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Spatial Design Methods of Contemporary Mosques: Originality and Modernity

Case Study: Mosques of Jordan

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Abstract:

In the past, Muslim architects made great efforts to shape the mosque space and its features, based on the religious functions and social relations of the worshipers, and other economic and climatic factors. So the space was divided into two main parts, internal dedicated to worship (the prayer hall) and external to social (the open courtyard). The evolution of time and the succession of states does not mean a radical change in functions. Worship and prayer are constant, and people automatically build their social relationships in the mosques.

Developing the shape, externally and internally, of the contemporary mosque in Jordan and designing it according to the latest structural capabilities and shapes is necessary, but the mosque is a mosque and still has specific and historically known functions. Here, the researchers conduct a study to measure the effect of these modern architectural forms on the spatial planning of the mosque, and also on the internal functions of the various spaces in the mosque, in comparison with some historical models in the mosque's architecture.

This study is a critical study that aims to evaluate the spatial shape of contemporary mosques in Jordan, internally and externally, and to show the advantages and disadvantages of each mosque from the selected samples.

Keywords: Contemporary Mosque, Spatial Design, Mosques of Jordan.

1 Introduction

1.1 Research Problem

Contemporary mosque architecture in Jordan is based on the construction where the space of the prayer hall occupies the main part of the building within a great geometric shape. Worshipers visit the prayer hall daily when they enter the mosque to pray five times a day, since most local mosques at the present time do not have any other spaces than the prayer hall. Usually the prayer hall is crowded on Friday at noon prayer, and in order to solve the congestion problem on Friday, it is noticed that the caretakers of some mosques take advantage of parts of the outer spaces of the mosque in an ill-considered way, by making tiled roofs for them, which may reduce the external spaces and make the shape of the mosque inconsistent.

In fact, researchers of this paper note that contemporary mosques do not have a sound, varied and integrated space planning as was the case in historical mosques. Where is the open courtyard and why it is not considered an essential part of the contemporary mosque design? Do not the exterior spaces add a vital social life to the mosque?

1.2 Research Questions

- 1- What are spatial design methods in contemporary mosques, internally and externally?
- 2- What are the religious and social requirements for contemporary mosque architecture?
- 3- Have contemporary mosques preserved the historical heritage of mosque spatial design?
- 4- Why is the focus always on the interior space of the prayer hall while neglecting the exterior spaces in contemporary mosques?

1.3 research Objectives

- 1- Analysis of the interior spatial design methods of contemporary mosques.
- 2- Conducting an evaluation of some contemporary mosque plans in Jordan and studying their spatial configuration.
- 3- Comparison of the spaces available in contemporary mosques with historical mosques, taking into account the religious, social and mundane requirements.

1.4 Research Hypothesis

Despite the fact that the mosque as an idea has become more than one thousand four hundred years old but religious rituals remained the same without the slightest change, and the social and architectural value that a mosque can add to the place in which it is built is great. So that the new architectural form of the contemporary mosque does not mean that the functions of the interior and exterior spaces of the mosque have changed.

1.5 Research Methodology

This study follows the descriptive and analytical research method as a main methodology with the benefit of the historical research method.

The study proceeds within the following steps:

First: The research presents three historical examples of socio-religious mosque complexes built in the sixteenth century in the city of Istanbul as alive references that can be used and built upon.

Second: A group of contemporary mosques from Jordan will be selected as research samples in order to study their spatial formation and compare them with the historical examples.

Third: Conclusion and recommendations.

1.6 Research Limits

1- Time limits: The research deals with contemporary mosques that were built in Jordan since the last decade of the twentieth century until the present time.

2- Geographical Limits: The research deals with random samples of the important and large mosques, which were built within the borders of the Hashemite Kingdom of Jordan.

3- Objective Limits: The research deals with the essential part of mosque architecture, the spatial design methods.

2 Models of Historical Mosques:

The architecture of the Ottoman mosques in particular relied on the construction of strong buildings with an interior domed space devoid of structural obstacles and columns. And this structural concept is similar to the architecture of contemporary mosques that are based on reinforced concrete which allows the space to be extended with very few columns. The origin of the Ottoman mosque derives from the single-dome cubic style devoid of columns. (The single dome layout is the origin and most basic type of pendentive dome mosque. Subsequent developments of the mosque layout design were derived from this category. The Orhan Gazi Mosque in Gebze, Turkey, is a good example of this layout, (Mustafa, F.A., Hassan, A.S., 2013).

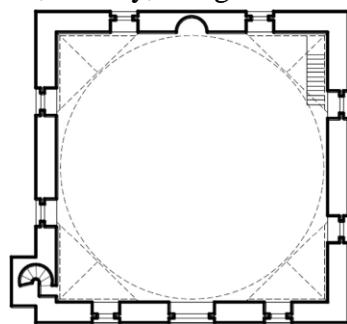


Figure No. (1) Single Dome Layout (nuclear dome layout), Plan, Orhan Gazi Mosque.

Three Ottoman mosques built in Istanbul from the sixteenth century of an important historical models that are famous for their distinctive design and diverse spaces will be analyzed, and their spatial construction will be studied as a historical models in this paper.

2.1 Rustem Pasha Mosque in Istanbul

This mosque was built in 1563 AD, and it is considered one of the most prominent historical examples of the Ottoman style. The mosque plan refers to the prayer hall in the front, followed by a double external portico that shades the back yard. The prayer hall is a rectangular and transverse shape that intersects with the Qibla axis. In the center, a column of the central cube space is topped by a hemispherical dome, and on the sides are corridors, parallel to the qibla axis and topped by internal balconies, at a height less than the height of the central space. Immediately behind the prayer hall is the transverse portico consisting of five domed bays. At the rear, corridors surrounds the transverse portico on three sides and is covered with tiles. The portico and the corridors provide a deep semi-outdoor shaded space suitable for meeting worshipers and for sitting and interacting with the surrounding environment of the mosque, as they act as a transitional space between the external city space and the internal prayer hall space. (Freely, John, 2011)

Due to the tilted geographical location, the markets are available in the basement that contains multiple warehouses and industrial warehouses. The intention of building the lower market was to return the money to the mosque to cover its expenses and maintenance over the years. The shops gave the building a mundane dimension and made it interact with the surrounding environment and meet the needs of people and visitors to the area.

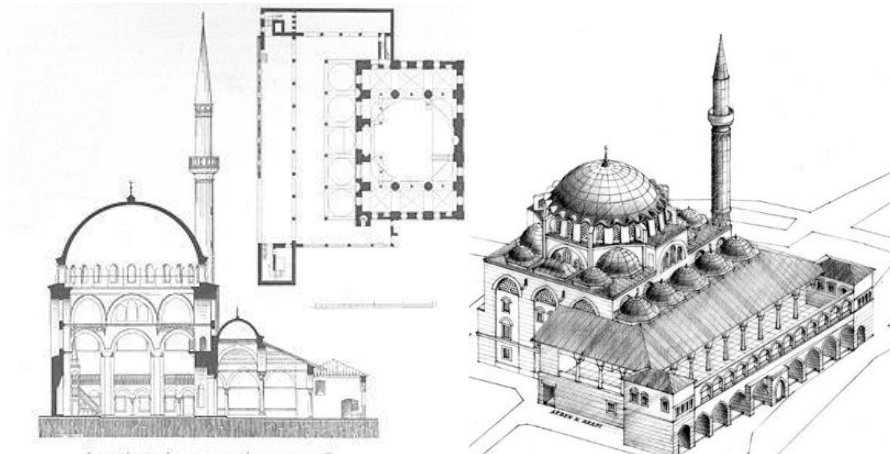


Figure No. (2) Rustem Pasha Mosque, Section, Plan, Isometric

(www.rustempasamosque.com)

2.2 Sokollu Mehmed Pasha Mosque in Istanbul

This mosque was built in 1571 AD, and it is considered one of the most beautiful mosques built by Mimar Sinan. The mosque is noted for its architecturally challenging location on a steep slope. Architect Sinan resolved this issue by fronting the mosque with a two-storey courtyard. The complex consists of a school, a hospice, a mosque, and a number of lower stores at the northwestern wall. Direct access to the school is through the entrance located on the northwest side, and access to the mosque square is through a staircase after crossing the school rows, and in the middle of the square is a very distinctive domed fountain, and the hospice is located at the front of the mosque. The open courtyard of the mosque is rectangular in shape in the middle of the external space between the transverse portico on the south side, and on the rest of the sides it

is surrounded by corridors shaded with tiles to protect the school classes and students.(Freely, John, 2011)

The prayer hall occupies the advanced part of the mosque building. It is rectangular, transverse and intersecting with the Qibla axis. In the center rises the central space cube, topped by the central dome. The lateral galleries, parallel to the Qibla axis and topped by internal balconies, became more amalgamated with the central void for the simplicity of their size and their direct location below the tilted semi-domes around the drum of the central dome.

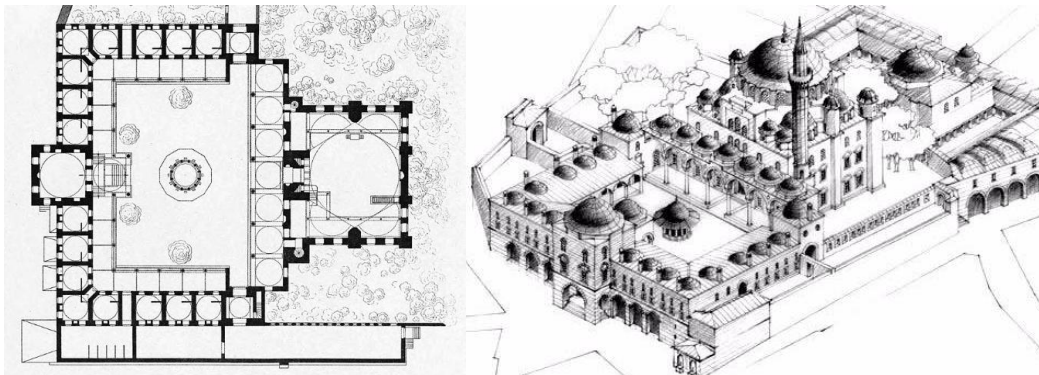


Figure No. (3) Sokollo Muhammad Pasha Mosque, Plan, Isometric
(www.sokollomhematpasamosque)

2.3 Mihrimah Sultan Mosque in Istanbul

This mosque was built in 1570 AD. It is the second of the two mosques established by Mahriama Sultan, daughter of Sultan Suleiman the Magnificent. The mosque complex included the school, a double public bath with a public drinking fountain, and also a row of shops under the balcony on which the mosque was built, as it was intended to spend on the mosque and its maintenance.(Goodwin, Godfrey, 2003)

The interior space of the prayer hall is wide and rectangular in plan, transverse and intersecting with the qiblah axis, but the central vertical cube topped by the great semicircular dome with a diameter of 20 meters appears dominant internally and externally. The side galleries surmounted by the interior balconies enriched the interior space and seemed close to the human scale in comparison with the high dome in the center, the granite columns and the wide arches.

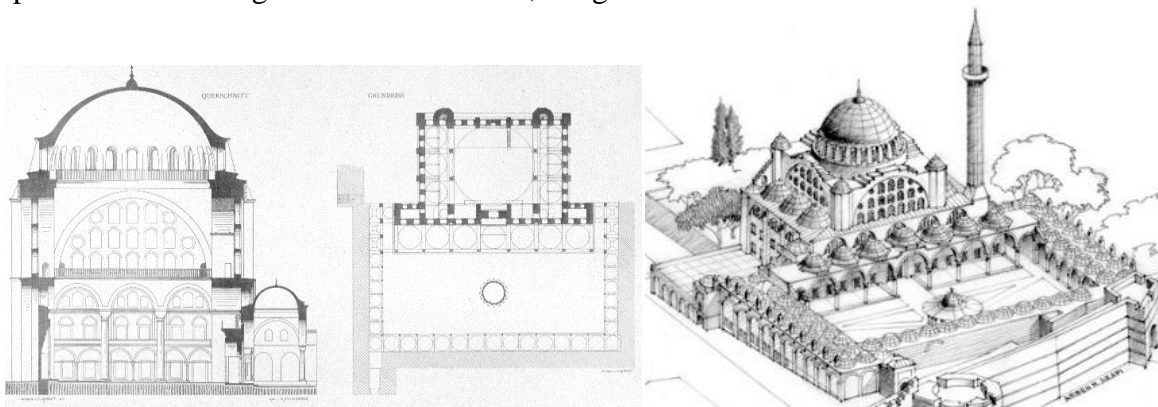


Figure No. (4) Mihrima Sultan Mosque, Section, Plan, Isometric
(www.mihremasultanmosque)

2.4 Discussion and Analysis of the Historical Models

From the foregoing it is concluded that the spaces of the traditional and historical mosque are distinguished by the diversity of spaces and the multiplicity of functions. The formation of the spaces in the historical mosque included in this study has a planning approach, with a vertical spatial direction and another horizontal spatial direction, and can be divided as follows:

2.4.1 Interior Spaces

What is meant by this title is the fully covered interior space dedicated for worshipping, the prayer hall, which includes a vertical, cube-shaped central space covered with a semicircular dome and surrounded by walls containing a large number of windows distributed in several horizontal layers. On the east and west sides of the central cube, side galleries are lined up surmounted by the interior balconies. The prayer hall, with its wide and prominent space, is always at the front of the building at the southern end of the Qibla axis.

2.4.2 Exterior Spaces

The exterior space includes the main transverse domed portico, domed portico that surround the open courtyard, the open courtyard and brick-shaded arcades. In addition to some other spaces like corridors, entrances and flower beds to perfume the place.

2.4.2.1 Transverse Domed Portico

This part of the mosque building is located directly behind the prayer hall, it is adjacent to the back wall of the prayer hall. Usually it is distinguished and higher than the rest of the exterior domed porticos, and it consists of seven or five domed spaces divided into two halves by the main entrance to the prayer hall and.

2.4.2.2 Open Courtyard and Domed Porticos

The open courtyard space is one of the basic architectural elements in the architecture of historical mosques, and it was existing in two samples of historical mosques in this paper, Mihrimah Sultan mosque and Sokollu Mehmed Pasha mosque. It was rectangular and transverse, parallel to the prayer hall, and was surrounded by domed porticos on all sides and was completely open to the top. In the center of the courtyard is a beautiful and lively musical element, the water fountain used for ablution.

2.4.2.3 Brick-Shaded Arcades

The brick-shaded arcades provide more shade in the summer for the worshipers and protect them from the rain in the winter. They also provide additional exterior multi-use spaces that the worshiper can use at various times.

2.4.3 Public Spaces

What is meant by public spaces is the mosque's annexes, such as the shops, the school, or the hospice. Shops can provide income to spend on mosque and its maintenance. All shops were located in the basement store of the three mosques in this study. The hospice can add a very great social and solidarity dimension among the visitors of the mosque.

These results will be projected, or part of them, on the local modern mosques in Jordan to understand their spatial design methods.

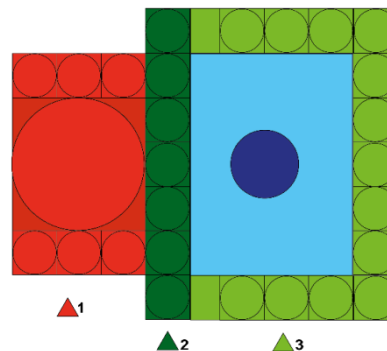


Figure No. (5) Spatial Design of Historical Mosque, 1: Prayer Hall, 2: Transverse Domed Portico, 3: Open Courtyard, Domed Porticos and fountain (By Authors)

3 Examples of Contemporary Local Mosques

Mosque architecture is active at the present time in all governorates of the Hashemite Kingdom of Jordan, and according to a study published by Al-Sabeel newspaper in 2017, the number of mosques in Jordan exceeds seven thousand mosques (assabeel.net/2455). Local mosques are mostly private ones, which are built at the expense of benefactors who donate to build a mosque for prayer in the first place, in order to obtain the ongoing charity wage from building the prayer hall without regard to the architectural value of the project and its social importance. As a result, most mosque buildings are incomplete projects and are not mature enough to play the desired social role.

Some mosques in Jordan have a distinctive design, both internally and externally, and become of social value, and their visitors have grown in popularity among the people, such as the Abu Isha mosque on the airport road, the Hamshari Mosque in the Khalda area, the Kalouti Mosque in Rabieh, the Khalil al-Salem mosque in the Zuhour neighborhood, and the Kalouti mosque in Aqaba. These mosques stood out either for their size, geographical location, and distinctive architectural design, or for their social role and the quality of the preacher. But what the researchers are interested in here is to review the plan and learn about the methods of forming the spaces of the mosque.

The abundance of mosque projects in Jordan requires conducting more studies on mosque projects to become multi-purpose and socially fruitful orderly projects. Therefore, this study will select a group of well-known local mosques to study their spatial composition and measure their success as architectural projects, not only as a place for prayer.

3.1 The Hamshari Mosque

This mosque is distinguished by the light color of its walls and its modern design, which does not follow any specific classical style known in Islamic architecture, but due to the absence of columns the interior space is close to the Ottoman style of mosque architecture. In a report by Al-Rai newspaper issued on 7/11/2013, the Hamshari Mosque is considered one of the most beautiful and enriched local mosques in terms of construction and decoration. It was built on four thousands m² of land in a very special location west of the capital Amman (<http://alrai.com/article/597690.html>).

The mosque was built in 2012 in the Khaldaneighborhood, and it can accommodate about four thousand worshippers. The mosque is a three-story building, most of which are male prayer rooms, in addition to the women's prayer hall, the Dar al-Qur'an, and a library. There is an external car park north of the mosque. The mosque has some wide glass façades, which made its daylighting excellent.(<https://archnet.org/sites/15709>)



Figure No. (6) Al-Hamshari Mosque, Exterior View (www.alhamsharimosque.com)

The Mosque was constructed as three separate rectangular units, two of which are for the main halls in front of the building and the third is the back courtyard. The interior space of the prayer hall is wide and white, rectangular in plan, transverse and intersecting with the Qiblah axis. In the middle of the front wall a decorated wall protrudes forward slightly, representing the space of the Mihrab. The ceiling of the Mihrab space is slightly raised, giving the place a special importance and daylight, especially with the modern wooden and glass Minber.

In the northwest corner of the prayer hall, there is a staircase that connects the prayer hall to another prayer hall in the basement of the same shape and size, equipped with screens for viewing the preacher and hearing his voice.

On the second basement floor there is a very wide hall separated from the two upper floors. This hall is only used on Friday's noon prayers in order to accommodate the surplus worshippers that cannot be accommodated by the upper halls.



Figure No. (7) Al-Hamshari Mosque, Interior Space (www.alhamsharimosque.com)

Behind the prayer hall there is an open courtyard that represents the idea of the open courtyard in the traditional mosque of moving from the public space to the space designated for worship inside the prayer hall, and the worshippers use it in the summer during Tarawih prayers and to sit between Maghrib and Night prayers. Dar al-Qur'an and a library occupies the northeast corner behind the open courtyard. See figure (8)

The striking design of the Hamshari Mosque is the disappearance of the qibla axis, the spaces are lined up in an oblique manner. The prayer hall is divided into two parts, the first at the front, followed by another smaller space with a slight shift towards the street, and the same applies to the exterior courtyard space. This unconventional shape is due to the irregular outline of the plot of land on which the mosque was built.



Figure No. (8) Al-Hamshari Mosque, Exterior Space (www.alhamsharimosque.com)

The separation of the minaret and its support at the western part of the front facade of the mosque increased the strength and boldness of the design, and attracted the attention of passers-by to it more. The minaret is decorated with some inscriptions from square Kufic script (Hussein, M. F. (2017). The upper crescent of the minaret has a silver color with a metallic rectangular shape, with a glass crescent circle at its top. See figure (4)

The Hamshari Mosque, in its current architectural state, does not have any endowment that may generate income to cover part of the expenses, as all the spaces on the three floors are converted into prayer halls due to the great demand for the mosque, especially in Friday prayers and in the month of Ramadan to perform Tarawih prayers at night. The question that arises here: Can the two basement floors be converted into commercial spaces to be rented as a shops or as a large hall that is invested in social occasions, or as an emergency clinic serving the surrounding areas? If yes, it will be public spaces that contribute to creating an interactive atmosphere with the surrounding environment of the mosque.

3.2 Abu Eisha Mosque

This great mosque is located at the beginning of the road leading to the Queen Alia International Airport, the main airport in the Kingdom, from the Seventh Circle side. It is a very vital and important area at the beginning of a long road that connects the north of the kingdom with its south, so the mosque is intended for many passers-by, travelers and public vehicle drivers for the purpose of rest and prayer, in addition to the people of the region.

According to a report published on the International Truth website on 05/17/2008, the mosque was inaugurated on May 16, 2008, and it consists of three floors, with an area of 3500 square meters, and includes a prayer room for women. (<http://factjo.com/fullnews.aspx?id=4068>).



Figure No. (9) Abu Eisha Mosque, ExteriorView (www.abueishehmosque.com)

The mosque's architecture has taken a traditional form based on the Arabic style of mosque architecture, which is based on the rectangular space of the prayer hall, transversal and intersecting with the Qibla axis, and a medium-sized prominent dome rises above the Mihrab in the middle of the Qibla wall. The mosque is surrounded by two minarets, completely identical in shape and size, one of them separate from the body of the mosque near the airport road. The mosque is covered with a stone veneer from the exterior, simple in shape and contemporary in design in general.

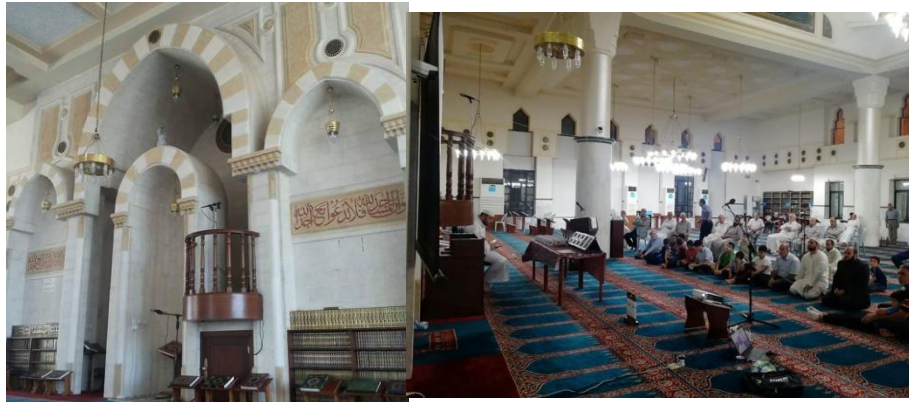


Figure No. (10) Abu Eisha Mosque, InteriorSpace (www.abueishehmosque.com)

At the bottom of the prayer hall is the basement space that is completely similar to the prayer hall in shape and size, but it is separate. This space is used for congregational prayers such as Friday prayers and Tarawih prayers in Ramadan nights.



Figure No. (11) Abu Eisha Mosque, Basement InteriorSpace (www.abueishehmosque.com)

The mosque does not contain well-defined outdoor spaces like courtyard, but rather some shaded corridors and stairs that connect the mosque levels and entrances to the surrounding streets, the main airport road east of the mosque is higher than the prayer hall level, and the secondary road west of the mosque is lower than the prayer hall. In addition to the above, there is a small front garden planted with some fruit plants. See Figure (9)

Abu Eisha mosque does not have any endowment or any regular financial income, despite the availability of a large hall on the basement floor of the mosque that can be rented for various social events. The mosque was originally built at the expense of the Abu Eisha family, and later the Abu Eisha Contracting Company took over the entire expenses of the mosque, the salaries of the imam, the muezzin, workers and maintenance work for about eight years. At the present time, the mosque committees are involved in collecting donations to cover monthly expenses. Therefore, the mosque needs to change the functions of the basement spaces and make them economically feasible to cover some of the expenses. See Figure (11)

The mosque's presence on the right of the main road leading to the airport road makes it offer a double role, as it is on the eastern side serving passers-by and travelers to the airport and to the south of the kingdom and on the west side it serves the residents of the neighborhood and the surrounding areas. It is difficult to use the mosque by residents of the area adjacent to the airport road in the east because of the danger of crossing the main street, so a pedestrian bridge can be made to facilitate the arrival of worshipers from the opposite side.

Despite the value of the project and its architectural and social standing, the mosque does not have a conference room or an appropriately equipped lecture hall. Most of the activities, lectures and educational courses that take place in the mosque are held in the prayer hall.

3.3 Kalouti Mosque - Rabieh

The Kalouti Mosque is located at the Etisalat intersection in Rabieh neighborhood, west of Amman. It was built in 1999 and then expanded after three years towards the north and northwest. Currently, those in charge of the mosque are about to expand it towards the south by demolishing the Qibla wall and moving it forward.

The mosque appeared to be a simple, modern, beautiful and striking architectural project on the day of its inauguration. The prayer hall is rectangular and transverse, topped at the center by a pointed dome proportional to the size of the ground rectangle and with the building mass from the outside. In the small side façade overlooking the main street, geometric patterns carved in stone are surrounded by glass areas to illuminate the mosque during the day. The mihrab block was also slightly forward in the form of a curved wall.



Figure No. (12) The Kalouti Mosque Before and After the Expansions, South East View(www.kalotimosque.com)

Despite its medium size, the Kalouti Mosque is one of the most famous mosques in the capital, Amman, and it attracts worshipers from the Rabieh neighborhood and most areas of western Amman, especially during Friday prayers and in the night prayers in the blessed month of Ramadan, and it may be due to the quality of the sermon and the imam.



Figure No. (13) The Kalouti Mosque after the expansion, West View (www.kalotimosque.com)

The Kalouti Mosque lost much of its architectural and aesthetic value due to the subsequent renovations to expand the prayer hall to suit the large number of worshipers on Friday and in the month of Ramadan. The area of the prayer hall increased, and an upper floor has been added, but the geometric shape of the hall became completely irregular, and the external shape seemed to be unclear in its geometric form.



Figure No. (14) The Kalouti Mosque, Interior Space (www.kalotimosque.com)

The mosque has a distinctive social value locally, and the level of permanent spending on it and on maintenance and renovation work is very large. And it does not have any endowments or any

source of income, not even in the expected expansion of the front of the mosque. Therefore, the future of the mosque remains dependent on the ability of the sponsor, its inheritors, and fundraising committees to maintain it. The mosque is dominated by a light stone and lacks plants and green color because it has no garden or green spaces around. It also lacks a typically equipped lecture hall.

3.4 Al Kalouti and Disi Mosque

The mosque was built at the expense of the Kalouti family and with the participation of the famous doctor, Arafat Al-Dissi. It is one of the modern mosques built in the eighth region in the city of Aqaba, and it was inaugurated on 7/12/2013. Despite the recent construction, the mosque began to assume an important role in the city, deriving its position from the reputation of the famous Kalouti Mosque in the west of the capital, Amman. The mosque has a modern and simple architecture style, its shape is box-shaped and transverse, and its walls are covered from the outside with plaster of brown color suitable with the building colors and the surrounding nature.



Figure No. (15) Kalouti and Disi Mosque, Exterior View

(www.kaloti.com & disimosque.com)

The interior space of the prayer hall has a very simple and cubist shape devoid of all forms of decoration. A curved stone wall protrudes at the front of the mosque, which includes the Mihrab, surrounded by glass areas that illuminate the front part of the prayer hall. The prayer hall has a rectangular plan, and it is not topped by the traditional dome, nor by any formation instead. The walls of the mosque internally are devoid of ornamentation except for some Qur'anic verses of the naskhi script.



Figure No. (16) Kalouti and Disi Mosque, Interior Space (www.kaloti.com & disimosque.com)

The mosque does not have a courtyard or garden for people and visitors, nor places for children to play. It also lacks a lecture hall that can be used to hold activities, lectures, and educational and training courses for young men and women. The prayer halls are used to conduct lessons and courses in memorizing the Qur'an and religious sciences.

The mosque has become a distinctive social place in the city of Aqaba, yet the mosque does not have any endowments for financial income at the present time, so the future of the mosque remains dependent on the ability of the sponsor and the fundraising committees to maintain it.

3.5 Khalil Al-Salem Mosque

The Khalil Al-Salem Mosque was established in Al-Zuhour area in 2011 and was named by that name in memory of the engineer Khalil Al-Salem, one of the most important pioneers of agricultural engineering. The mosque can accommodate about 1500 worshipers and its construction area is 6300 square meters, and it includes a main prayer hall for men named after Khalil Al Salem and another for women named after Hajjah Halima in addition to a daily prayer hall for men named after the martyr Mahmoud Al Salem and another for women named after Hajjah Areej, in addition to other facilities and services Support. The mosque was built within an integrated architectural complex woven of the same architectural style.

The endowment complex of the Khalil Al-Salem Association were built within a crowded, popular neighborhood in the southeast of the capital, Amman. The mosque has achieved great interaction with the people of the neighborhood thanks to the various facilities available around the mosque. It is covered with a light colored stone veneer that perfectly matches the surrounding architectural environment, and it is surrounded by a large garden and agricultural land, which increases the green color and wooded environment.(<https://kscs.jo/facilities/khalil-salem-mosque/>)



Figure No. (17) Khalil Al-Salem Mosque, Exterior View (www.kscs.jo)

The architectural body of the mosque is distinguished by originality and renewal, in which the various Islamic decorative arts are shown in a discreet style and of high artistic value. The mosque was built in the style of modern classic local mosques, with the presence of traditional elements in mosque architecture, such as the dome and minarets. The stone veneer dominated the building completely from the outside, the frequent pointed arches in the front facade of the mosque and the tops of the windows suggest the accuracy and originality of the design.

Internally, the mosque was distinguished by geometric linear details and decorations, and abundant copper and woodwork, inspired by the heritage of Jordan and its traditional industries. The stylized and ornate prayer hall has a rectangular and transverse space intersecting with the Qibla axis, topped by the spherical space of the dome in the center. The Qibla wall, rich in decoration and materials, includes in the middle of it the Mihrab, which juts out to the front, and on its right is the wooden Minbar integrated into the wall.



Figure No. (18) Khalil Al-Salem Mosque, Interior Space (www.kscs.jo)

The mosque complex includes a group of vital public spaces. To the east, the complex contains a commercial market that invests in covering the mosque's expenses and maintenance, it is made up of several stores, separated by a longitudinal corridor covered by a series of small domes. And to the south of the mosque there are large tents that can be used in social events. In addition, the cultural center consists of several classrooms that can be used by holding various educational and training courses for the neighborhood and interested people.



Figure No. (19) Khalil Al-Salem Mosque, Public Spaces (www.kscs.jo)

Khalil Al-Salem Park, located opposite the complex, which is a public park belonging to the Greater Amman Municipality. The park includes green spaces, children's play areas, and footpaths, places to sit and socialize.



Figure No. (20) Khalil Al-Salem Mosque, Green Spaces (www.kscs.jo)

Public spaces here are an integral part of the original architectural program that was devised when designing the mosque and complex. The cultural center, lecture halls, tents, the commercial market, in addition to the public park and children's playgrounds, all contributed to creating a great cultural and social interaction with the local community surrounding the mosque and its endowment complex.

4 Discussion

4.1 Historical Mosques

The three historical mosques presented in the second chapter of this study, which were selected from the sixteenth century, were all “religious-social” complexes that included a mosque in the heart of the complex. These mosques had a typical spatial arrangement that included a group of spaces distributed as follows:

- 1- **A quiet furnished interior space dedicated for worshiping and prayer**, represented by the prayer hall with all its interior sections.
- 2- **A semi-open outdoor space suitable for social life**, represented by the transverse portico, shaded corridors, uncovered courtyard and the domed corridors surrounding it.
- 3- **A public space that achieves the mundane interaction** between the complex and the surrounding community, represented by shops, schools and hospice.

The space distribution of the three spatial sections seemed to be typical and logical in the three mosques, as it appeared as a single coherent and indivisible unit, especially with regard to the interior space of the prayer hall surrounded by walls and domes with the almost open exterior space. The public space represented by the commercial stores, schools and hospices did not detract from the value of the architectural design of the mosques, due to the skill of the designer and the perception of those in charge of the mosque architecture on the importance of having sources of income and endowments that cover all expenses and necessary maintenance in the future.

4.2 Hamshari Mosque

The Hamshari Mosque, built within an upscale neighborhood in the west of the capital, Amman. It has cost a lot of money to build, and despite the mosque's social standing it does not have any public spaces for continuous income source or endowments that may support the mosque in the future. Here, the researchers suggest converting the basement floor spaces to a commercial market or medical complex to provide a regular income for the mosque, perhaps the second solution is closer to the mosque's nature and design. The presence of a medical center on the site of the mosque would provide a great health and social services for neighborhood residents. The researchers also propose to equip one of the halls and turn it into a lecture hall to activate the scientific and training aspect in the mosque. See Figures (6, 7, 8)

4.3 Abu Eisha Mosque

The Abu Aisha mosque on the airport road owns very large and unused basement halls that can be converted into halls for social events, as is the case in the very social Khalil al-Rahman

Association near the site, in order to provide a financial income that contributes to covering part of the mosque's expenses and maintenance.

With its traditional and simple architecture at the same time and its light-colored stone veneer and simple geometric composition, the Abu Eisha Mosque is an excellent contemporary model in Islamic architecture that is in perfect harmony with the residential architectural environment surrounding it from the western side. Also it has a positive interaction with the main road, but it needs a more spacious outdoor spaces to accommodate people and funeral processions comes from the airport road east of the mosque. See Figures(9, 10, 11)

4.4 Kalouti Mosque - Rabieh

The Kalouti Mosque has become a great social meeting place for the residents of Rabieh neighborhood, and it played a major role in creating a distinctive social atmosphere in the neighborhood when the worshipers attend to perform the five daily prayers, especially the Fajr prayer, religious lessons and the recitation of the Qur'an. However, the spatial distribution is difficult to track and accurately determine its geometrical shape because the mosque has undergone successive renovations in order to accommodate the largest possible number of worshipers, so the space construction has become improper geometry.

In the current situation, the spatial arrangement is not typical in the Kalouti Mosque, the interior space of the prayer hall is not proportionate or unified and there is no exterior space that allows the worshipers to sit and communicate in the vicinity of the mosque. Finally it is difficult to have a public space in any part of mosque. See Figures(12, 13, 14)

4.5 Kalouti and Disi Mosque

This modern and simple mosque in Aqaba is considered an architecturally revised version of the Kalouti Mosque in Amman, where the architect studied the area and size of the prayer hall and developed the building so that it does not need to make future expansions like those that took place in the Rabieh Mosque. However, the mosque does not include any public or social spaces, and the design cannot be developed to meet any future needs. See Figures(15, 16)

4.6 Khalil Al-Salem Mosque

This great socio-religious complex in Jabal Al-Zuhoor, east of the capital Amman, is considered a typical mosque project according to this study, because it contains many facilities and social departments such as the cultural center, agricultural land and public parks, in addition to economic facilities such as the commercial market and tents that are used for social events. The mosque is sponsored by the Khalil Al-Salem Association and has an administrative team capable of supervising and maintaining it in the future and taking care of its endowments. The presence of the cultural center contributes to building the surrounding community and raising its awareness in many social, cultural and health aspects. See Figures (17, 18, 19, 20)

5 Conclusion and Recommendations

5.1 Conclusion

After studying a group of five locally known mosques, four of them in the capital Amman and one in the city of Aqaba, in southern Jordan, the study concluded the following results:

- 1- The traditional mosque consists of two main spaces, a quiet interior space devoted to worship, prayer, and the lessons of religion that has a horizontal extension, a vertical construction, and an external space that represents a social space and a transition space between the exterior mundane space and the interior spiritual space. This is in addition to the various public spaces that create positive interaction between the religious complex and the surrounding community.
- 2- There is an exaggerated emphasis in local contemporary mosques on the space of the prayer hall at the expense of other spaces of great social, cultural and economic value.
- 3- Local mosques do not have the exterior space of the value and design of the courtyard of historical mosques, which is considered a design defect affecting the social aspect.
- 4- Building the mosque within an integrated religious and social complex contributes to creating a great positive interaction with the local community, and the best example of this is the Khalil Al-Salem Mosque, which includes in addition to the prayer hall the market, the cultural center, tents and agricultural land and overlooks the public garden opposite the mosque.
- 5- Architecturally and aesthetically, all the mosques in this study looked contemporary and elegant, but there are many local mosques suffer from spatial design and aesthetic problems were not within the scope of this research.

5.2 Recommendations

- 1- The local contemporary mosques included in the research were all affected by the location and plot of the land, whether positively or negatively. Therefore, the location of the mosque must be chosen so that the place is spacious and easily accessible at all times.
- 2- The mosque should be part of an integrated social complex that includes interior for worshipping and external spaces for social life, in addition to worldly public spaces if possible.
- 3- The necessity to equip mosques with study spaces that can be used by conducting educational and training courses, hosting experts and intellectuals, spreading environmental, cultural, social and health awareness, educating young men, young women and children, and bringing volunteers for such purposes.
- 4- Paying attention to equipping local mosques with economical and environmentally friendly electrical and mechanical systems so that the mosque does not burden the neighborhood's residents.
- 5- Historic mosques can offer a lot of benefits and design expertise to designers interested in designing modern mosques, so they should always remain an architectural reference when designing new mosques.

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