Royal Commission for Jubail and was provided a data collection approval form to send along with the survey URL link (see appendix D). After approval, an email was sent by the Royal Commission for Jubail to all employees including an invitation message by the researcher describing the objectives of the study, confidentiality of the survey, and a direct URL link to complete the survey electronically. The survey was open for the participants to take for a two week period to allow for flexibility and maximum participation of subjects. A reminder email was sent to the sample as well. Survey responses were recorded through the Qualtrics software for documentation. Initial analysis of results was generated by the software. The researcher refined quantitative data analysis using descriptive statistics with tables, charts, and graphs.

Eight phone interviews of the Farouq mosque attendees as well as the Imam were conducted by the researcher who was responsible for leading the interviews, asking questions and recording answers. Interview participants were selected randomly from a group of mosque attendees who agreed to participate in the interviews during a site visit. The researcher approached the attendees and asked them to volunteer for this study after explaining the objective of the study and the nature of the interview. A range in age was a consideration the researcher sought

when selecting participants. Subjects were later contacted through the phone and were asked to specify a suitable time to start a 30 minutes interview. A schedule for interviewing was planned for each interview based on participants availability. Interviewees were provided a consent form to sign digitally prior to participation. Interviews were completed over a 10 day period. The Farouq congregational mosque was chosen for the case-study due to its location in the Farouq district, one of the oldest districts in Jubail Industrial city. This could ensure that residents of the district had the opportunity to form place attachment and social relationships which are the focus of the study. Interviews were conducted in Arabic, which is the native language of the participants and the researcher, and then transcribed into English. Responses were transcribed, documented, coded, categorized and reported in descriptive quotations.

Qualitative data was analyzed using the coding method and was classified into categories then grouping individuals' words, phrases, and themes under appropriate categories. Quantitative data was processed utilizing descriptive statistics. Data was analyzed separately and was then combined to present findings. Using such a variety of instruments and analysis techniques allowed for data triangulation and increased the validity of the study.

Space Syntax Method

The case study of the Farouq congregational mosque along with architectural documents of the mosque were analyzed by the researcher and presented using DepthmapX program. Space syntax theory was used to analyze the Farouq mosque building and the Farouq neighborhood. The theory of space syntax was introduced by Bill Hillier and Julienne Hanson in the 1970s and was published in their book *The Social Logic of Space* (Hillier & Hanson, 1984). It attempts to study spaces in terms of how they influence users and how humans interact with the physical environment, not counting for stylistic considerations (Rohloff, 2009). This method analyses the

relationship between spatial configuration and use of spaces. It provides a set of techniques that aim to evaluate and analyze spatial layouts in buildings and urban scale in relation to social structures (Hillier & Hanson, 1984, Hillier 1996). Space syntax is used as a tool to analyze spatial configuration which “defines the relationship between two spaces by measuring its functions and attributes relative to all other spaces within a structure or interconnected system of designed units” (McLane, 2013, p. 37). Hillier (1996) defines configuration as “relations taking into account other relations” (p.1). He argues that buildings are socially configurational as they provide physical spaces which humans occupy and use. They are reproductions and reflections of social patterns or generative of new social knowledge (McLane, 2013). These configurations are non-discursive in nature and people tend to handle them intuitively in the same way as language (Hillier, 1996). Space syntax aims to provide a configurational theory of how human use spatial configuration, and how spatial configurations reflect social meaning (Dursun, 2007).

Spatial configuration analysis of a layout includes permeability, visibility, depth of spaces, hierarchy, movement, and visual fields, and isovists. Permeability is concerned with the network of spaces which humans move from one to another and the relations between them and is represented through convex maps and axial lines maps (Rohloff, 2009). Convex maps are produced by convex polygons representing spatial units illustrating how continuous and permeable are units in a layout (see figure 3.1) (McLane, 2013).

Axial lines maps are produced by drawing the longest straight line possible, then the second longest, that connects permeable units without running through boundaries (see figure 3.2). They are an abstraction of movements within a configuration (Rohloff,2009).

Visibility deals with the how visible spaces are from each other within a network of spaces in a configuration and is illustrated using visibility graphs analysis and isovists. Visibility

graphs are produced using an overlapping grid which connects the center of the grid cells to unobstructed neighboring cells (McLane, 2013). The resulting graph is presented with colors depicting visibility levels (see figure 3.3).

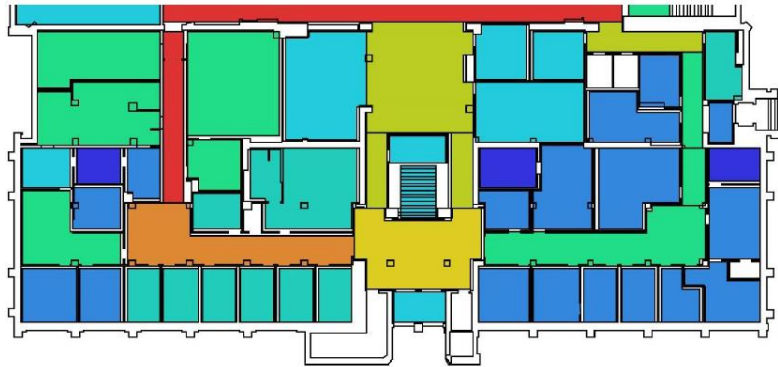


Figure 3.1. Convex map illustrating permeability (McLane, 2013, p.70).

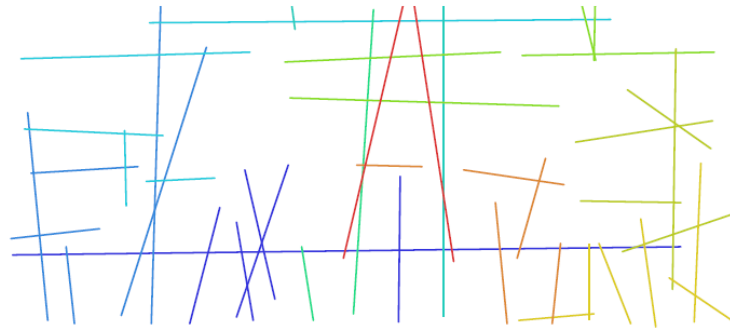


Figure 3.2. Axial lines map illustrating permeability (McLane, 2013, p.71).

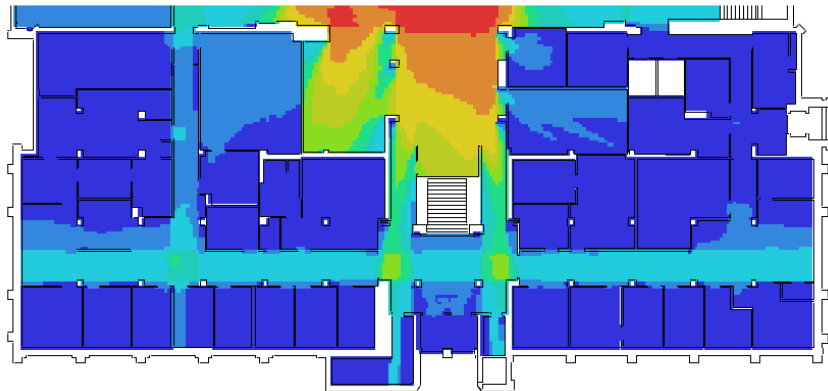


Figure 3.3. Visibility graph analysis (McLane, 2013, p.72).

Another technique for analyzing visibility is isovist introduced by Michael Benedikt (Benedikt, 1979). Benedikt defines isovist as “the set of all points visible from a given vantage point in space and in respect to an environment” (Benedikt, 1979, p. 47). The isovist and its visual fields change as the vantage point changes (see figure 3.4).

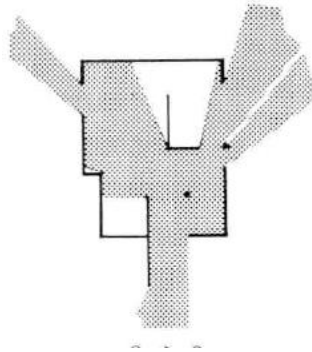


Figure 3.4. Isovist illustrating visual field (Benedikt, 1978 , p.53).

As a method, space syntax studies relations within a local and a global level. The local level pertains to the relationships between one unit in the layout to neighboring units, this measure is called “connectivity”. Connectivity expresses the level of how spaces are connected to each other. High connectivity refers to how many spaces are directly accessible to a unit. The global level pertains to the relationships between one unit to all other units in a layout, this measure is called “integration” (Rohloff,2009; McLane, 2013). Integration expresses the level of how a space is integrated within the whole configuration. High integration refers to the lowest number of spaces one must pass through to access a specific unit in the layout. The intensity of connectivity and integration is illustrated in the graph using colors. Red depicts high levels, while blue refers to low levels.

Justified graphs represent a building as a set of networks with spatial units arranged and drawn as nodes and connected with lines describing permeability or visibility to depict

topological relationships of a configuration (Rohloff, 2009). A justified graph starts with the root or “base” unit represented with a circle with a cross. Then, immediate units connected to the base are drawn as nodes in a row above the base representing depth step “one” with lines linking between them to represent connections. Another row of units is drawn above the first row representing a direct connection to the first row and depth step “two” et al (see figure 3.5) (Hillier, 1996). The justified graphs illustrate depths of a spatial configuration from one particular unit as a base conveying fundamental means of social patterns of use.

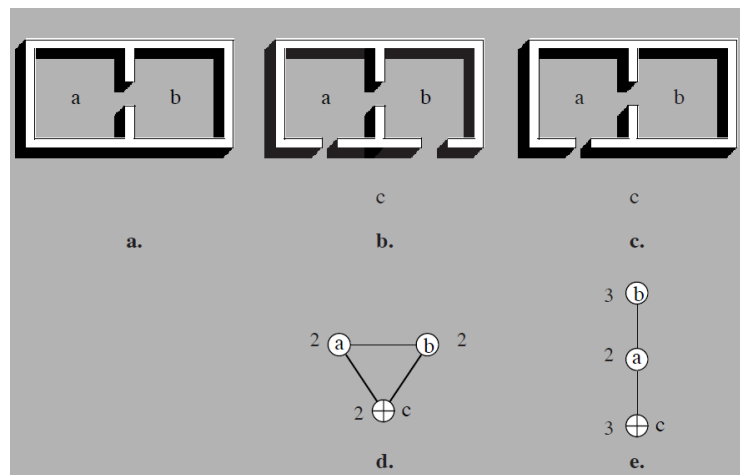


Figure 3.5. Justified graphs for three different spatial configurations showing steps of depth (Hillier, 1996, p. 24).

Assumptions and Limitations

The study focused on residents’ attachment to the mosque as a communal place. Because the study took place in a Muslim country, it was assumed that the selected participants practice the same faith and have been in contact with the mosque at some point of their lives. It was also assumed that all residential neighborhoods in the country have at least one congregational mosque within its premises as the planning regulation of this country requires.

The study was limited to residents of Jubail industrial city and employees of the Royal commission for Jubail. The study only explored residential neighborhoods that have been built over the last 35 years. The study aimed to evaluate the sense of attachment and community in residents of newly established neighborhoods only and might have not captured a wide response of a variety of situations, which might limit its external validity. Generalizability might be limited because it studied a specific environmental setting which might not allow it to be extended to other contexts such as different locations in other countries. Conducting the research while in the United States might have limited the researcher's ability to observe the studied environment in Saudi Arabia and opportunities to contact specific subjects and meet with them physically.

Summary

This chapter presented an overview of methods of data collection and analysis. Quantitative data was collected using electronic surveys through Qualtrics software then analyzed and reported as descriptive statistics in the findings chapter. Qualitative data from interviews was analyzed using coding method and summarized in the following chapter. Participant's privacy was protected, and data collected was kept secured within the safeguard of the researcher.

The collected data will help evaluate the effectiveness of the role of the current congregational mosques as community centers in Saudi Arabia. Findings and results of the surveys and interviews may assist in the development of congregational mosque' design and support its communal role. The study might provide insights into residents' attachment to their neighborhood and sense of community between neighbors.

CHAPTER FOUR

FINDINGS

Introduction

This chapter presents data obtained from a mixed method study examining the role of the congregational mosque as a communal place and residents' attachment to their community. The findings from the survey questionnaire and interviews are analyzed here and a case study was conducted. The first section of this chapter will discuss the demographics of the sample. The second section will list and explain themes that emerged from findings. Data will be presented with the use of graphs and statistical analysis. Lastly, the third section will present an analysis of the case study using spatial syntax methodology. The aim is to understand the relationship between space configuration of the mosque building and mosque attendees usage and patterns of interaction and compare the graphs to participants' responses.

Demographics

Two instruments were used to collect data. A survey was sent to three thousand employees of the Royal Commission for Jubail in Saudi Arabia. Data was collected within a two-week period with a total of 345 completed responses. The majority of these responses (312) were from men, which is due to the higher percentage of men in the workplace in Saudi Arabia and because, unlike men, women are not required religiously to pray collectively in a mosque. Sixty-seven percent of the responses were from employees between 20 to 40 years of age, and 91% of responses were from Saudi Arabian citizens. The majority of the responses came from residents of Jubail Industrial city with 276 completed responses. Six percent of respondents said they have never attended the mosque; therefore, they automatically were exited from the survey. After totaling the completed responses, excluding the 6%, only 325 were considered usable and

included in the analysis for this study. Because this study examines community attachment, it was important to find out how long respondents had lived in the community. Forty-eight percent have lived in their current residence for over 5 years, 34% have lived in their residence for 1 to 5 years, and 18% have lived for less than a year (see figure 4.1). Seventy percent of respondents are regular mosque attendees who visit the mosque daily and 78% attend the Friday ceremony weekly.

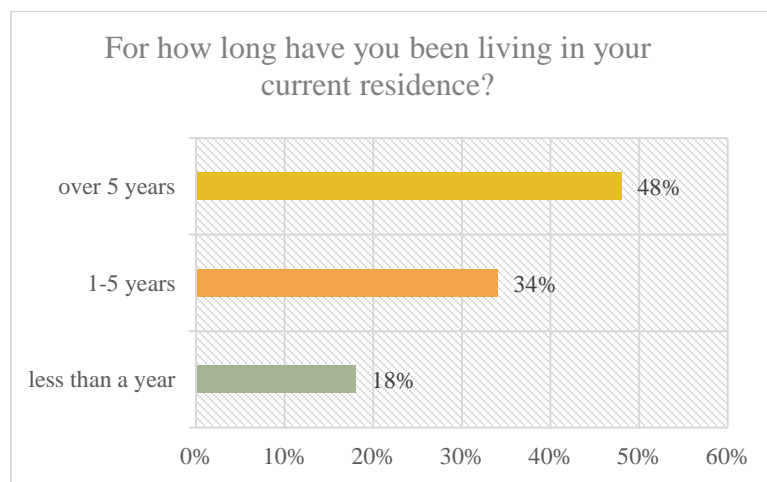


Figure 4.1. Length of residency (n=325).

Interviews were conducted with the Farouq mosque’s Imam and eight mosque attendees to further investigate the users’ experience there. Interviews were conducted through the phone over a 10-day period. The Imam has been the leader of the Farouq mosque since it opened in 2008. He had worked in two other mosques in Jubail Industrial city prior to working in the Farouq mosque. He was a resident of the Farouq district but moved out a couple of years ago. Most of the mosque attendees interviewed have been residents of the Farouq neighborhood for more than ten years, except for one who has been living there for only five years. Interviewees were chosen randomly from the Farouq congregational mosque attendees. All eight interviewees

were men and of age ranging between 21 and 61. Four interviewees stated that they visit the mosque daily, and the other four attend as their schedules allow.

Emergent Themes

Survey results and interview transcripts were analyzed and coded to reveal emergent themes. Questions from the survey and interviews were first grouped under related research questions. Then, findings from the survey and interviews were sorted into six categorizing themes corresponding to each research questions. These themes are used in the discussion and presentation of findings.

Six themes emerged in the analysis of data related to the research questions:

1. Social interaction between residents of the local neighborhood.
2. Neighborhood attachment.
3. The use of the mosque today.
4. The mosque as a social gathering place.
5. The mosque's role as a community influencer.
6. Mosque architecture.

Social Interaction Between Residents of the Local Neighborhood

At the beginning of the survey and before introducing questions on the mosque, participants were asked to list which part of their neighborhood's environment they feel most attached to other than the house. Forty-three percent answered the mosque, 8% the commercial center, 7% listed the park, playground, or walkways, 6% the beach, 6% the gym or recreational center, 13% have nothing attached to other than the house, and 17% listed miscellaneous or unrelated answers (see figure 4.2).

When exploring the facilities most frequented, all eight interviewees listed the commercial center as the most frequently used facility in their neighborhood which includes a supermarket, pharmacy, tailor, bakery, barber shop, and an ATM. Four interviewees mentioned the mosque, and one added the pedestrian walking trail. They were then asked about the existing facilities in their neighborhood that allow community interaction and the forming of social bonds. Four interviewees responded the mosque and its weekly gatherings, and one could not identify a place. Other facilities listed include kids' playground areas, schools, coffee shops, a clinic waiting area, pedestrian trails, and neighbors' house visits. Moreover, they named facilities that are not available, but those they felt could aid in social interaction such as a public library, parks, recreational center, and public gathering areas.

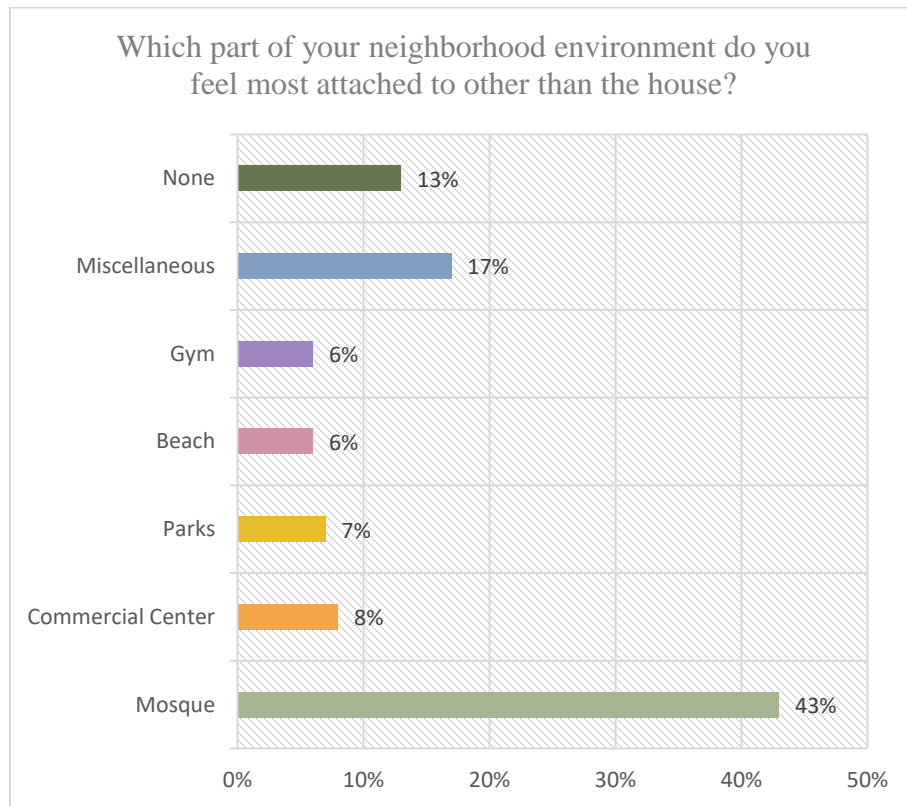


Figure 4.2. Attachment to neighborhood environment (n=325).

Neighborhood Attachment

When survey participants were asked about their feelings regarding attachment to the neighborhood, 47% either strongly agreed (15%) or agreed (32%) that they feel attached to their community. Conversely, 33% were neutral, and 20% did not feel attached to their neighborhood's community (see figure 4.3). Similar distribution of responses can be observed between people's feeling of attachment to their neighborhood's community in general, and their likelihood of socializing within the mosque (see figure 4.9).

Eighty-eight percent of survey participants agreed that living within a connected community can help improve the quality of living for residents, indicating that the majority of residents of Jubail Industrial city recognize the importance of the sense of community in residential neighborhoods. However, only 51% agreed that their existing neighborhoods offer good facilities that can support community interaction and help in forming social bonds, while 22% were neutral, and 27% disagreed (see figure 4.4).

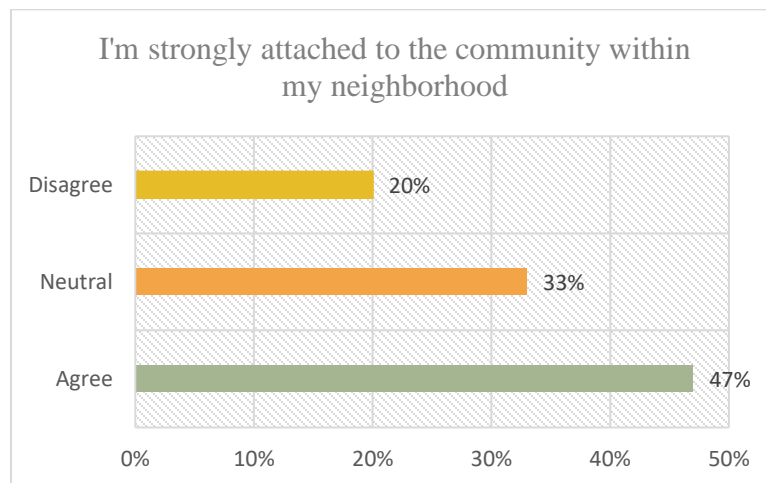


Figure 4.3. Attachment to neighborhood community (n=325).

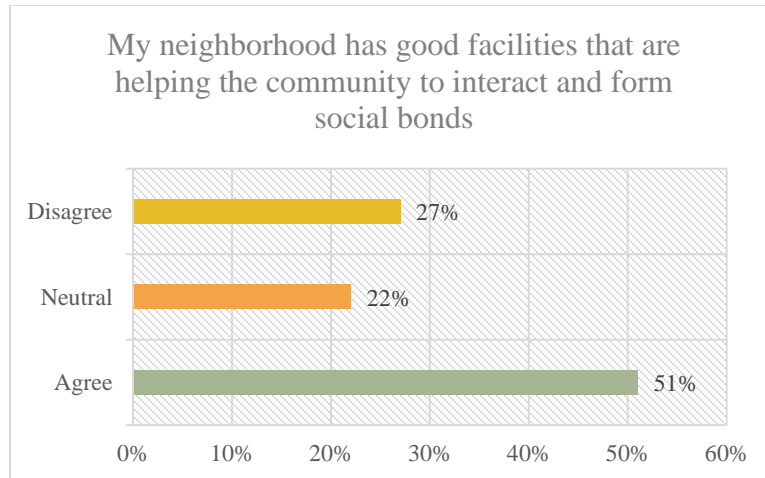


Figure 4.4. Neighborhood facilities (n=325).

Half of the interviewees, four out of eight, said that they are attached to the Farouq neighborhood and its community and would not want to move out. They attribute their attachment to the long years of residency, feeling safe, living in a quiet neighborhood, and forming relationships with the neighbors. The other half of the interviewees felt their attachment to the neighborhood was weak. Reasons for not feeling attached included the absence of strong social relationships, unsatisfactory quality of social and commercial services; therefore, they would choose to move out if they found a better housing option. A positive correlation was found between age, length of residency and feelings of attachment which is discussed in a following section. All eight interviewees agreed that the mosque plays an important role in establishing a sense of community and attachment to the neighborhood.

The Use of the Mosque Today

To evaluate the role of the mosque in the twenty-first century Saudi Arabian residential neighborhoods, questions were asked about residents' use and perception of the mosque. Thirty percent of survey participants reported that the mosque should only be used as a praying space, 54% disagreed, and 16% were neutral (see figure 4.5). Eighty-six percent agreed that the mosque

has the potential to act as a communal place, 11% were neutral, and 3% disagreed (see figure 4.6). Eighty-eight percent reported that the mosque of the past (pre-oil discovery) had a more active role in the community, 10% were neutral, and 2% disagreed (see figure 4.7).

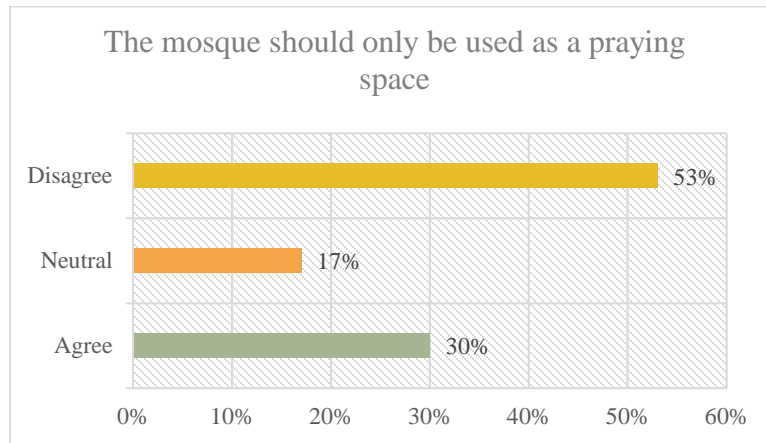


Figure 4.5. The mosque role as a praying space (n=325).

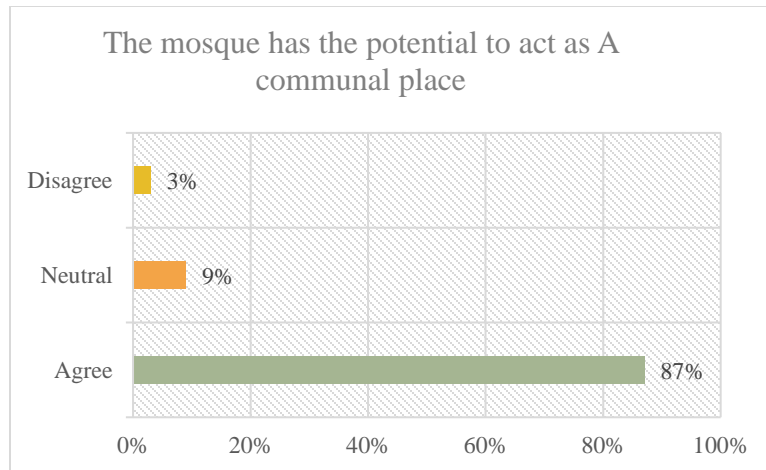


Figure 4.6. The mosque role as a communal place (n=325).

Survey participants were asked to identify the reasons, other than praying, they visit the mosque. Answers included attending lectures, Quran recitals, social gatherings, and to contemplate. Interview participants were also asked to list reasons to visit the mosque and four out of eight said only to pray. The other four listed reasons that include; attending lectures,

Quran recitals, and meetings with the Imam to discuss neighborhood's issues. The Imam also confirmed that activities other than praying must be approved by the office of Islamic Affairs. In addition, he stated that other than prayers, visitors frequently visit the mosque between the Aser and Maghrib prayers (mid-day to sunset) to attend lectures or Quran recitals.

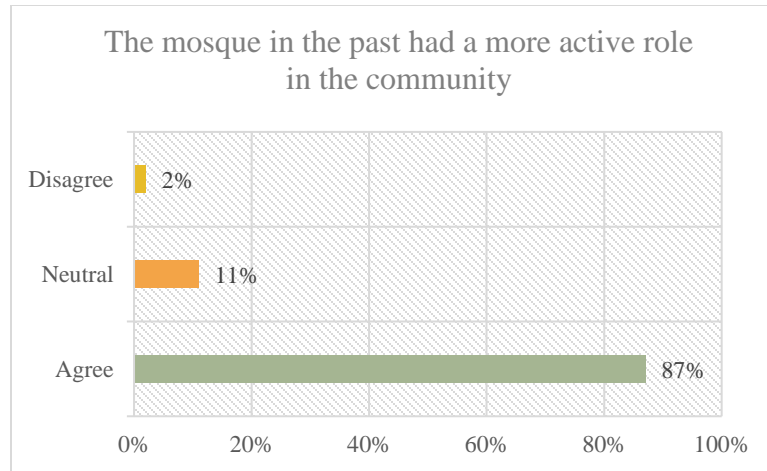


Figure 4.7. The mosque role in the past (n=325).

When asked what other amenities they would like to see integrated within today's mosque, 31% suggested a library, 29% suggested a multipurpose hall for the community to gather, hold events, or celebrate, and 15% suggested adding classes that teach both religious lessons as well as school tutoring and workshops. Other suggestions included a nursery for the use of the residents, a park, sports fields, playground, and a separate community center for women. When interviewees were asked the same question, a gathering hall was the most recorded answer. Other amenities mentioned included a public library, lectures and workshops, a small shop that sells cold and hot drinks in which profits go to running the mosque, a bulletin board to exchange news, and invitations to introduce new neighbors. Activating already existing facilities such as the library was suggested, and the need for better facilities for women to encourage them to

attend. One participant stated that he initiated starting classes for students and elders to teach math and English; however, his suggestion was not met with encouragement, which he believed was due to a lack of sense of responsibility and differences in opinions. The Imam responded that the mosque has an active group chat using SMS and Whatsapp application to send updates, news, invitations to registered mosque's attendees along with a screen installed at the back of the mosque to present the same information. He also suggested adding a library and an e-library with a WI-FI connection, and a center for community development.

The Mosque as a Social Gathering Place

From survey results, 70% of regular mosque's visitors indicated that residents of Jubail Industrial city are highly engaged with the mosque making it a common place for residents' interaction within the neighborhood. On the other hand, female responses showed a lack of physical connection with the mosque as the majority of them answered with "never attended" or "rarely attended" (92%), and only 8% attended the mosque regularly.

To address the social interaction happening within the mosque, a survey question was asked regarding how many people one can identify by their names in their mosque. Twelve percent could not identify anyone, 53% could identify between 1 to 10 people, and 35% could identify more than 10 persons (see figure 4.8). Sixty-two percent of participants agreed that they were able to form social relationships within the mosque, 24% were neutral, and 14% disagreed indicating that they failed to meet people within the mosque (see figure 4.9). Fifty-three percent agreed that their mosque's attendants succeeded in forming a strong community, 37% were neutral, and 10% didn't agree (see figure 4.10).

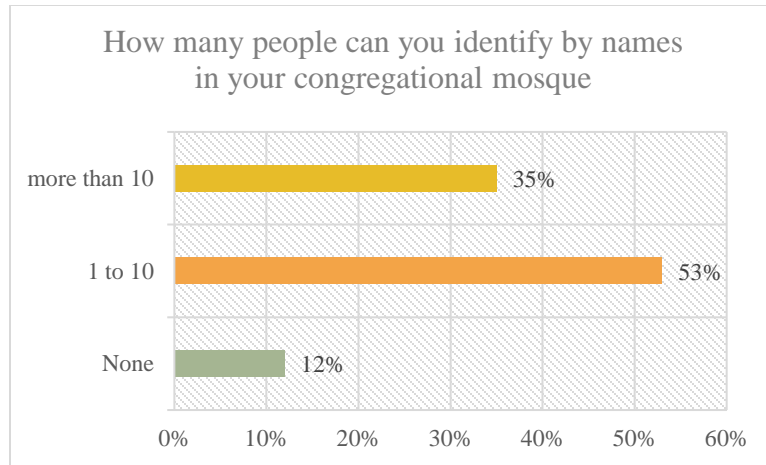


Figure 4.8. People one can identify in the mosque (n=325).

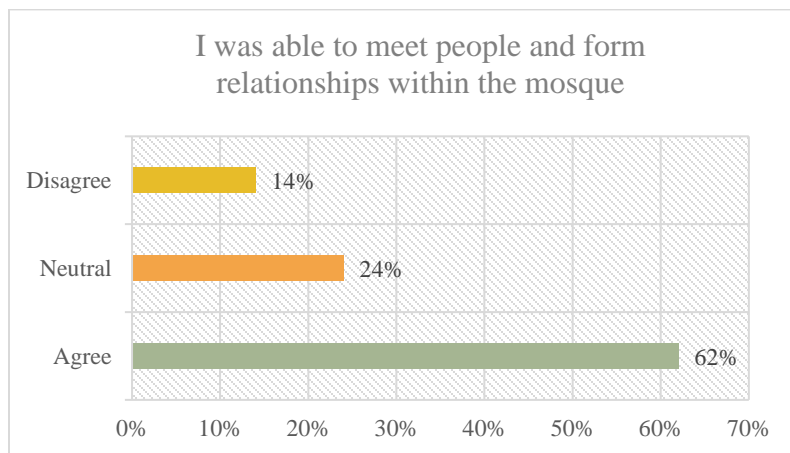


Figure 4.9. Social relationships formed in the mosque (n=325).

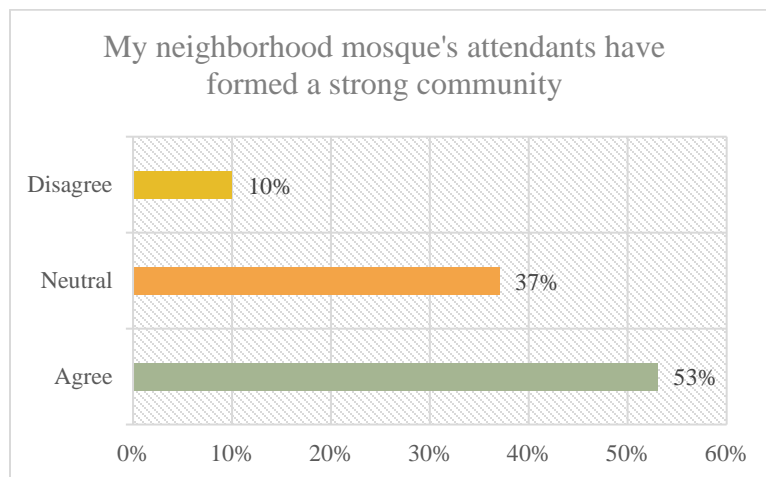


Figure 4.10. The mosque community (n=325).

Interviewees were asked if they have formed any social groups within the mosque. Two out of eight answered that they had not formed any new relationships with others from the mosque. Two formed a few shallow relationships inclusive only to the mosque. Four formed relationships that extended outside of the mosque.

When asked if they would attend if their neighborhood’s mosque started a weekly informal social gathering, 42% survey participants answered yes, indicating that they may accept the mosque as a social place, 46% answered with maybe, and 12% answered with no, which can be interpreted that they don’t perceive the mosque as a place to socialize and meet people (see figure 4.11).

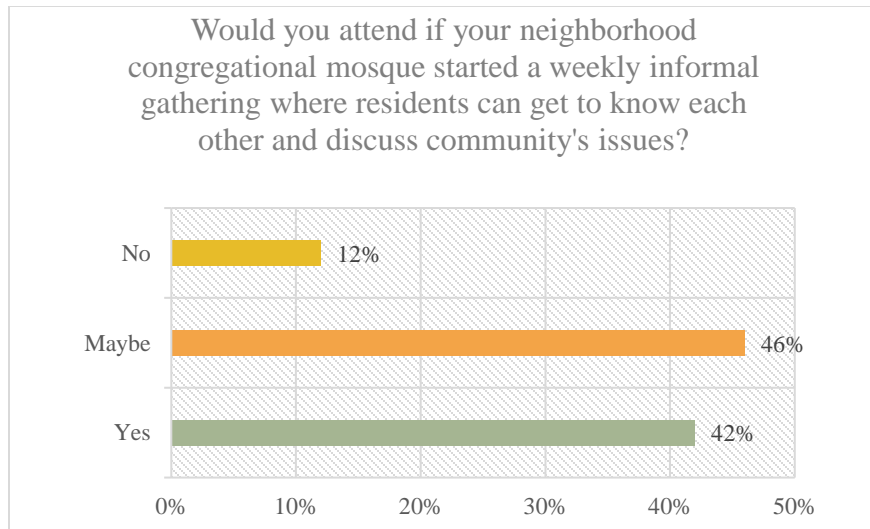


Figure 4.11. Social gathering in the mosque (n=325).

To identify the spaces within the mosque where social interaction usually takes place, survey participants were asked where they usually meet people and have conversations within the mosque. The majority answered that the courtyard and the interior hall, especially the back of the mosque were the most common locations. Other answers included the entrance and all areas of the mosque. Interviewees were also asked the same question to which six answered the courtyard

and two said all parts of the mosque. The Imam identified that approximately 85% of visitors come in alone and 15% come in groups--usually with family members. He had noticed some social groups forming within the mosque taking place in the back of the mosque or the courtyard. The Imam specified some social events held in the mosque, such as a monthly gathering of the neighborhood community, parents meeting for children's Quran recital classes, and feasts for breaking fast during the holy month of Ramadhan.

The Imam was asked if a community center were to be established in the neighborhood, where would he suggest it be located. He suggested it be built within the parameter of the mosque but detached from it which will make it more accessible. He mentioned that he saw similar successful examples in non-Muslim countries.

The Mosque's Role as a Community Influencer

Fifty percent of survey respondents reported that their neighborhood community has discussed and solved issues related to their neighborhood in the mosque, with 31% neutral, and 19% disagreeing (see figure 4.12).

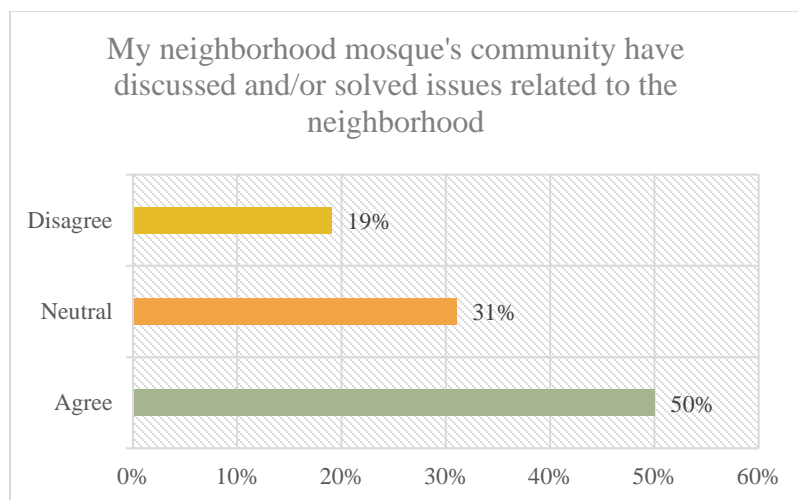


Figure 4.12. The role of the mosque's community (n=325).

Seventy-nine percent of participants agreed that the mosque should be managed by the community members, 16.5% were neutral, and 12.5% disagreed (see figure 4.13). Forty-nine percent of participants reported that when they see uncivil activities in their neighborhood they discuss it with their mosque’s community, 30% were neutral, and 21% didn’t discuss such issues with their mosque’s community (see figure 4.14).

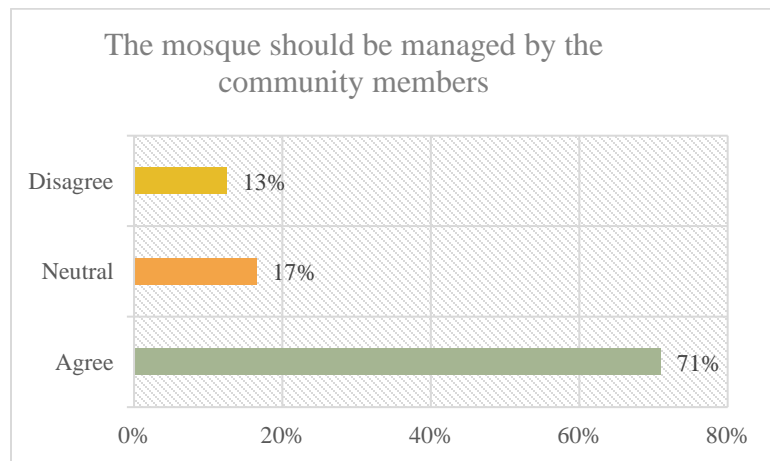


Figure 4.13. Managing the mosque (n=325).

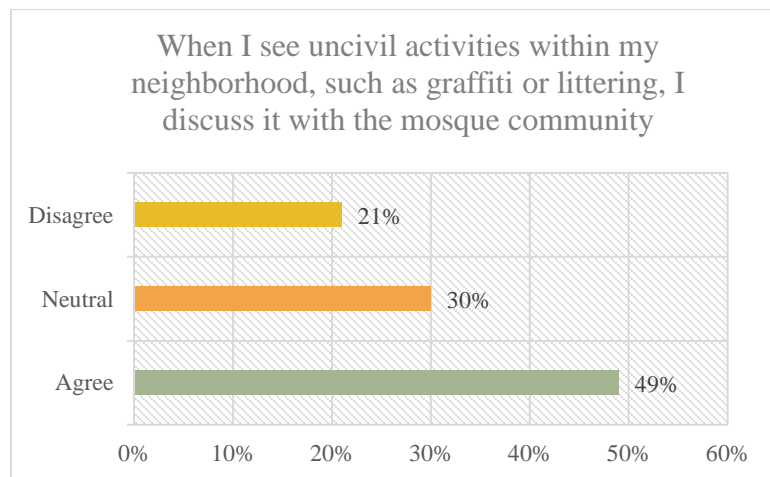


Figure 4.14. Reporting and discussing uncivil activities with the mosque community (n=325).

Six interviewees answered that the mosque’s community has discussed and solved issues related to the neighborhood while two did not experience that. Examples of issues discussed

include helping families in need, reconciling issues between neighbors, disruption from gatherings of youngsters, and high schoolers speeding in their cars. They identified that issues are either raised by the Imam and discussed after prayers, or complaints from the residents are directed to the Imam. When asked if those issues were solved and if the community was responsive, they answered yes. In some cases, the Imam and members of the community reached out to authorities, the police for example, to solve the issues. While discussing the community of the mosque, only two attendees were able to confirm that the mosque has formed a committee consisting of regular attendees, between 7 to 10 people, that meet regularly to take care of the mosque in terms of cleaning, maintenance, and planning classes and lectures. The rest of the interviewees did not mention it which could be due to their lack of knowing such a committee existed or they did not identify them as part of an active social community but rather volunteering individuals who take care of the premises.

Interviewees were asked if they consider the mosque as community place or a religious institution. Four interviewees responded that the mosque should be solely religious, three viewed it as a mostly religious but sometimes a communal place, and one viewed it as a community place due to its active Imam. However, the majority of them agreed that it's capable of being a community place as it used to act as one in the past. The Imam explained that the role of the current mosque is religious more than communal and reminded the researcher that permission must be sought from the office of Islamic Affairs if the mosque hosted any social activities. It was stressed that it could be difficult to get permission to hold social activities as they have to be monitored and evaluated but the office Islamic Affairs.

Mosque Architecture

To assess people's understanding of the role of architecture in supporting a sense of community, a survey question was asked on whether architecture is an important element in creating a better community and living conditions. Eighty-six percent agreed, 11% were neutral, and only 3% disagreed (see figure 4.15).

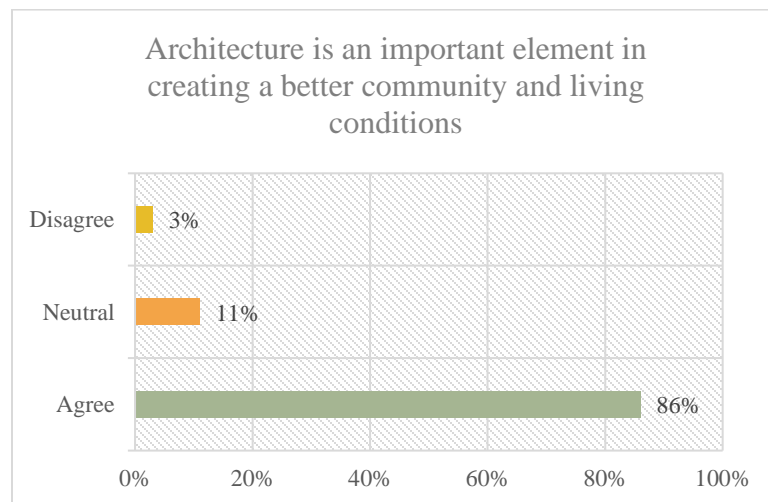


Figure 4.15. The role of architecture on community qualities (n=325).

The study also explored the respondent's perception of the mosque as a social and religious building representative of the culture. Ninety-one percent of survey participants agreed that the mosque as a building is an important representation of the cultural identity of Saudi Arabia, 7% were neutral, and only 2% disagreed (see figure 4.16). Sixty-nine percent agreed that the design of modern (post oil discovery) mosques represent the culture, 22% were neutral, and 9% disagreed (see figure 4.17). Sixty-six percent agreed that the current architectural elements of the mosque support its role as a community center, 20% were neutral, and 14% disagreed (see figure 4.18).

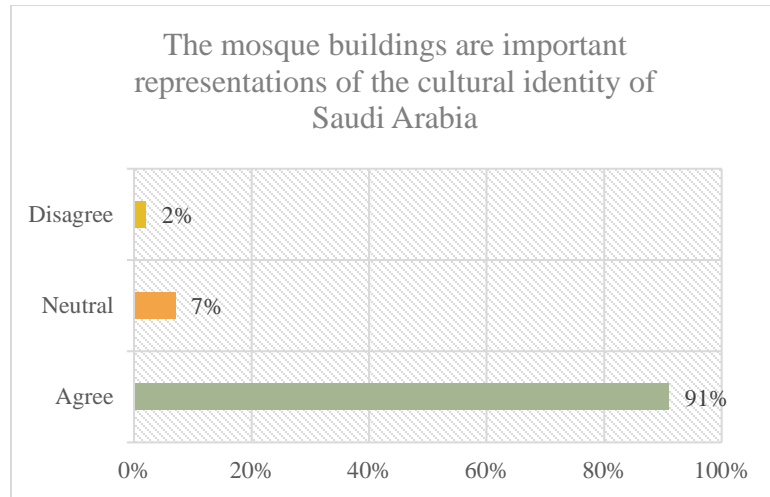


Figure 4.16. The mosque building as a cultural representation (n=325).

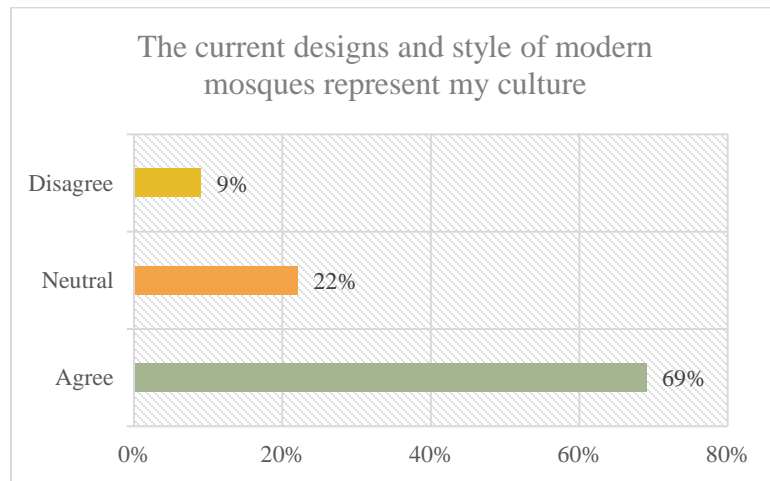


Figure 4.17. The current mosque design & representation of culture (n=325).

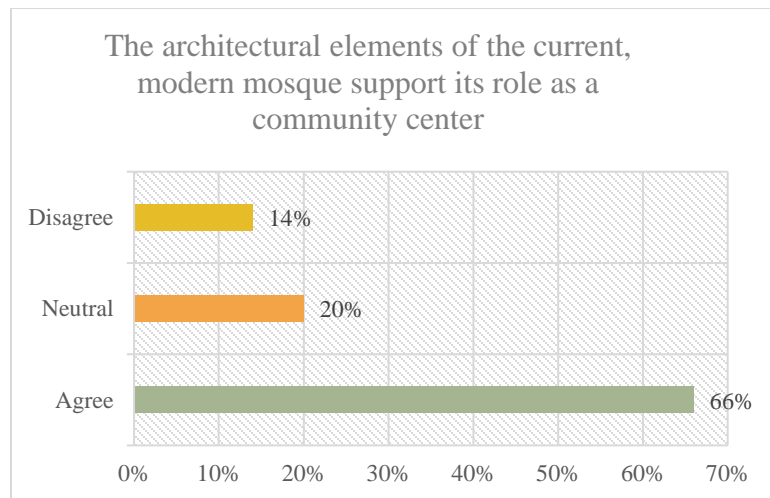


Figure 4.18. The mosque architecture and its role as a community center (n=325).

To ensure ease of access to the neighborhood’s mosque, survey participants were asked if their mosque is located within a convenient distance from their houses. Eighty-six percent agreed, 8% were neutral, and 6% disagreed. This indicates that the majority of residents have easy access to their mosque, and current mosques in the Jubail Industrial city are centrally located within the neighborhood to efficiently serve residents. The congregational mosque was found to be conveniently located by 75% of respondents with 12 % being neutral and 13% disagreeing (see figure 4.19). The congregational mosque is a larger mosque that hosts the daily prayers along with the weekly Friday prayer and needs to accommodate a larger number of Friday worshippers. It is often called the Friday mosque as the Friday ceremony is held only in a congregational mosque and there is often one, sometimes two in bigger neighborhoods, congregational mosque to serve a neighborhood.

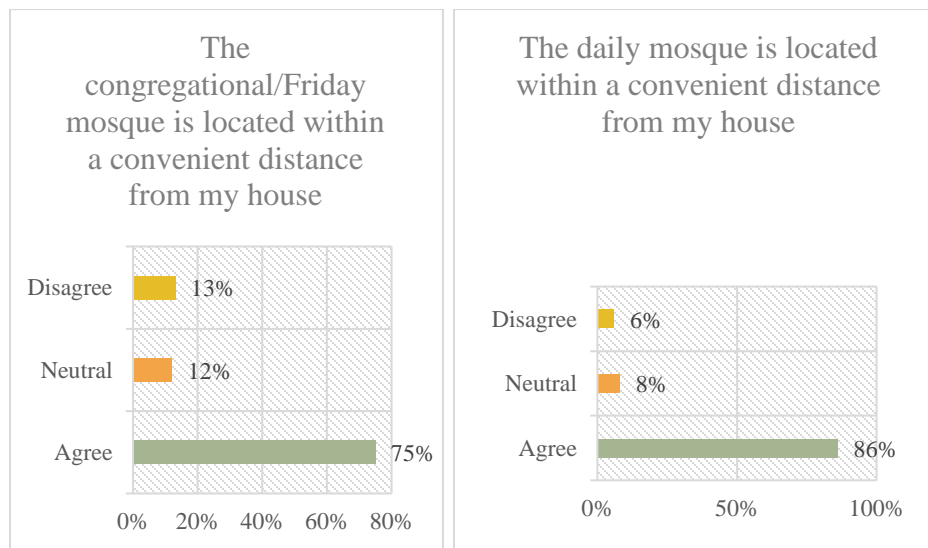


Figure 4.19. The location of the mosque (n=325).

Statistical Analysis

Statistical findings showed a positive correlation between the length of residency and the number of people one can identify by name in the mosque($r=0.1$) (see figure 4.20), and between

the number of people one can identify by name in the mosque and the sense of attachment to the neighborhood's community($r=0.2$) (see figure 4.21). Correlations were also found between age ($r=0.02$), length of residency ($r=0.03$), and how often residents visit the mosque ($r=0.014$) and the sense of attachment to the neighborhood community (see figure 4.22,23, and 24). The older the people and the longer they have been living in their current residence he more connected and attached they feel to their neighborhood community. Table 4.1 illustrates the correlation between the four variables; age, length of residency, how often residents visit the mosque, the number of people one can identify by name in the mosque, and the sense of attachment to neighborhood community.

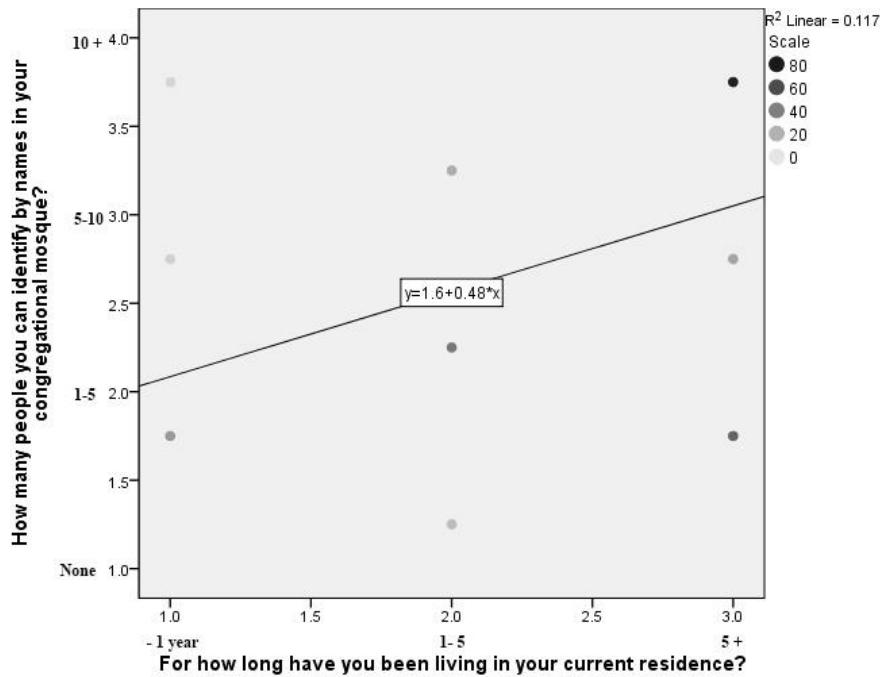


Figure 4.20. Scatter plot of the correlation between length of residency and the number of people one can identify by name in the congregational mosque (n=325).

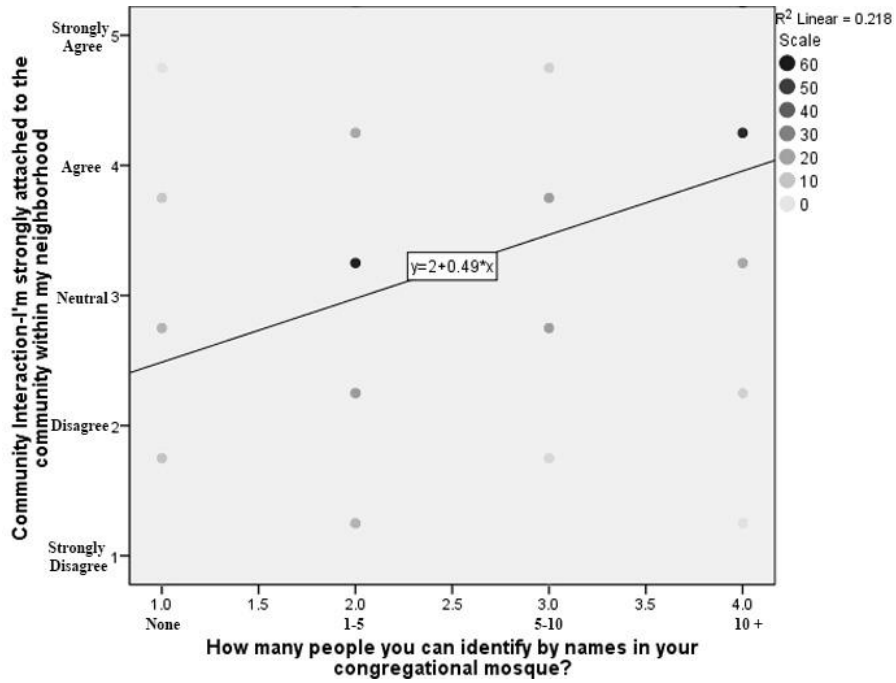


Figure 4.21. Scatter plot of the correlation between the number of people one can identify by name in the congregational mosque and sense of attachment to neighborhood community (n=325).

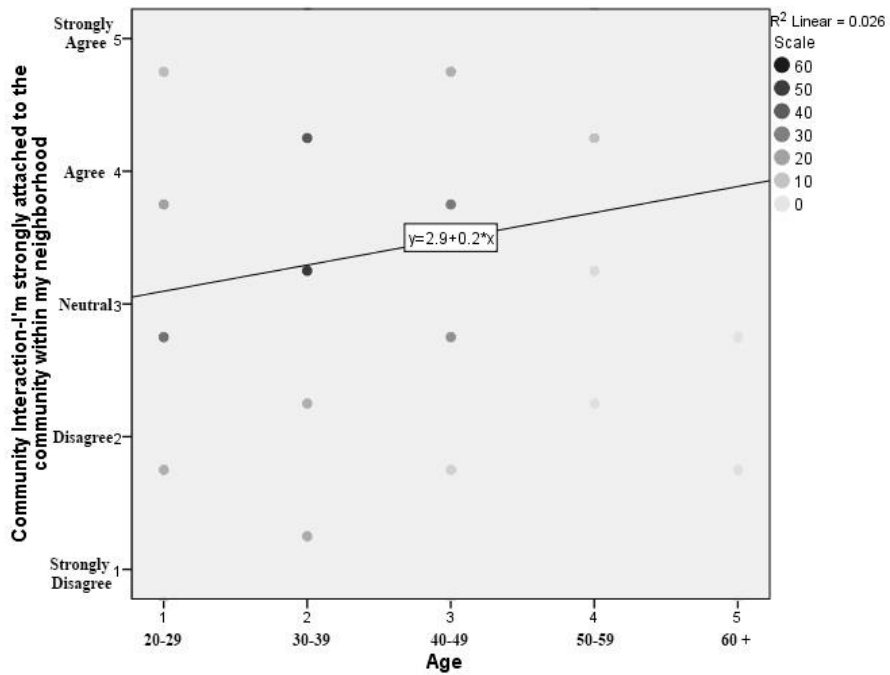


Figure 4.22. Scatter plot of the correlation between age and sense of attachment to neighborhood community (n=325).

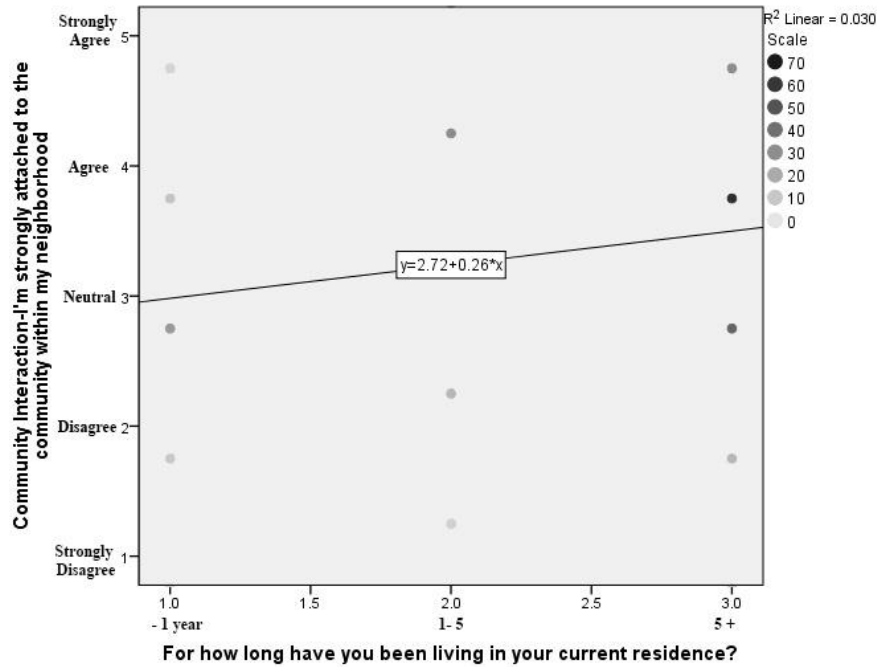


Figure 4.23. Scatter plot of the correlation between length of residency and sense of attachment to neighborhood community (n=325).

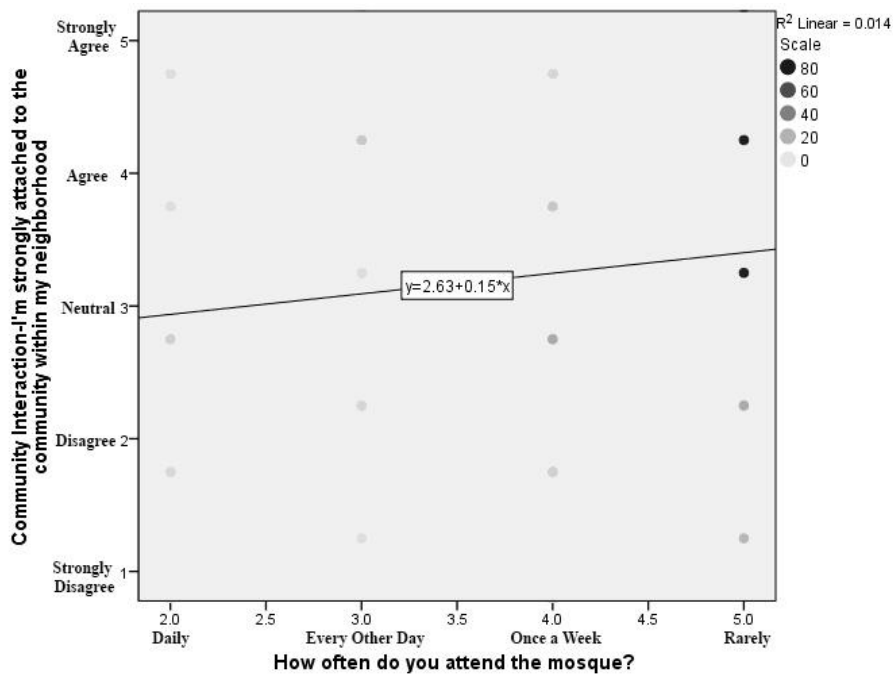


Figure 4.24. Scatter plot of the correlation between how often residents visit the mosque and sense of attachment to neighborhood community (n=325).

Table 4.1

Correlation Analysis Between Age, Length of Residency, How Often Residents Visit the Mosque, the Number of People One Can Identify by Name in the Mosque, and the Sense of Attachment to Neighborhood Community.

		Age	For how long have you been living in your current residence?	How often do you attend the mosque?	How many people you can identify by names in your congregational mosque?	Community Interaction-I'm strongly attached to the community within my neighborhood
Age	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	325				
For how long have you been living in your current residence?	Pearson Correlation	.304**	1			
	Sig. (2-tailed)	.000				
	N	325	325			
How often do you attend the mosque?	Pearson Correlation	.091	-.108*	1		
	Sig. (2-tailed)	.094	.048			
	N	325	325	325		
How many people you can identify by names in your congregational mosque?	Pearson Correlation	.284**	.343**	.199**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	325	325	325	325	
Community Interaction-I'm strongly attached to the community within my neighborhood	Pearson Correlation	.162**	.181**	.120*	.466**	1
	Sig. (2-tailed)	.003	.001	.028	.000	
	N	325	325	325	325	325

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

The Farouq Congregational Mosque Building Analysis

For the purpose of further analysis of users experience with the congregational mosque, the Farouq congregational mosque in Jubail Industrial city was chosen as a case study for this research. Interviews were conducted with the Farouq’s Imam and eight attendees. The Farouq congregational mosque is the second largest mosque in the city and was opened in 2008 according to the Imam. It is located in the center of the Farouq residential district, which houses the congregational mosque, supermarket, clinic, pharmacy, shops, and restaurants (see figure 4.25, and 26). The congregational mosque is used to perform the five daily prayers and the

Friday ceremony and has a capacity of 4000 occupants and 218 parking spaces. It is designed in accordance to the Royal Commission for Jubail’s requirements which follow a typical floor design. Figures 4.27, and 4.28 provide the ground floor and mezzanine floor plans of the Farouq congregational mosque. Table 4.2 below provides a summary of the congregational mosque design and planning requirements adopted by the Royal Commission for Jubail city (RCJY, 2015).

Table 4.2

The Royal Commission Building Requirements for Congregational Mosques in Residential Areas

Element	Requirement
Location	In the district’s commercial center with five minutes walking distance
Capacity	1500 to 3000 persons
Parking	1 parking space per 10 users
Courtyard	In the case of a courtyard, the required area is equal to the entire covered hall + 1\2 the area of the courtyard.
Total height	Minimum of 10.0 m for the Friday prayer hall
Minerats	2 minerats with a height 3 times the height of the mosque.
Main Friday Prayer Area	Each user is allocated a rectangular area of 1 m ² . The main hall is designed in a rectangular form where that the width of the hall is longer than its depth. The hall floor level must be raised from the outside level without exceeding 0.15 m.

Table 4.2- continued

Element	Requirement
Daily Prayer Hall	Must be an area 20% of the total area and located at the back of the Friday prayer hall. Must be divided from the Friday prayer hall with a glass wall with a separate AC and lighting units.
Female Prayer Hall	20% of the total area. Separate entrance and ablution area. Separated by glass wall or placed on a mezzanine floor.
Qibla Wall	Must not have any doors except to the Imam room or windows along the sight level.
Mihrab	In the center of the Qibla wall with 2.5 m in depth and 5.0 m in width.
Imam Room	6.0 to 9.0 m ² in size and attached to the mihrab from the inside with a door opening to the outside.
Structural Columns	Must be minimized in the prayer hall.
Security Room	Maximum area of 10.0 m ² .
Library	Minimum area of 16.0 m ² .
Storage	Maximum area of 16.0 m ² .
Ablution area	6% of the total area.
Service Area	A total of 30% to 40% service area, including washrooms, storage, and others, is added to the required area for each user resulting in an equivalent of 1.30 to 1.40 m ² per user.

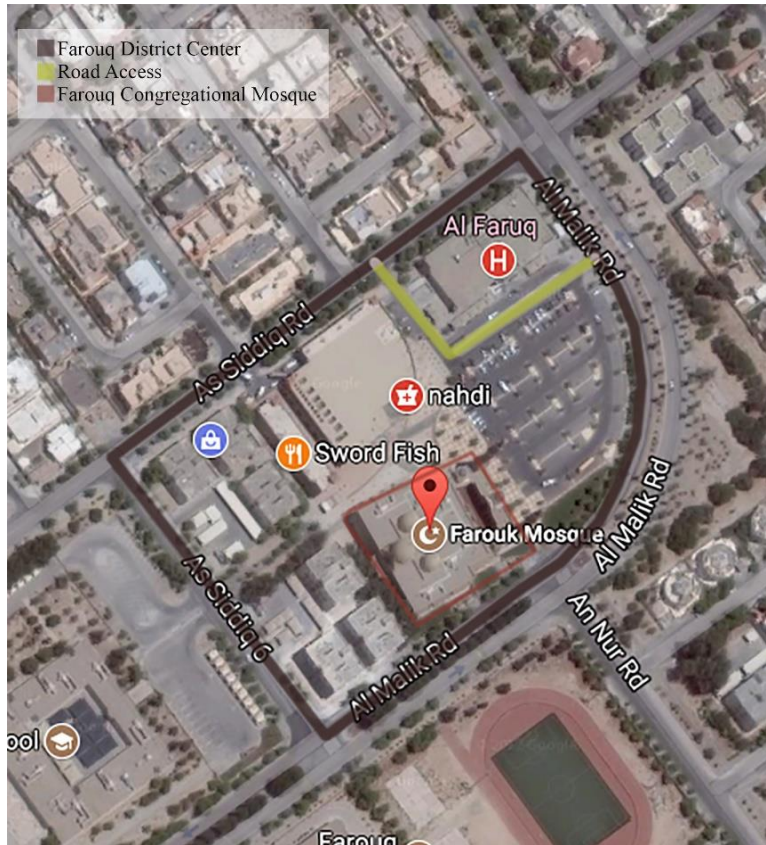


Figure 4. 25. Farouq congregational mosque’s satellite view (Google Earth).

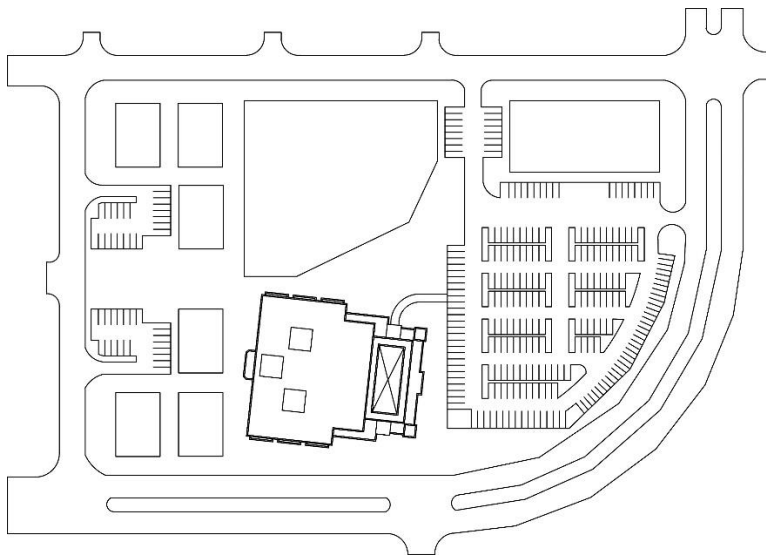


Figure 4. 26. Farouq congregational mosque's site plan (modified from architectural documents obtained from the Royal Commission for Jubail, 2017).

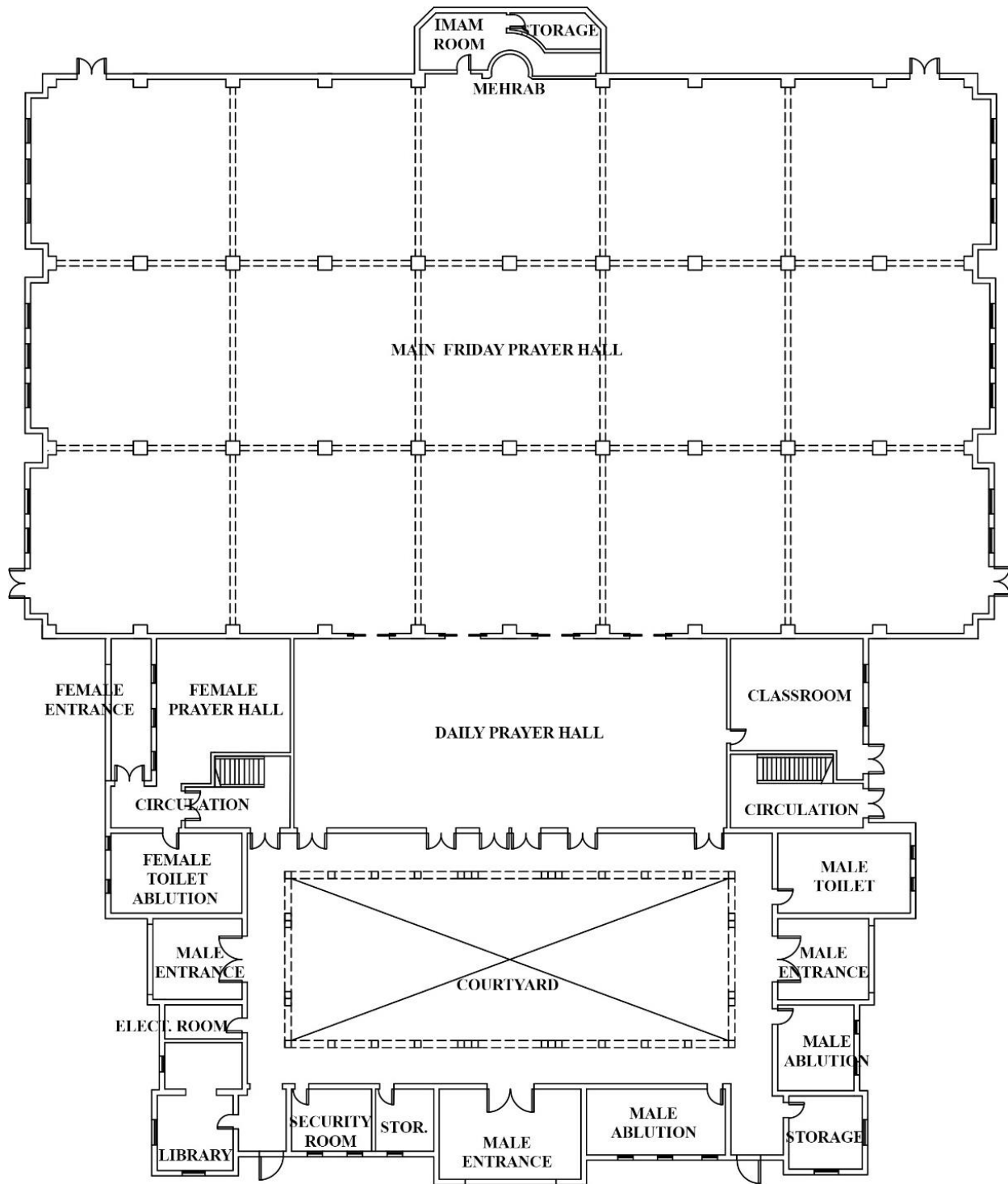


Figure 4.27. Farouq congregational mosque's ground floor plan (modified from architectural documents obtained from the Royal Commission for Jubail, 2017).

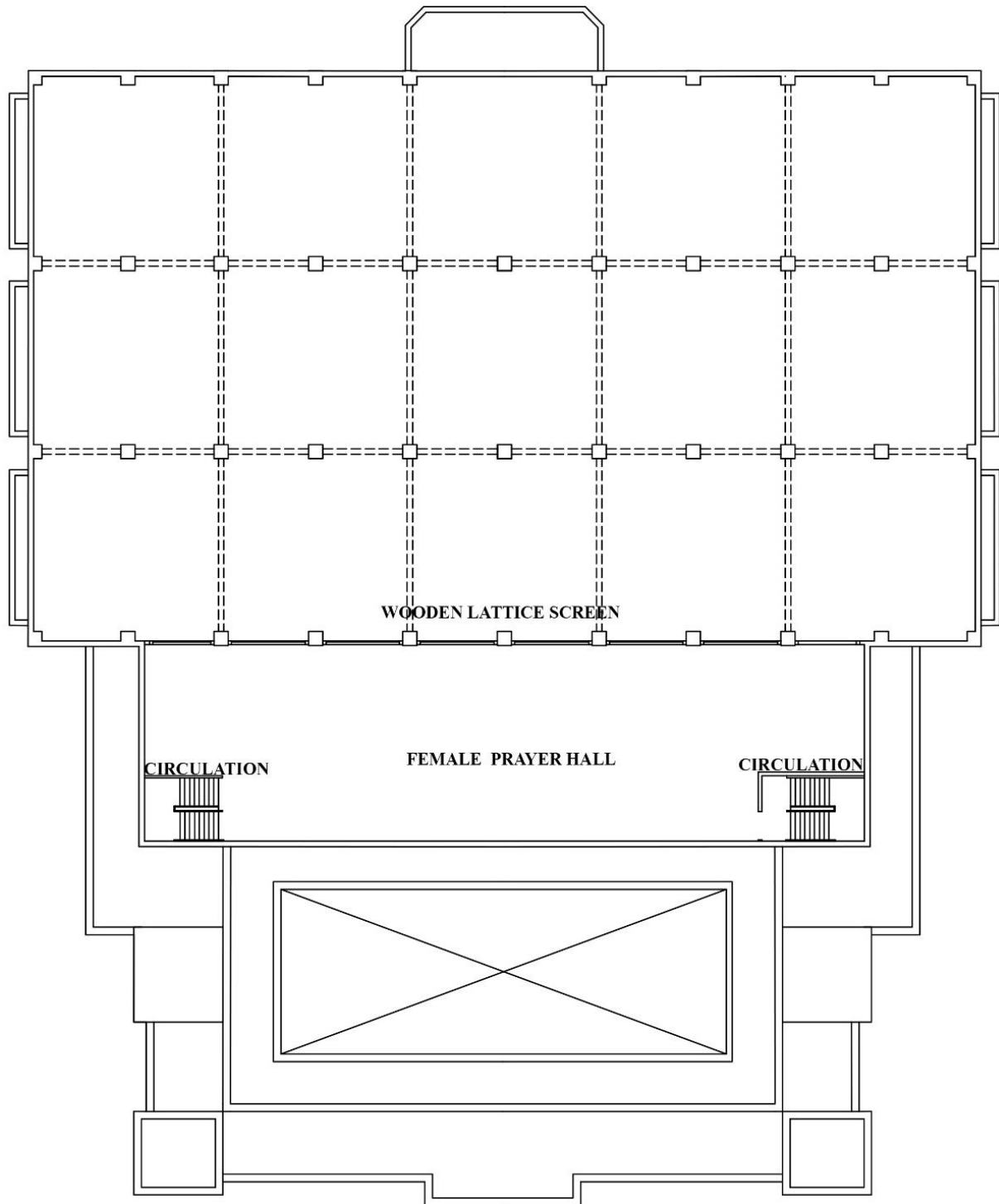


Figure 4.28. Farouq congregational mosque’s mezzanine floor Plan (modified from architectural documents obtained from the Royal Commission for Jubail, 2017).

The mosque building has three main male entrances that open onto an open courtyard from three sides (see figure 4.29).



Figure 4.29. Main male entrance, Farouq congregational mosque (Author, 2017).

An arcade surrounds the courtyard providing shades and circulation, which leads to the washrooms and ablution areas (see figure 4.30, 4.31, and 4.32). According to participants' responses, the courtyard is used as a social space to meet people and interact with residents before and after prayers.



Figure 4.30. Courtyard, Farouq congregational mosque (Author, 2017).



Figure 4.31. Ablution area, Farouq congregational mosque (Author, 2017).



Figure 4.32. Washroom, Farouq congregational mosque (Author, 2017).

The library, security room, electrical room, and storage can be accessed directly from the courtyard. From the courtyard, visitors enter the daily male prayer hall through five doors located along the back wall to prevent disruption of worshipper's rows during prayers. This hall is used for the five daily prayers and serves the central zone of the Farouq neighborhood (see figure 4.33). There are four other daily mosques located within the Farouq neighborhood.



Figure 4.33. Daily male prayer hall, Farouq congregational mosque (Author, 2017).

The daily prayer hall is connected to a bigger Friday prayer hall through four glass doors that open on Fridays only to accommodate the bigger number of worshippers during the Friday ceremony (see figure 4.34). The Farouq congregational mosque serves the entire Farouq neighborhood during the Friday ceremony and is the only congregational mosque in the neighborhood.

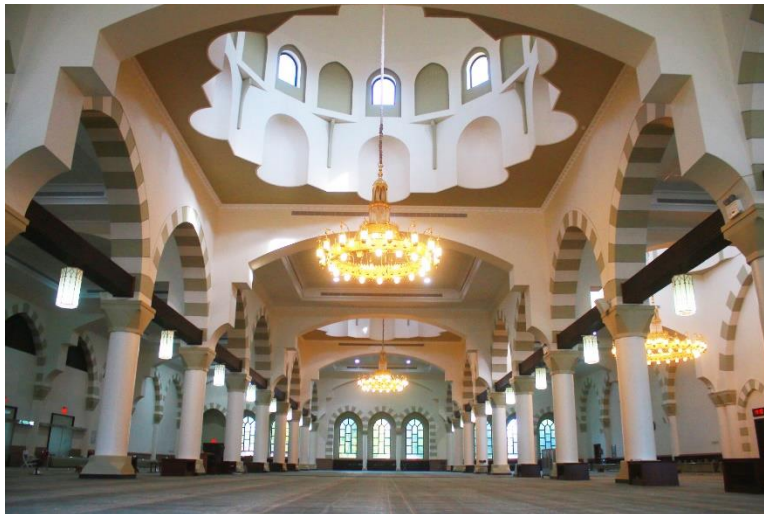


Figure 4.34. Friday main hall, Farouq congregational mosque (Author, 2017).

The Friday prayer hall has a mihrab along the Qibla wall, where the Imam stands to lead the prayer and delivers the Friday sermon, (see figure 4.35, and 4.36). There is a room for the Imam behind the mihrab that provides storage space. The projected mihrab is also used to indicate the Qibla direction from the outside.



Figure 4.35. Mihrab, Farouq congregational mosque (Author, 2017).



Figure 4.36. Qibla wall, Farouq congregational mosque (Author, 2017).

A space used for meetings and Quran lessons is accessed from the daily prayer hall (see figure 4.37).



Figure 4.37. Classroom, Farouq congregational mosque (Author, 2017).

A separate female prayer hall with toilets and ablution area are located on the side of the mosque building with a separate entrance (see figure 4.38). A female prayer area is located on a mezzanine floor, which overlooks the Friday prayer hall through wooden lattice screens. A smaller area is allotted to the female prayer hall due to the smaller number of female attendees. The Muslim religion does not require women to pray collectively in mosques.



Figure 4.38. Female entrance, Farouq congregational mosque (Author, 2017).

The mosque has two high minarets located on the front corners of the building (see figure 4.39). Parking for the mosque is shared with the commercial services located in the neighborhood's center next to the Farouq congregational mosque (see figure 4.40 and 4.41).



Figure 4.39. Minarets, Farouq congregational mosque (Author, 2017).



Figure 4.40. Parking, Farouq congregational mosque (Author, 2017).



Figure 4.41. Adjacent services, Farouq congregational mosque (Author, 2017).

Space Syntax Analysis

To better understand the relationship between a space and the activities within, an analysis of how people use the space and how efficiently a place serves its function is worthy of study. Spatial analysis of the Farouq mosque, and the Farouq neighborhood are discussed in this section. Space syntax theory is used as a method of analysis of the mosque building and the neighborhood planning to better understand spaces in relation to human activities. This syntactic analysis studies spaces on both a local level and a global level. On the local level, a “connectivity” analysis of the relationships between neighboring spaces is conducted. On the global level, a “integration” analysis of the relationships between the space and the whole layout is conducted. First, a visual analysis is conducted to examine visual accessibility between spaces using visibility graphs. Second, permeability analysis is presented to observe movement between and within spaces using convex, axial, and justified graphs.

The Farouq Mosque Analysis

The floor plan of the mosque is examined using the space syntax software DepthmapX. The mosque is analyzed during two different times; the daily prayer and the Friday prayer. The

spaces used for daily prayers and the Friday prayer service are included in the evaluation and only spaces used by the public are analyzed. Therefore, spaces such as storage spaces, the electrical room, and the Imam room are not included. Only the ground floor is analyzed because the mezzanine floor includes only one space; the female prayer hall.

Visual Connectivity Graph Analysis. The visual connectivity analysis is a measure that analyzes the degree in which spaces are visually accessible from neighboring spaces (Hillier & Hanson, 1984; Rohloff, 2009). A space is considered highly connected when it has the most direct visual access to other space (McLane, 2013). This helps visitors identify the connected space easily from different locations when entering a building. Connected spaces are thought to be the areas which occupants are drawn into and are the mostly used areas in a layout. Figure 4.42.a shows the visual connectivity graph analysis of the daily prayer area of the mosque when the Friday prayer hall would be locked. The courtyard (in red and orange) is the most visually connected area and located at the center of the building as it is visibly accessible from a high number of neighboring spaces within the mosque. The daily prayer hall has a medium visual connectivity represented in light blue, green and yellow. The least connected areas are represented in deep blue and located at the perimeter of the building including the foyers, washrooms, library, and the entire female section. Figure 4.42.b illustrates the visual connectivity graph analysis during the Friday prayer time when the main Friday prayer hall is open for use. At the time of Friday prayer, the Friday prayer hall is the most visually connected area. It is noticeable that the columns, making the arches that stretch around the hall, obstruct the visual accessibility in the hall. The least connected areas during the Friday prayer analysis are similar to the daily prayers time analysis. The female section is physically segregated from the male section leading to a lack of visual connectivity. The visual connectivity analysis graphs

show the visual relationship between adjacent spaces. They indicate how spaces are visible to each other in the mosque. Most connected spaces are likely the mostly used areas in a configuration. The courtyard (on a daily basis) and the Friday prayer hall (during Friday services) are the expected to have the heaviest use by mosque attendees, which provides insight into which spaces can be utilized more and the ones visitors will tend to be drawn into.

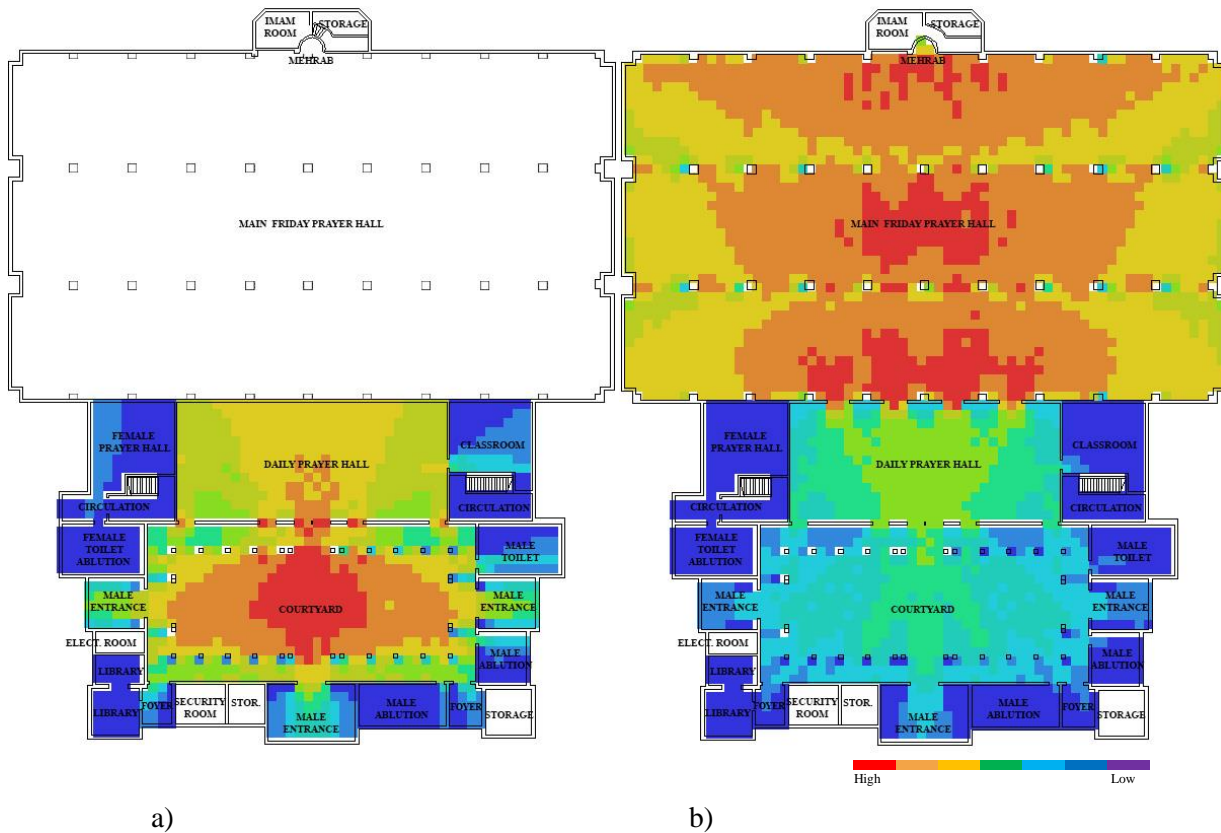


Figure 4.42. The Farouq mosque visual connectivity graph analysis a) during daily prayers, and b) during Friday prayer time.

Visual Integration Graph Analysis. This is a global measure concerned with depth and analyzes the degree of visual accessibility between each space to the whole layout. It calculates the number of visual fields needed to pass through in order to see the whole layout from each space (Hillier & Hanson, 1984; Rohloff, 2009). Figure 4.43 shows the visual integration graphs

analysis of the mosque during daily prayers and Friday prayer time. The two graphs indicate similar visually shallow (weak) integrated spaces (represented in blues) which mostly include service areas. This means that a visitor would not be able to identify these spaces and navigate his way around them when he enters the space for the first time and would be required to move around or use signage to see them. The weak visibility integration in the mosque is a result of the need for more obstructed spaces to fulfill the need for quietness and contemplation during the prayer rituals. However, it might also be interpreted as a result of a single-function use of spaces where multi-use is not considered.

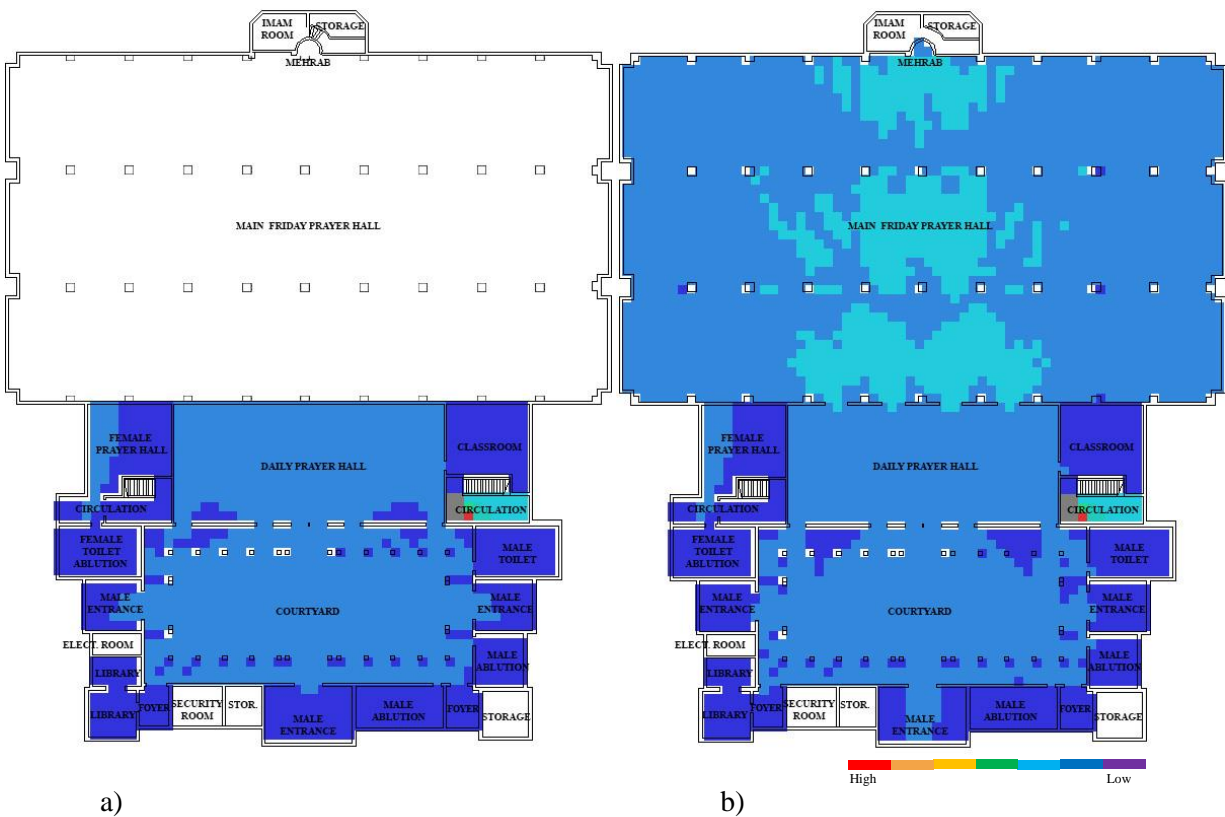


Figure 4.43. The Farouq mosque visual integration graph analysis a) during daily prayers, and b) during Friday prayer time.

Isovist Analysis. This analysis provides a navigation point from which spaces are visible. Isovist point is a point of sight selected on the layout with projected boundaries (Rohloff, 2009). These boundaries represent the lines of sight from the isovist point until they are obstructed by a physical object. An angle of 120 degree is used in this analysis which is the widest possible horizontal angle for a standing human. Figure 4.44 presents 3 isovist analysis with 3 different isovist points and their visual boundaries during Friday prayer time.

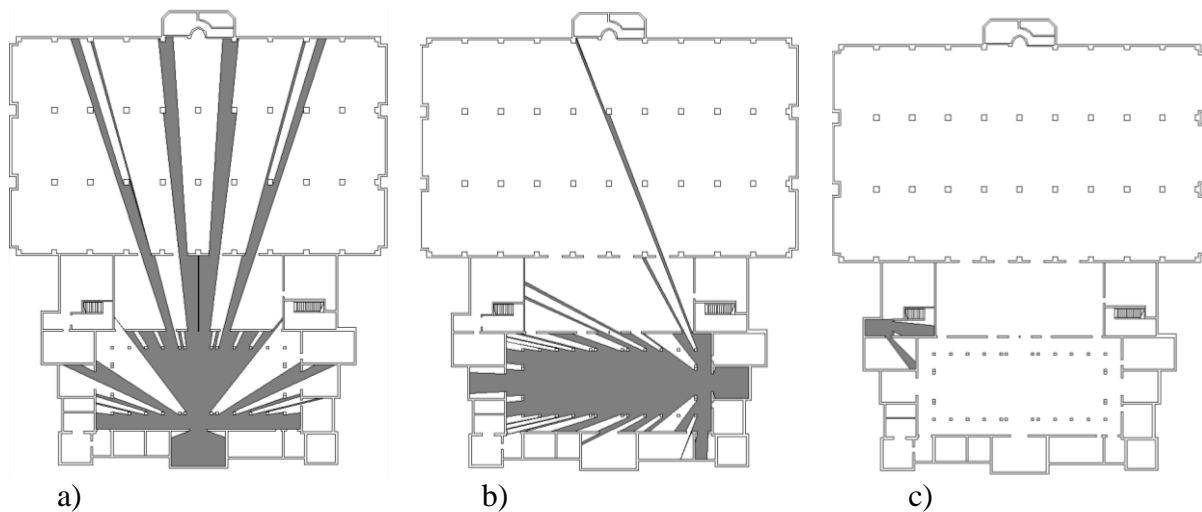


Figure 4.44. The Farouq mosque Isovist analysis. A) main male entrance, b) male side entrance, and c) female entrance.

The male main entrance in graph “a” and the male side entrance in graph “b” provide good navigation points with radials of sight that extend to the courtyard, the daily prayer hall, and into the main Friday prayer hall. Moreover, one can easily navigate his way into the washrooms and library from the entrance. As a result of the segregation between the male and female sections, the female entrance in graph “c” cannot provide a visual access to the male area and therefore lines of sight are limited to the female section. From the female entrance, a visitor can visually navigate her way to the washrooms and staircase, leading to the larger prayer hall on the mezzanine floor, but must turn in order to see the smaller female prayer area located on the

ground floor. Points of navigations in the Farouq mosque allow visitors (especially new ones) to fully comprehend the layout of the entire configuration. If visitors can easily navigate their ways through a space, they are more likely to engage more with it and explore it in its entirety.

Convex Connectivity Graph Analysis. This is a local measure that analyzes the degree in which a space is permeable from all neighboring spaces (Hillier & Hanson, 1984; Rohloff, 2009). Figure 4.45 shows the convex connectivity graphs analysis of the mosque during daily prayers and Friday prayer time.

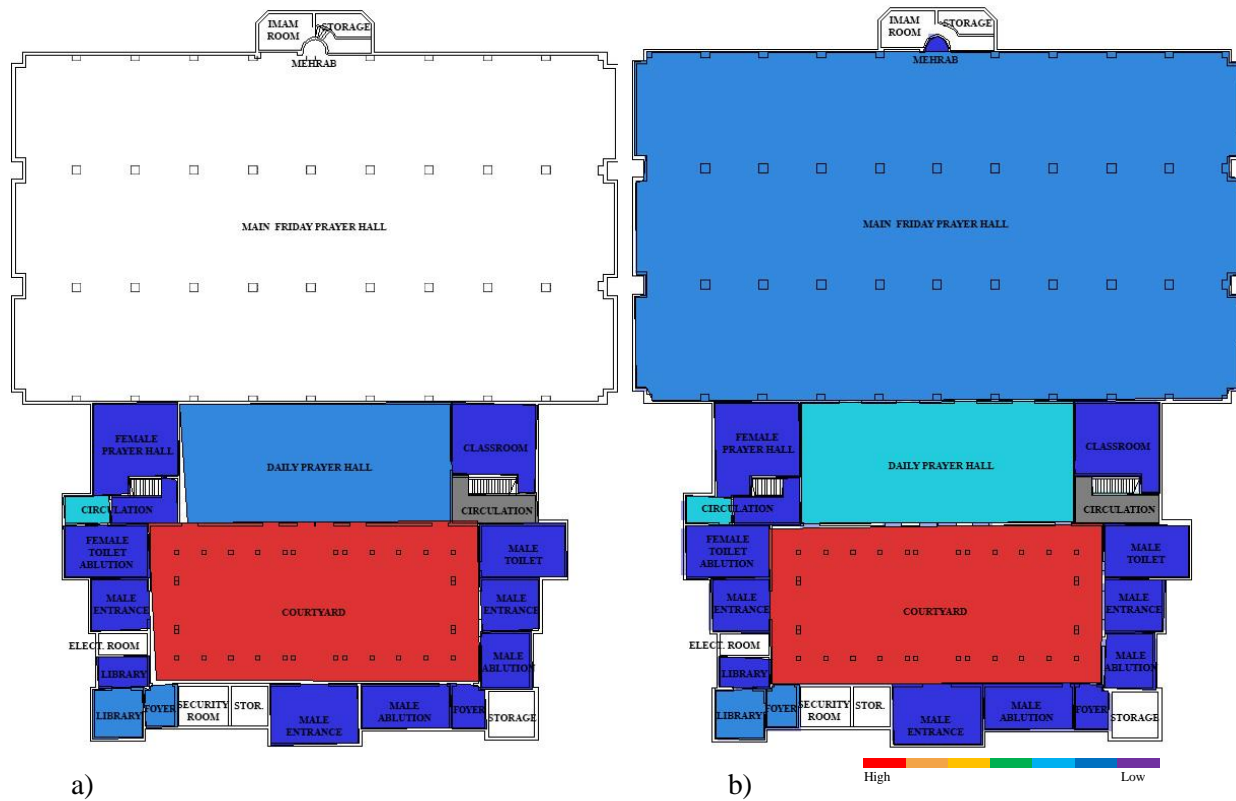


Figure 4.45. The Farouq mosque convex connectivity graph analysis a) during daily prayers, and b) during Friday prayer time.

During both times, the courtyard is the most connected space and therefore the most permeable in the layout having a direct access to most adjacent areas. Furthermore, the least connected

spaces are located on the perimeter of the layout with the female section being least connected. During the Friday prayer time, the daily prayer hall has a medium connectivity as it is necessary to pass through it in order to access the Friday prayer hall. As a result of these graphs, the courtyard is the mostly used spaces with the highest traffic patterns. It presents itself with the opportunity to be more efficiently used and a place where people are naturally drawn into. Social interaction is expected to be take place within the courtyard. The courtyard should be thoughtfully designed to accommodate for social interaction and communal gathering with the mosque.

Convex Integration Graph Analysis. This is a global measure of depth that analyzes the degree in which it is necessary to move through spaces to reach a specific area in the layout by calculating the number of spaces that the visitor must pass through (Hillier & Hanson, 1984; Rohloff, 2009). Figure 4.46. shows the convex integration graphs analysis of the mosque during daily prayers and Friday prayer time. Both graphs present the courtyard as the most integrated area in the layout and the daily prayer hall as a moderately integrated area. During the Friday prayer time, areas on the perimeter become more integrated in comparison to the daily prayers time. The Friday prayer hall has a shallow integration requiring one to move across a number of spaces to reach it. The integration analysis graphs emphasize the courtyard significance as a highly permeable space within the mosque similar to the results shown in the convex connectivity analysis graphs. When designing for social interaction and multi-use, the courtyard is an already existing space that could fulfill these needs as visitors move through it to access all other parts of the mosque. Movements within the courtyard are spontaneous and not forced.

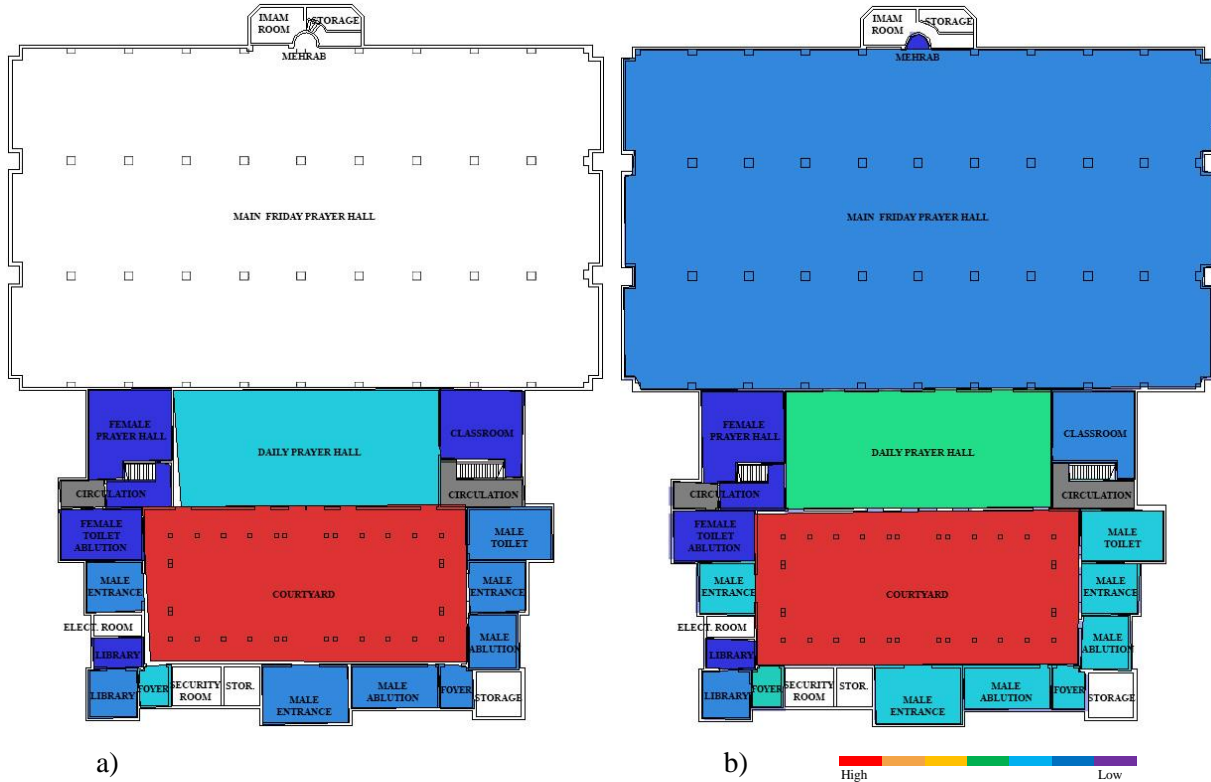


Figure 4.46. The Farouq mosque convex integration graph analysis a) during daily prayers, and b) during Friday prayer time.

Axial Lines Analysis. This is an abstraction of possible movement between spaces. Axial graph is made up of the longest straight lines connecting between permeable spaces (Rohloff, 2009, McLane, 2013). Figure 4.47 shows the axial lines of integration during daily prayer time. The courtyard has the highest level of integration lines (in red), indicating that it hosts the highest degree of movement within the layout. There is a direct permeability from the main male entrance to the daily prayer hall. An overall examination shows that the layout has a high to medium levels of permeability in both local and global measures. Figure 4.48 shows the axial lines of integration during Friday prayer time. A strong permeability is depicted along the horizontal central part of the layout between the courtyard, daily prayer hall, and Friday prayer hall. A similar observation to the daily prayers time is shown here with a strong to medium permeability on the global measure. The axial lined graphs illustrate the patterns of movement

expressed in the convex analysis graphs. These are the movements that visitors are likely to perform.

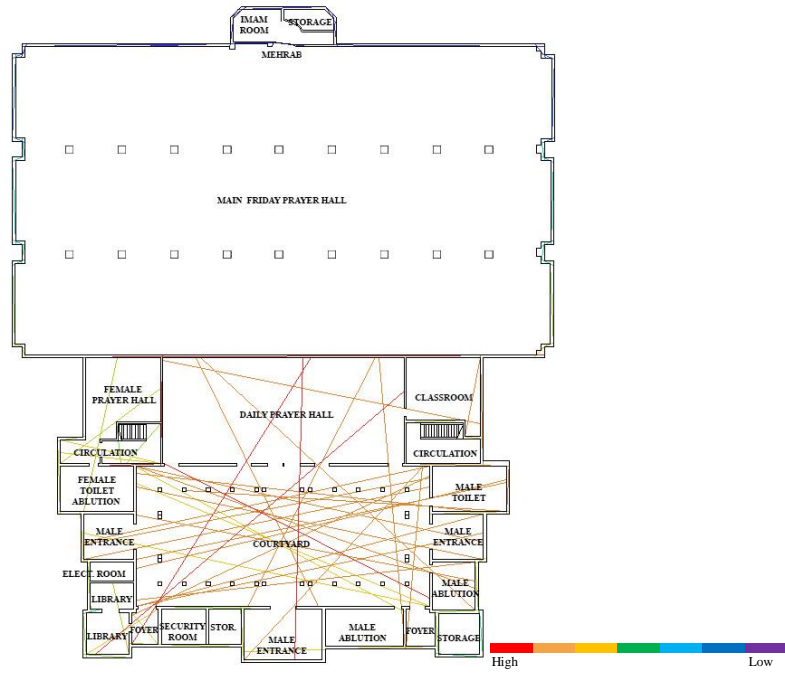


Figure 4.47. The Farouq mosque integration axial lines graphs during daily prayers.

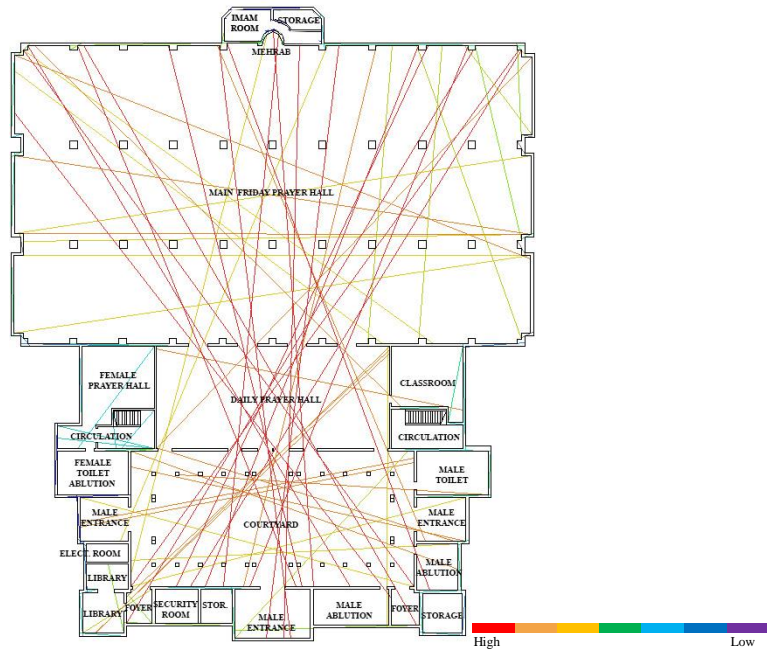


Figure 4.48. The Farouq mosque axial lines integration graphs during Friday prayers.

Justified Graph. A justified graph provides a topological analysis on the configuration of spaces in a layout with no account to the actual distances or metric measurement between them (Rohloff, 2009, McLane, 2013). In this graph, a base is drawn to reflect the viewers point, then sets of nodes are spread to represent levels of depth. Links are then drawn to connect different sets of nodes, which represent different depth levels (steps). Figure 4.49 and 4.50 shows the justified graph and steps of depth graph for the mosque during both daily use and Friday prayer time with the male main entrance as the point of view (base). The justified graph indicates that there are four steps of depth from the first point being the male main entrance to the fourth step including areas of mihrab and library. As a consequence of the segregation between male and female sections, the female section is not included in this analysis. A depth analysis for the female section would show only 1 level of depth with the female entrance as a base; hence it is not presented. The shallower the depth of a space the more likely it is to be used. Based on this graph, the courtyard is the mostly used space, while the Friday prayer hall, library, and classroom is the least used. When designing for social activities, a shallow space should be considered.



Figure 4.49. The Farouq mosque justified graph.

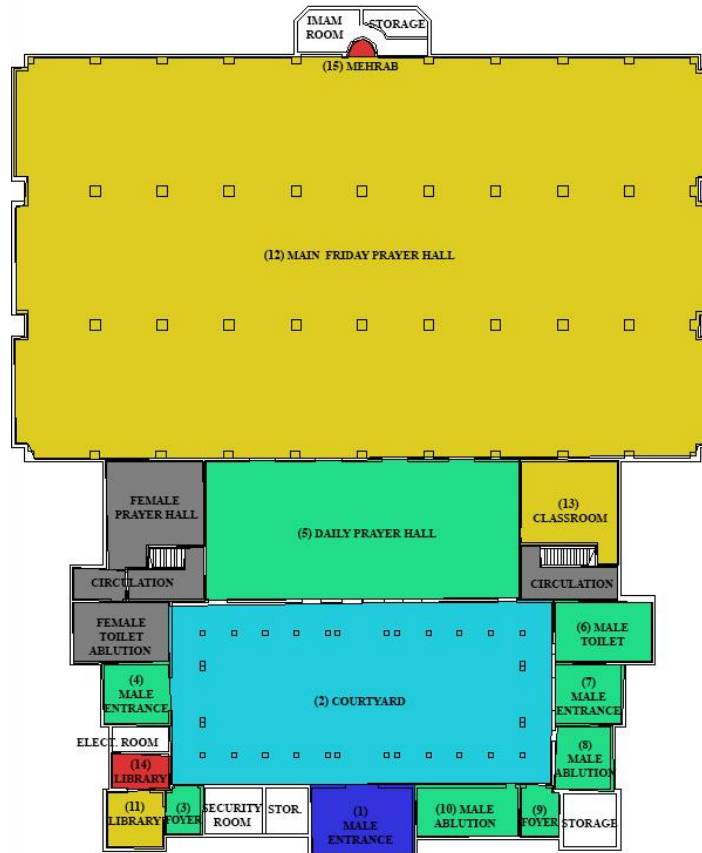


Figure 4.50. The Farouq mosque steps of depth graph.

The Farouq Neighborhood Analysis

An investigation on the Farouq neighborhood was conducted to examine the effect of the neighborhood planning and the Farouq congregational mosque location on the sense of the community between the Farouq residents. Visibility graph analysis and axial lines analysis were generated.

A site plan of the Farouq neighborhood was drawn in accordance to a reference obtained from the architectural and urban planning department of the Royal Commission for Jubail. The site plan includes vehicular roads and pedestrian walkways to ensure that both means of access and transportation are considered in the analysis. The central square, which hosts the

congregational mosque and other commercial services, is drawn without boundaries so they would not intervene with the analysis as the entire square can be accessed by pedestrians.

Figure 4.51 is a visual connectivity graph. It shows the visual connectivity relations between neighboring units. The result is poorly connected housing blocks and some highly connected intersections leading to the central square. Major roads and the central square have medium visual connectivity. It can be interpreted that housing blocks are more private and isolated while major roads are more connected as they link all housing blocks to other areas of the neighborhood, such as neighborhood main entrances, schools, and a central square. The neighborhood has three entrances in which two have a direct visual access to the central square. For a new visitor, one can easily navigate his or her way towards the central square and congregational mosque.

Figure 4.52 demonstrates the visual integration graph analyzing the units in relation to the whole neighborhood configuration. The graph shows the intersections around the central square as the most highly integrated areas in the whole configuration then the square and main roads follows. This suggests that major activities should take place around these highly integrated areas for them to be visually accessible and navigable within the neighborhood.

Permeability analysis was also conducted using axial lines graph. Axial lines connectivity graph in figure 4.53 shows that the most connected longest lines of permeability are located around the central square, similarly to the visual graph analysis. However, they are not linked to the neighborhood's entrances. Figure 4.54 analyzes permeability in relation to the whole using an axial lined integration graph. It shows that housing blocks are more accessible to the central square and to the main roads. Minor roads are presented to have a medium integration in the whole configuration. This graph indicates that movements, vehicular and walking, around the

neighborhood and accessibility to the central square have been considered in the planning of the neighborhood. Moreover, residents' interaction, voluntarily or involuntarily, with the central square and the congregational mosque is expected based on the axial lines integration graph.



Figure 4.51. The Farouq neighborhood visual connectivity graph analysis.



Figure 4.52. The Farouq neighborhood visual integration graph analysis.



Figure 4.53. The Farouq neighborhood axial lines connectivity graph.



Figure 4.54. The Farouq neighborhood axial lines integration graph.

Summary

This chapter examined and reported data gathered from survey and interview respondents on their sense of community and the use of the congregational mosque. The data was categorized and discussed under six emergent themes to assess in the analysis of collected data; Social interaction between residents of the local neighborhood, neighborhood attachment, the use of the mosque today, the mosque as a social gathering place, the mosque's role as a community influencer, mosque architecture. Further analysis on the Farouq mosque building and the Farouq neighborhood was conducted using space syntax method and DepthmapX software. Visibility, permeability, and hierarchy of depth was discussed in the analysis of the case study in an attempt to link space configuration to human use. The next chapter will provide an assessment of the findings intended to answer research questions.

CHAPTER FIVE

CONCLUSION

Introduction

The intent of this study was to identify the changes in the twenty-first century congregational mosque in Saudi Arabia following the discovery of oil in the 1930s. Moreover, the study explored the role of the congregational mosque as it relates to residents' attachment to their residential neighborhood and the presence of a sense of community. This chapter will summarize and analyze data gathered through surveys, interviews, and a case study in order to answer the research questions. Design recommendations will be offered and discussed, along with ideas for further research.

Discussion of Research Questions

Literature discussed in chapter two suggested a drastic urban and social change in the Saudi Arabian cities and community after the discovery of oil. It indicated that congregational mosques "pre-oil" played an active role in the community and served a dual function as a religious and communal place. Today, mosques are required to be built and located in Saudi Arabian cities following specific building codes and planning requirements established by Ministry of Municipality & Rural Affairs. Congregational mosques are built to accommodate residential districts and their residents. Questions have been raised regarding the impact of design changes on the role of the mosque today.

In this chapter, research questions will be discussed and answered using the data as a grounding source of information. Secondary questions are discussed first leading to the primary question.

Secondary Questions

- How has the use of the mosque changed respective to the design changes that have occurred since the discovery of oil?

Previous literature reviewed in chapter two suggested that in the pre-oil period, the mosque required simple spatial elements to fulfil the role as a praying space. The only essential element was the need for a horizontal space facing the Qibla (direction of prayer). During this time, the mosque used its simple open spaces to serve religious, social, and administrative functions. As a result of increasingly available resources and the expansion of cities, other elements, such as the minarets and mehrab to emphasize the location of the mosque, were added later.

After 1979, the Ministry of Municipality & Rural Affairs established the Saudi building codes and cities started following specific building requirements for mosque buildings. Most mosques requirements address location, capacity, and allocated area for worshippers. An addition of a library, classrooms, and an Imam room were added to the requirement for congregational mosques as well. These requirements provided larger assigned spaces to serve single functions in the congregational mosques. Data from this study revealed that these additional spaces are infrequently used. They are either not open for the use by the public or don't meet the expectation of the residents. Furthermore, the added spaces are usually used to serve religious activities such as Quran recitals and religious lessons. Only a small number of respondents reported the use of the mosque for social events other than discussing neighborhood related issues. Data gathered from the survey and interviews suggested that although the spatial design of the congregational mosque has evolved (with more additions), the social use of the space has declined in comparison to the past. Data obtained through interviews suggested the insufficient use of the mosque spaces in regard to social and non-religious activities.

- What spatial features in the design of the mosque have played a part in the mosque's role as a community gathering space?

An analysis of the data gathered indicated that the open (interior or exterior) courtyard and the back of the prayer hall are the areas of the mosque where social interaction usually takes place. As a transitional space, the courtyard currently serves as a place where people can stand or walk with each other and freely converse without disrupting the prayers inside of the mosque. This was reflected in survey and interview responses which emphasized the role of the courtyard as a social space where visitors frequently interact and socialize. The spatial analysis of the Farouq congregational mosque shows the interior courtyard as an open circulation area that connects the entrances to the prayer halls with shaded arcades to provide more comfort from the direct sunlight. Space syntax graphs show the courtyard as the most connected and integrated space in terms of movement, permeability, and visibility (see figure 4.47). Visitors are required to walk across it to reach other components within the mosque. The courtyard can be considered as the most public area of the mosque with the heaviest traffic patterns. It is directly connected to the prayer area and worshippers need to pass through it in order to reach the prayer area. It is physically separated from the prayer area by walls and doors that allow it to be a place where visitors can interact casually away from the prayer or religious rituals taking place inside the prayer area.

Although the courtyard is a requirement in all congregational mosques in Jubail Industrial City, the Saudi Arabian building requirements present it as an optional element. This may result in a loss of a significant space that aids in social interaction between residents. The inclusion of the courtyard offers an increased chance of social interaction and community gathering.

- What is the relationship between the socio-behavioral environment of the mosque and the Saudi citizens' attachment to their community?

As indicated from participants responses, there is a lack of spaces to accommodate social gathering and community affairs in the existing neighborhood of Jubail Industrial City. A strong relationship has already been formed between Saudi residents and the mosque as men are required to pray collectively five times a day in the mosque. This leads to a high probability of interaction between residents within the parameters of the mosque. The mosque has an open-door policy to everyone and is accessible almost all-day long. The building has the potential for shaping the community in which it resides. A socially active mosque can prompt the formation of a strong and connected community.

In discussing the role of the congregational mosque in the formation of residents' sense of community, data showed that 47% of respondents felt attached to their neighborhood community. Forty-three percent reported the mosque as the space (other than home) participants felt most attached to. Moreover, 53% of respondents felt that their mosque's attendees formed a strong sense of community, and 50% reported that their mosque community discussed issues related to the neighborhood. Sixty-two percent of respondents answered that they were able to meet people and form relationships within the mosque. Observing the similar patterns between sense of attachment and social use of the mosque, one can argue that the mosque can significantly affect residents' attachment and sense of community as only 47% of the respondents feel attached to their residential neighborhoods and congregational mosque's community.

Primary Question

- How have changes in the design of the Saudi Arabian congregational mosque following the discovery of oil influenced the sense of community in modern residential neighborhoods?

Survey results showed 70% of people who attend the mosque regularly and 87% of total respondents agreed that the mosque has the potential to act as a communal place. Ninety percent agreed that the mosque building is an important representation of their cultural identity with 43% participates listing the mosque as the part they feel most attached to in their own neighborhood (after the house). This indicates that mosques are an essential part of the Saudi community in which men have a frequent contact and understand its value and potential as a community gathering place. However, when asked for the reasons, other than praying, participants visit the mosque, the majority answered that they attend religious lectures and lessons. Little social and non-religious gatherings taking place in the congregational mosque were mentioned by the participants. The Imam (leader of the mosque) stated that gaining permission to hold social events is required by the office of Islamic affairs and is often complicated. Fifty-three percent of participants feel that the mosque should not only be used as a praying place.

Fifty-one percent answered that their neighborhood in general offers sufficient facilities that allow the community to interact and form social bond. This can indicate the need for better neighborhood facilities to support residents' social interaction. Forty three percent listed the mosque as the place they feel most attached to in the neighborhood other than the home. As the most listed answer, the mosque has the potential to act as the community center for the neighborhood if social activities were to be held in it. This is supported by the 87% of participants who agreed that the mosque does have the potential to serve as a community gathering place. Moreover, place identity is an important factor for creating meaning and a sense

of attachment to a place. A communal place needs to reflect the community's identity to fulfil the need for membership and attachment. Ninety-one percent agreed that the mosque buildings are important representations of the Saudi Arabian cultural identity. This already established belief and agreement may support its potential as a community place as participants expressed a sense of identity and attachment to the mosque as an architectural building. An important factor that may aid in its communal role includes giving the community more control on the activities that they can hold within the mosque. Seventy-one percent agreed that the mosque should be managed by the community members. However, the Imam clarified the difficulty for getting approvals from the office of Islamic affairs to hold activities other than prayers, which can be considered as a setback for the mosque to serve social activities.

As an existing building which is opened daily to the public, the congregational mosque might not be satisfying its potential use as a community gathering places. The majority of participants agreed that the pre-oil mosque played a more active role in the community. This means that people are aware of the communal aspect of the mosque that was strongly present in the past. The data suggested little social use of the congregational mosque today, but an acceptance and eagerness from participants to maximize its use to better serve the community. Participants' suggestions that social gathering spaces be included in the design of new mosques imply their interest in making it a more communal place. As a result, allowing maximum use of the mosque and benefiting from these potential social spaces that already exist in each neighborhood of Saudi Arabia, could be a very good use of resources. Other buildings that serve the community could be added to residential neighborhoods to encourage more social interaction; however, this study focuses on the congregational mosque building and suggests a more efficient use of its strategic location in residential neighborhood of Saudi Arabia. The congregational mosque and

its allocated parking can accommodate the entire neighborhood and provide opportunities for gathering that would put the mosque to greater use.

Data suggested a noticeable social interaction happening within the mosque. Sixty-two percent participants reported experiencing social interactions within the mosque community. As men become regular attendees at the mosque, social interaction is likely to happen between them. This shows the potential for the mosque to be a foundation for creating a strong and connected community. However, only 50% said that their mosque formed a strong community meaning the mosque has not reached its potential to act as a community center in residential neighborhoods. Fifty percent of participants answered that their neighborhood mosque's community discussed issues related to the neighborhood and the same percentage of people said that they report neighborhood issues to their mosque. If the mosque provides a place to discuss and possibly solves residents' issues, it can potentially host other social events and community services. A conclusion can be made that the congregational mosque of the twenty-first century Saudi Arabian cities is not serving its full potential as a communal gathering place when compared to the mosque prior to the discovery of oil. The lack of a socially active congregation can impact residents' feeling of attachment to their neighborhoods' environment and community.

A lack of attachment to the mosque was found in the female respondents (although only 4% of completed responses were from women). As women are not required to attend the daily or Friday prayers in the mosque and the lower number of female employees, women were less likely to respond to the survey. The deficit of participation and low response rate could be due to the Muslim culture which only requires men to attend the mosque. These findings could also be the result of the women's view of the mosque as a place for praying alone.

Other Notable Findings

Although research questions have been answered, other findings emerged which are worth noting. In terms of location, the public and commercial square present in traditional towns where the congregational mosque used to be located is not a requirement by the Saudi ministry of Ministry of Municipality & Rural Affairs. The lively and dynamic location in the public and commercial square allowed the mosque to be a place where spontaneous interactions could occur. As a result, a loss of public interaction within the mosque is more likely to occur when it is built on a plot set off by itself with no adjoining commercial services. For this study, no specific investigation was made on the twenty-first century congregational mosque examining the effect of the absence of the public courtyard. In fact, this study focused on a mosque in Jubail Industrial City, which has unique building requirements that require a public square where the mosque. The spatial syntax analysis of the Farouq neighborhood showed a strongly integrated location (visibly and permeably) of the congregational mosque in relation to the whole neighborhood with easy vehicular and walking accessibility (see figures 4.54 and 4.56).

A vital point was mentioned by the mosque's Imam on the strict policies of holding activities other than praying in the mosque. This can be considered as a major factor limiting the use of the mosque and its social role. Community's members' lack of control and management on the neighborhood's mosque and the difficulty of obtaining permissions to hold gatherings from the office of Islamic affairs have prevented the mosque from acting as a communal center for the neighborhood. Residents participation and sense of involvement in the mosque are important to achieve a sense of membership in its community. If the mosque cannot fulfill the social needs and the shared social values of the residents, it would fail to be perceived as an influencing communal center for the community.

Women's participation was lacking in this study due to the higher concentration of men in the mosque. Female attachment to the neighborhood's mosque is absent as they are not required to attend. This leads to the absence of an entire demographic in this study as the mosque does not cater to the female residents. The absence of an active women's community within the mosque could be a factor in its limited communal role. To ensure community's attachment and involvement to the neighborhood, all community members need to be served and fulfilled. Places other than the mosque might be serving the female separately or the entire community cumulatively.

It is worth mentioning that the study was conducted on Jubail Industrial city which is a newly developed city that is less than 40 years in age. Residents of the city and participants of the study come from all over the country and may not have been born or lived in the city prior to working for the Royal Commission for Jubail. A large number of residents might not have had opportunities for attachment that would have begun during childhood. Only 48% of respondents have lived for over five years in their current residence. The correlations run for this study indicate a positive correlation between years of residency and sense of attachment, which suggests that length of residency has a strong impact on residents feeling of attachment to their neighborhood. The shorter length of residency is likely a factor impacting the results relating to the participants feeling of attachment. Another consideration is that as a new city, it was built following modern and Western planning standards.

Future Studies

The site for this study was the Jubail Industrial City, which has building and design requirements for the congregational mosque. Further studies could explore these same research questions in other cities in Saudi Arabia. Other studies could investigate the role of other

community gathering areas in the residential neighborhoods that can aid in social connectedness and their impact on residents' sense of attachment. Focus on specific user groups and the female community can be explored. Looking into how the built environment can engage and bring together all members of the community without exclusion is worth inspecting. This study explored the significance of the sense of community and attachment to residential neighborhoods and the impact on residents' well-being. Future studies could focus on cultural identity, social meaning, and reflections on the design and architecture of residential neighborhoods, which could be investigated in relation to their impact on forming a local community and social connectedness. Exploring other aspects related to design and the built environment that aid in the formation of a sense of attachment to the neighborhood and investment in the community would also be of value. An observation on residents' patterns of use in public and commercial areas of residential neighborhoods could also be of interest.

Conclusion

This study explored the sense of community and connectedness to residential neighborhoods in the twenty-first century Saudi Arabia. It investigated the role of the congregational mosque in the formation of an attached community. Literature review highlighted the vital role of architecture and built environment on the sense of community and residents' well-being. Findings of the study indicated the presence of a small community formed around the congregational mosque. However, not satisfactory enough to assume a strong and connected community that is highly attached and invested in their residential neighborhood. More efforts should be given to strengthen social relationships between residents and better design solutions further promote sense of community and attachment to residential environments.

It is in the interest of residents, communities, and cities to have strongly connected citizens who share fundamental principles, ideologies and commitment to their residential environment. This can lead to creating a culture that is highly engaged in the development and sustainability of their communities and focused on public needs. Strong communities can help promote safe and well-maintained neighborhoods due to the highly attached residents who feel a shared responsibility for serving and conserving the residential built environment and members.

APPENDIX A

FSU HUMAN SUBJECTS COMMITTEE APPROVAL



Office of the Vice President for Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

APPROVAL MEMORANDUM

Date: 07/24/2017

To: amjad AlFawaz

Address:

Dept.: INTERIOR DESIGN

From: Thomas L. Jacobson, Chair

Re: Use of Human Subjects in Research
Preserving the Architectural Identity of Saudi Arabia: The Mosque as a Communal Place

The application that you submitted to this office in regard to the use of human subjects in the proposal referenced above have been reviewed by the Secretary, the Chair, and two members of the Human Subjects Committee. Your project is determined to be Expedited per 45 CFR § 46.110(7) and has been approved by an expedited review process.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals, which may be required.

If you submitted a proposed consent form with your application, the approved stamped consent form is attached to this approval notice. Only the stamped version of the consent form may be used in recruiting research subjects.

If the project has not been completed by 07/23/2018 you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.

You are advised that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the chairman of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is IRB00000446.

Cc: Lisa Waxman, Advisor
HSC No. 2017.21278

APPENDIX B

FSU HUMAN SUBJECTS COMMITTEE APPROVED INFORMED CONSENT FORM

FSU Behavioral Consent Form- Interviews

Preserving the Architectural Identity of Saudi Arabia: The Mosque as a Communal Place

You are invited to be in a research study of the effectiveness of congregational mosques as communal places in residential neighborhoods. This will be part of a thesis research conducted by Amjad AlFawaz in consultation with her major advisor, Lisa Waxman, Ph.D., Professor, Department of Interior Design, Florida State University. You were selected as a possible participant because you are an employee of the Royal Commission for Jubail or a resident of Jubail Industrial City. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

An approval from the Royal Commission for Jubail has been obtained to conduct this study.

Background Information:

The purpose of this study is: To understand the effectiveness of the current congregational mosque in residential neighborhoods of Saudi Arabia as an active communal center. Examine if the congregational mosque still maintains the same social role as in the past. Assess residents' attachment to their neighborhood's community and whether the congregational mosque influences this attachment.

Procedures:

If you agree to be in this study, we would ask you to do the following things: taking a 30 minutes interview and answer questions related to the study subject.

Risks and benefits of being in the Study:

The study has no expected risks.

There is no direct benefit to participation but your participation might help in improving the physical quality of residential communal places.

Confidentiality:

The records of this study will be kept private and confidential to the extent permitted by law. In any sort of report we might publish, we will not include any information that will make it possible to identify a subject. However, research information that identifies you may be shared with the FSU Institutional Review Board (IRB) and others who are responsible for ensuring compliance with laws and regulations related to research, including the Office for Human Research Protections (OHRP).

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the Royal Commission for Jubail. If you decide to participate, you are free to withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is Amjad AlFawaz. You may ask any question you have now. If you have a question later, you are encouraged to contact Amjad AlFawaz at:

Email: _____

Phone: _____

Or contact major advisor, Lisa Waxman, Ph.D. at:

Phone: _____

Email: _____

If you have any questions or concerns regarding this study and would like to talk to someone other than the researchers, you are encouraged to contact the FSU IRB at 2010 Levy Street, Research Building B, Suite 276, Tallahassee, FL 32306-2742, or 850-644-8633, or by email at humansubjects@fsu.edu

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

Signature Date

Signature of Investigator Date

FSU Human Subjects Committee approved on 07/24/17. Void after 07/23/18. HSC # 2017-21278

APPENDIX C

SAMPLE INTERVIEW QUESTIONS

- Imam
 1. For how long have you been the leader of this mosque? Have you been the leader in other mosques prior to this one?
 2. Do you live in the same neighborhood as the mosque?
 3. When was this mosque constructed/opened?
 4. What functions other than prayer are permitted within the mosque?
 5. Other than formal prayer times, what other times do people frequent the mosque? What are the most frequent activities (other than prayer)?
 6. Have you noticed users forming social groups during visits to the mosque? If yes, where do these groups happen?
 7. What percentages of people come to the mosque alone? In groups?
 8. Are social events held within the mosque? If so, specify what types?
 9. What design features could be incorporated within the mosque to encourage social interaction and community gathering?
 10. Do you have opinions on the design criteria for congregational mosques in Jubail? If so, are there any changes you would recommend?
- Users
 1. Could you specify your gender, age?
 2. How long have you been living in JIC? How long have you been living in this neighborhood?
 3. What facilities in the community do you frequently use?
 4. What facilities in your neighborhood provide places for the community to interact and form social bonds?
 5. How often do you visit the mosque?
 6. Other than praying, what activities do you participate in while at the mosque?
 7. In what part of the mosque do you usually meet people and have conversations?
 8. Have you formed any social groups at the mosque?
 9. Has your neighborhood mosque's community discussed and/or solved issues related to the neighborhood?
 10. What other amenities would you like to see integrated within the modern mosque of Saudi Arabia to encourage neighbors' interaction and community development?
 11. Do you view the mosque as the center of the neighborhood community? If not, what would you suggest would revive the role of the mosque as a center for the community?
 12. How would you describe your feeling of attachment to your neighborhood's community?
 13. Is your mosque important to your sense of community?

APPENDIX D

THE ROYAL COMMISSION FOR JUBAIL DATA COLLECTION APPROVAL



**Royal Commission for Jubail and Yanbu
Jubail University College
Academic Affairs Department**

FX-ACA-085 Issue 0 Rev. 0 December 7, 2016
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Data Collection Approval Form

1. Researcher

ID Number:	4133489
Name:	Amjad Al-Fawaz
Department:	Interior Design

2. The Study

Research Title:	Preserving the Architectural Identity of Saudi Arabia: The Mosque as a Communal Place
Aim/Purpose/Objective of the study:	<ul style="list-style-type: none"> ▪ Explore the role of the mosque from the beginning of the 20st century through the present to better understand both changes in design and the impact of these changes on the community. ▪ Examine the current conditions of the Saudi Arabian modern architecture. ▪ Explain the need for communal places in Saudi residential districts and its effect on the community social bonds and interaction. ▪ Describe the relationship between place identity and users' sense of attachment and belonging to the place ▪ Examine the influence of architecture and design in creating environments that promote social interaction and wellbeing.
Collaborating Institution:	Florida State University

3. Use of data

The researcher is committed to preserve the anonymity of participating people, organizations, and departments.

Yes No

If No, please give details:

--

4. Publications

The researcher agrees to mention his affiliation to JUC or RC in any publications resulting from this research.

Yes No (Why?) This research study is conducted as part of a thesis to obtain a master's degree. The Institutional Review Board of my university denies the affiliation of any third party unless permission is obtained.

5. Attached documents: (tick)

- Research ethics code (collaborating institution)
- Research overview/proposal/abstract
- Questionnaire/Interview questions
- Other (please specify)

(Handwritten signatures in blue ink)

Applicant's Signature: <i>(Signature)</i>	Date: May 16, 2017
---	--------------------

MD's Decision		
<input checked="" type="checkbox"/> Approved	<input type="checkbox"/> Not Approved	<input type="checkbox"/> Forwarded
Comment:		
.....		
Signature: <i>(Signature)</i>		Date: <i>(Date)</i>

Note: The researcher must fill out this form and forward it to the department chairperson for further action.

APPENDIX E

SAMPLE SURVEY QUESTIONNAIRE

8/14/2017

Qualtrics Survey Software

FLORIDA STATE UNIVERSITY

English (US) ▾

Default Question Block

Preserving the Architectural Identity of Saudi Arabia: The Mosque as a Communal Place

You are invited to be in a research study of the effectiveness of congregational mosques as communal places in residential neighborhoods. This will be part of a thesis research conducted by Amjad AlFawaz in consultation with her major advisor, Lisa Waxman, Ph.D., Professor, Department of Interior Design, Florida State University. You were selected as a possible participant because you are an employee of the Royal Commission for Jubail or a resident of Jubail Industrial City. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

An approval from the Royal Commission for Jubail has been obtained to conduct this study.

Background Information:

The purpose of this study is: To understand the effectiveness of the current congregational mosque in residential neighborhoods of Saudi Arabia as an active communal center. Examine if the congregational mosque still maintains the same social role as in the past. Assess residents' attachment to their neighborhood's community and whether the congregational mosque influences this attachment.

Procedures:

If you agree to be in this study, we would ask you to do the following things:
Take a 10 minutes' survey and answer an online questionnaire.

Risks and benefits of being in the Study:

<https://fsu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview>

1/8

The study has no expected risks.

There is no direct benefit to participation but your participation might help in improving the physical quality of residential communal places.

Confidentiality:

The records of this study will be kept private and confidential to the extent permitted by law. In any sort of report we might publish, we will not include any information that will make it possible to identify a subject. However, research information that identifies you may be shared with the FSU Institutional Review Board (IRB) and others who are responsible for ensuring compliance with laws and regulations related to research, including the Office for Human Research Protections (OHRP).

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the Royal Commission for Jubail. If you decide to participate, you are free to withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is Amjad AlFawaz. You may ask any question you have now. If you have a question later, you are encouraged to contact Amjad AlFawaz at:

Email:

Phone:

Or contact major advisor, Lisa Waxman, Ph.D. at:

Phone:

Email:

If you have any questions or concerns regarding this study and would like to talk to someone other than the researchers, you are encouraged to contact the FSU IRB at 2010 Levy Street, Research Building B, Suite 276, Tallahassee, FL 32306-2742, or 850-644-8633, or by email at humansubjects@fsu.edu

Statement of Consent:

I have read the above information.

- Agree
- Disagree

Age

- 20-29
- 30-39
- 40-49
- 50-59
- 60 and older

Gender

- Male
- Female

Nationality

- Saudi
- Arab\Non-Saudi
- Others

Place of residence

- Jubail Industrial City
- Jubail Town
- Others

If you are a resident of Jubail Industrial City, please specify the neighborhood where you live in.

For how long have you been living in your current residence?

- Less than a year
- 1-5 years
- Over 5 years

Which part of your neighborhood environment do you feel most attached to other than your home?

How often do you attend the mosque?

- Daily
- Every other day
- Once a week
- Rarely
- Never

How often do you attend the Friday prayer?

- Weekly
- Every other week
- Once a month
- Rarely
- Never

How many people you can identify by names in your congregational mosque?

- None
- 1-5
- 6-10
- More than 10

Community Interaction

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
I'm strongly attached to the community within my neighborhood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Living within an active and engaged community can help improving the quality of living for the residents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My neighborhood has good facilities that are helping the community to interact and form social bonds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Architecture is an important element in creating a better community and living conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My neighborhood mosque's attendants have formed a strong community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was able to meet people and form relationships within the mosque	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The role of the mosque

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
The mosque should only be used as a praying space	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The mosque has the potential to act as a communal place	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My neighborhood mosque's community have discussed and/or solved issues related to the neighborhood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
The mosque should be managed by the community members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I see uncivil activities within my neighborhood, such as graffiti or littering, I discuss it with the mosque community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The mosque in the past had a more active role in the community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Mosque architecture

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
The mosque buildings are important representations of the cultural identity of Saudi Arabia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The current designs and styles of modern mosques represent my culture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The architectural elements of the current, modern mosque support its role as a community center	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The mosque is located within a convenient distance from my house.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The congregational\Friday mosque is located within a convenient distance from my house.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What other amenities would you like to see integrated within the modern mosque of Saudi Arabia to encourage neighbors interaction and community development?

For what reasons other than praying do you visit the mosque?

In what part of the mosque do you usually meet people and make conversations?

If your neighborhood congregational mosque started a weekly informal gathering where residents can get to know each other and discuss community's issues , would you care to attend?

- yes
- Maybe
- No

If you are willing to participate in a short interview regarding the same topic please write your email address or phone number. Your participation is highly appreciated and valued in conducting this research study. Please note that interviews will be conducted anonymously.

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BIOGRAPHICAL SKETCH

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