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# Role of a Dome-Less Mosque in Conserving the Religious and Traditional Values of Muslims: An Innovative Architecture of Shah Faisal Mosque, Islamabad

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**Abstract:** The mosque occupies a central position in the social as well as religious life of Muslims. It is not only a place of worship where rites are performed, but also serves as a social place where Muslims take part in welfare activities. The design and architecture of the mosque have local as well as global impacts, representing religious, economic, and aesthetic dimensions of Muslim social organization. Generally, the mosque architecture has three notable things: domes, arches and minarets. There are very few examples of mosques which lack any one or all of these architectural features, but still they are maintaining the Muslims' traditional values. In this case-study, the Shah Faisal Mosque of Pakistan has been discussed in detail. This mosque is a dome-less building and is one of the best examples of modern Muslim architecture. This paper discusses the development of innovative architectural and design elements of the mosque and their benefit to the various functions in terms of space planning, proportion and aesthetics. A descriptive analysis is also performed to assess the effectiveness of the cultural and religious role being played by the mosque at national and global level.

**Keywords:** Dome-less mosque, modern architecture, innovation, Faisal Mosque, religious values

**DOI:** <http://dx.doi.org/10.7492/IJAEC.2017.010>

## 1 INTRODUCTION

The importance of the architecture of the mosque lies not only in the forms but also in the collective meanings it transmits to people over time. To understand the mosque is to understand the architecture of the region and place, and even more significantly, the sociology and the culture to which it belongs. For in the end, architecture is not about buildings, it is about people (Khan 2008).

The architectural style has been a means of expression of thought in constructive form. Every civilization developed its own architectural style which became its identity. The dome is considered as one of the most important elements in the architecture of mosques in particular, and Islamic architecture in general. The use of domes in Islamic architecture started from the Umayyad period in Jerusalem in 691 AD (Tarrad and Matrouk 2012). It is known that the dome was influenced by Byzantine architecture at its inception. The continued use of domes in Islamic architecture, in its various forms, led to the development of domes' concept among Muslim architects to become one of the most important elements in the Islamic Architecture because of its inspirational symbolism. But with the passage of time and advancement in various fields of science and technology new in-

novative methods were also adapted in the architecture field. An example of such a modern innovative architecture is Shah Faisal Mosque at Islamabad, Pakistan.

### 1.1 Location of Mosque

The Shah Faisal Mosque (written henceforth as Faisal Mosque) is the largest mosque in Pakistan, located in Islamabad, the national capital city. It was designed by Turkish architect Vedat Dalokay and completed in 1986. It is known to the world as an iconic symbol of Islamabad. It is situated at the north end of Faisal Avenue, putting it at the northern most end of the city and at the foot of Margalla Hills, the western most foothills of the Himalayas as shown in Figure 1. The mosque is located on an elevated terrain. This enviable location represents the mosque's great importance and allows it to be seen from miles around day and night.

### 1.2 Capacity

The Faisal Mosque has an area of 5,000m<sup>2</sup>. It can accommodate 20,000 worshippers in the main prayer hall, 24,000 in porticoes,

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100,000 in the courtyard and another 200,000 in the adjoining ground. Each of the Mosque's four minarets are 90m high. Entrance is from the east, where the prayer hall is fronted by a courtyard with porticoes.



Figure 1. The Faisal Mosque, Islamabad, Pakistan

The mosque houses a library, lecture hall, museum and cafe. The interior of the main hall is covered with white marble and decorated with mosaics and holds a spectacular Turkish-style chandelier at the middle. The mosaic pattern adorns the west wall, and has the Quranic verses written over them whose calligraphy is done by the famous Pakistani artist Sadequain. Figure 1 shows an aerial view of the mosque.

### 1.3 Faisal Mosque in Literature

The Faisal Mosque represents a modern phase of architectural decoration in construction form and surface ornamentation. A number of decorative effects in its interior and its exterior have deep aesthetic value. The mosque also presents a traditional phase of art of decoration in Pakistan. In literature the comments of several scholars are found regarding Faisal Mosque. [Nabi Khan \(1991\)](#) writes about the triangular geometry of the mosque and mentions that its roof structure resembles a pyramidal tent and that the prayer hall is a concrete square pyramid. At the same time he mentions that the mosque's triangular geometry merges with the hilly back ground. He writes that aqua gold leaf is applied on the ceiling, and that marble and transparent glass covers the arch.

[Mumtaz \(1985\)](#) writes on the construction and some basic information of the mosque. But he does not mention anything about the roof structure of the mosque. According to [Holod and Khan \(1997\)](#), the mosque resembles a small mountain or an enormous white tent, or is a colossal tent like structure having monumentality and modernity. Here too, a brief statement about the roof is written without any detail, and other structural and surface decorations of the mosque and the techniques, designs and symbolism are not mentioned. They write that the restrained decorative treatment of the interior is limited to calligraphy and a blue-and-gold calligraphic decorative tiles. Several colors are used for completion of the abstract symbolic mosaic work of west wall of the mosque's sanctuary.

[Khan \(2008\)](#) and [Holod and Khan \(1997\)](#) give brief information about the accommodation for the followers, and the tapered glass-fitted ladder-like interval in the roof. [Petersen \(1996\)](#) writes only one sentence that the mosque is a huge structure and its roof is a truncated pyramid with four tall pointed minarets. [Khan \(2008\)](#) refers the Faisal Mosque as an open-plan, tent-like concrete structure. But the mosque is not constructed according to the principles of open plan. An open plan mosque does

not have a separate facade for the prayer hall entrance. It has aisles and bays for the construction of the sanctuary. The Faisal Mosque has its facade, portico and entablature but in an abstract form, and the sanctuary is constructed without aisles and bays. These are not characteristics of an open-plan mosque. So it has characteristics of both open and closed plan in its construction: an open court area and a close independent sanctuary with a facade.

The Faisal Mosque is mentioned on several websites. Three of them inform that its design is a modern but traditional structure of the mosque with sanctuary and minarets. The statement needs further elaboration. Two other web sources say that chandelier of the sanctuary is in Turkish style. The above-mentioned sources have called the Faisal Mosque structure as eight-faceted desert tent, Bedouin tent or tent-shape. It is apparent from this brief review of the existing literature that the architecture, design and construction techniques of the Faisal Mosque have not been examined closely or comprehensively studied.

A similar case of a mosque having no dome has been discussed by [Thalib and Sulieman \(2012\)](#). They have discussed the rehabilitation of an old mosque building which was built in 1916 in Melaka, Malaysia and has a capacity of around 300 worshippers. The comparison of these two mosques just on the basis of having no dome is ruled out here as the Faisal Mosque is a very large scale mosque and has a huge capacity whereas the Melaka mosque is a local mosque which serves the people of a small community.

Researchers and scholars have concentrated only on the decorative techniques of Faisal Mosque ([Kassim et al. 2014](#)). They have given only cursory statements about the geometrical design of the roof. Due to this lack of study on the type of roof, and cultural and traditional role of the mosque, this study focuses on signifying the value of the dome-less roof, and discusses the religious values of Muslims related to the mosque.

## 2 IDEA AND DESIGN COMPETITION

During an official visit to Islamabad in 1966, the King Faisal bin Abdul Aziz of Saudi Arabia liked the idea of the Government of Pakistan to construct a grand mosque for the capital city and offered to underwrite the cost for such a project. The Capital Development Authority (CDA) which was authorized to arrange the design and construction process for the mosque, initially decided to hold a competition within the country. But after looking at the scale and importance of the project it was mutually decided to announce an international competition ([Naz 2005](#)). Hence the competition was held in 1969 in which skilled and famous architects from 12 countries submitted 38 proposals. To take a decision about the best-suited proposal, a panel of jury members was formed which conferred in Rawalpindi (the adjoining city of Islamabad) to examine the submitted material. The jury members assessed all the proposals on the basis of site development and landscaping, plan organization and circulation, structure and design elements.

After lengthy discussions the last session of the jury ended on the 20th of November, 1969, and the agreement with the first prize winner, Vedat Dalokay, a Turkish architect, was finalized. It was felt that this design would be suitable as a mosque and a national monument for Islamabad. Construction of the mosque began in 1976 by National Construction of Pakistan which as-

signed skilled Pakistani engineers and workers for its execution. King Faisal bin Abdul Aziz was instrumental in the funding, and both the mosque and the approach road were named after him.

### 3 DESIGN PERCEPTION AND MAJOR ELEMENTS

The history of Islamic geometrical ornaments is characterized by a gap of nearly three centuries dated from the rise of Islam in the early 7th century to the late 9th century, when the earliest example of geometrical decorations can be traced from the surviving buildings of the Muslim world (Abdullahi and Embi 2013). However, The Faisal Mosque's architecture is modern and unique, lacking both the traditional domes and arches of most other mosques around the world. The mosque's unusual design is a departure from the long history of South Asian Islamic architecture, fusing contemporary lines with the more traditional look of an Arab Bedouin's tent, with its large triangular prayer hall and four minarets. However, unlike traditional mosque design, it lacks a dome. The minarets borrow their design from Turkish tradition and are thin as compared to the main structure of the mosque. The shape of the mosque is an eight-sided concrete shell resembling a desert Bedouin's tent and the cubic Kaaba in Mecca, flanked by four minarets inspired by Turkish architecture. The architect Dalokay discloses his thinking as given below: "I tried to capture the spirit, proportion and geometry of Kaaba in a purely abstract manner. Imagine the apex of each of the four minaret as a scaled explosion of four highest corners of Kaaba - thus an unseen Kaaba form is bounded by the minarets at the four corners in a proportion of height to base. Shah Faisal Mosque akin to Kaaba. Now, if you join the apex of each minaret to the base of the minaret diagonally opposite to it correspondingly, a four-sided pyramid shall be bound by these lines at the base side within that invisible cube. That lower level pyramid is treated as a solid body while four minarets with their apex complete the imaginary cube of Kaaba." (Wikipedia Encyclopedia 2017)

These words indicate an idealism present in the design of the Faisal Mosque. The concept of the architect was a triangular network of polygonal geometry. If a diagonal line is drawn from top of each minaret to the base of its opposite minaret, the cross-section of all these lines form invisible symmetrical triangles with the apex of the mosque at the point of their crossing. The same triangular shape is repeated throughout the entire sanctuary as shown in Figure 2.

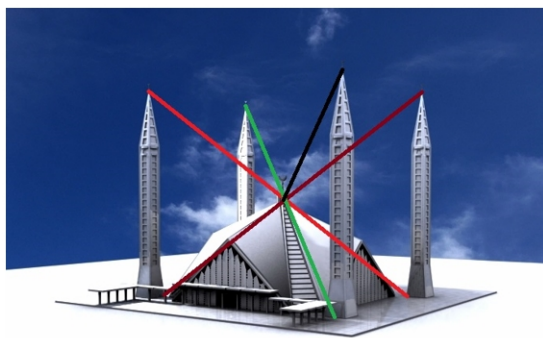


Figure 2. The architect's design perception

### 3.1 Dome-less Roof

Dome is a projected circular architectural element used to cover buildings, which began in Mesopotamia in the fourth millennium BC, and developed by the Romans and Byzantines. There are various forms of domes such as onion shape, a half circle and ellipse. The dome has a complete ability to withstand pressure loads of construction. Although, dome stands the greatest architectural innovation, and its evolution was before Islam, but Muslim architects developed or introduced numerous domes. In the Islamic era Muslim architects developed enormous and varied types of domes like smooth, ribbed and conical with neck. The first dome known in Islam is the Dome of the Rock; it was built by Abdul Malik bin Marwan, followed by the Dome of Eagle in the Umayyad Mosque built by Walid bin Abdul Malik (Squor 2016).

In a study done by Mustafa and Hassan (2013), the descriptive analysis reveals that the dome had been an important element in the layout design of the Ottoman mosque architecture during the 13th to 15th centuries. However, to date it remains the integral part of Muslim architecture.

But, the most obvious feature of Faisal Mosque is that it has no dome and the roof is constructed with triangular slabs. Heretofore the dome had served as an important visual symbol of Muslim identity. From exterior, the sanctuary of Faisal Mosque and minarets are the most prominent features of the mosque. The huge sanctuary has a plan of  $60 \times 60$  square meters. The peak of the roof is 40m above ground level (Nasim 2008).

The four walls are in the form of isosceles triangles (Figure 3) with a base of 70m and sides of 40m, and are constructed of steel and concrete. The roof is a major attraction of the mosque. It is consciously designed by combining historical and modern concepts. The top of the roof is based on a pyramidal form but the lower part has a gabled roof structure. Every joining of slanting triangular slab makes a gable point. Front beams which make a gable point on the top are connected with a solid rectangular three-dimensional block. The gable appearance of the Faisal Mosque is influenced by Greek architecture, and the sloping lines at the corners are inspired by the pyramidal roof. The slopes coming down from all four sides from the apex of the building are a perfect example of pyramidal form. The technical term for this form is hyperbolic paraboloid construction, which is introduced during modern times.

The angular setting of the eight triangular slabs of the roof itself is a major decoration in its structural form. A veneer of white marble covers the eight roof panels. The design formed by



Figure 3. Triangular walls of the Shah Faisal Mosque

the various sizes of these marble sections is visible from a distance, and gives a soft impression of a network of vertical and horizontal lines. The eight triangular concrete slabs are arranged in four pairs, with narrow rectangles of transparent glass between them. The double slab roof has hinged beams and cross beams that transmit the load to the girders. The tapered giant concrete girders play an important role in joining the four pairs supporting the roof. The girders coverage at the summit and their thrust is balanced by the four minarets at the corners of the main prayer hall. These are the usual roofing systems for all mosques, although some simple mosque structures have only a flat or pitched roof.

Pyramidal, conical and tapered roofs are variations of pitched roof construction. Pitched roofs have further differences of shapes and styles which are gable, cross gabled, hipped, cross hipped, gambrel and mansard roofs. All these kinds are characterized with diagonal or angular roof construction. The chief characteristic of the gabled roof is that the triangular front and back are covered by rectangular roofing at an acute angle as shown in Figure 4.

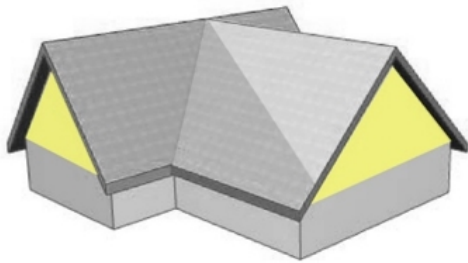


Figure 4. Gable roof (Wikipedia Encyclopedia 2017)

Gable roofs were used in the construction of buildings in Greek, Roman, Byzantine, Gothic and Medieval architecture. During the Gothic revival (1840-1880) roofing was at its most complex, with gable, cross gable and conical roofs. In the nineteenth and twentieth centuries American houses had angular roofs similar to gable roof construction called Stick Style.

The gable roof of the Faisal Mosque is an advanced form of hyperbolic paraboloid construction as shown in Figure 5. It is based on shell construction, which can be constructed with large or short span. The main purpose of this concrete shell structure is to cover a large area without any interior supports. The same purpose has been achieved in the mosque which gives huge internal space with no obstructive columns or supports as shown in Figure 6. Pitched roofs having gable or cross gable character are used for the areas of heavy rain and snowfall as a climatic factor such as the northern areas of Pakistan. On the plains of Pakistan, the pitched roof is just an architectural style.

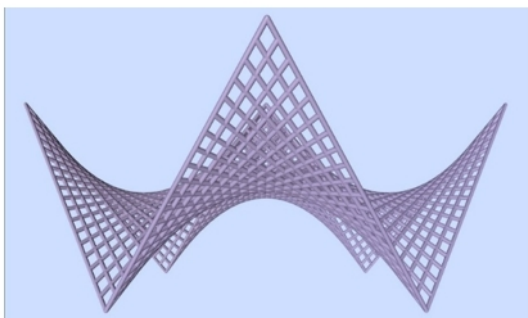


Figure 5. Hyperbolic paraboloid shape



Figure 6. Interior of main prayer hall

### 3.2 Triangular Walls

The main entrance of the sanctuary is from the east and the entrance wall is divided into nine vertical sections made of concrete filled with crescent motifs. Clear glass is fitted into the crescent shapes, which provides light to the interior. The north and south walls are designed with twenty raised vertical sections, with horizontal lines between the verticals that produce rectangles as shown in Figure 6. Such triangular-shaped walls have never been used in mosque construction previously. The traditional masonry walls are replaced by large glass elements, allowing light to transmit in. The idea of the mosque interior has been totally innovative. The periphery being visually obviated to the center dissolves the central polarity through declining beams, and by way of a smooth combination the space becomes single element (Gür and Durmuş 2012).

The architect has focused his attention on creating something new, combining abstraction and symbolism. The triangular shape is prominent in the whole composition of the monument. Actually the roof is designed according to the harmony and continuity of diagonal lines of Margalla Hills. The design of walls is based on triangular shapes in realistic or abstract forms. The architect tried to highlight its white structure by contrasting it with the softness of muddy olive hills, thus making the design dominant with the center of interest.

### 3.3 Minarets

The white color of the structure and touch of brown color of its design area gives grace to the entire composition. The simplification of its structure looks stylish and supports the geometrical decoration of the mosque with its four minarets, one each at its corner. The north-east and southeast minarets are equipped with electric elevators: the other two are built with 240 steps. The height of each minaret is 90m and the interesting thing is that the distance from one minaret to another is also 90m. This feature gives the whole structure a geometrical look, like an imaginary perfect cube.

### 3.4 Cultural and Traditional Architecture

Mosques should be categorized under socially inspired type and this type is like residential where it should be studied together with its relationship to social factors such as users' needs physically and psychologically (Othman and Zainal-Abidin 2011).

In Asia, as in most parts of the Muslim world today, the dome and the minaret constitute the mosque even if its function has changed. In a modern mosque the muazzin (one who calls

for prayer) does not climb the minaret to call for prayer. The minaret carries one or several speakers and could be designed to fit this purpose only. Similarly domes were also used to enhance and control acoustics of the mosques in those times when there were no electrical sound systems. With the passage of time due to the advent of modern technology the architecture of mosques has also been revolutionized. Nowadays there are mosques with neither minarets nor domes, yet they serve the very purpose of a mosque.

If, on the other hand we consider the form of the Faisal Mosque within the tradition of the Indian Sub-continent there is another prototype of significance: the Mughal mausoleum. The mausoleum as a building type was, of course, of Persian arid Central Asian origin, but in India new emphases were added by the turrets or kiosks at the corners of the structures. The proportions of the main body to the ancillary turrets changed in course of time. The turrets finally took the shape of real mosque minarets, released from the main structure. The minarets of the Faisal Mosque are pure architectural signs. They contribute to the domination of the main structure. They define and consecrate the space around it. Moreover the nationality of the architect and the national aspirations of the client merge on the higher semiotic levels; in the historical perspective the great Ottoman mosques - and the converted Hagia Sophia - make a superlative prefiguration.

One more matter to consider is the proportions of covered prayer hall and open courtyard. The Ottoman mosques were surrounded by vast precincts, additional buildings for ablution, study units, etc., but the open space was rather limited under the domes. As per the capacity of the main prayer hall of Faisal Mosque and its adjoining areas, the covered to open space proportion is about the same as in the Mughal mosques situated in Lahore and Delhi. Many conservative Muslims criticized the design at first for its unconventional design and lack of a traditional dome structure, but most criticism ended when the completed mosque's scale, form, and setting against the Margalla Hills became evident. This fact was also supported by the overwhelming response of the nation who liked and loved the structure of the mosque. Now the Faisal mosque is considered as one of the best examples of modern architecture and has become a landmark and the identity of the Capital of the country.

#### 4 TOOLS FOR ANALYSIS

To assess the effectiveness of the mosque some analysis was required. Hence, this analysis method has been utilized for the purpose. The analysis tool (Figure 7) being used here examines the cultural role of mosque by analyzing it into three key functions; the monotheistic function, the socialization function and the communicative function, out of which other functions are created to form an integrated and complicated system of functions. They altogether constitute a general structure of the mosque's cultural role (AbulQaraya 2015).

**The Monotheistic Function:** This is the mother of all, which can be analyzed into three levels such as individual, national and global, and thus it includes three secondary roles: inculcating monotheism, and tolerant teachings of Islam deep in Muslim's mind and soul, unifying the nation (the congregational prayers, Friday prayer, Ramadan and Eid prayers), and inviting others to Islam.

**The Socialization Function:** Mosque serves as a center for educational activities, where Muslims gain knowledge and acquire high moral values that help cultivating good moral personality through a process of instilling positive values, such as wisdom, modesty and tolerance. Furthermore, it helps them to be a real contributor to the civilizing process and producer of knowledge.

**The Communicative Function:** Being a frequently visited worship place, mosque plays a significant role in social communication. This role helps spreading love and tolerance among the people. It, also, makes Mosque a communication channel that connects the knowledge seekers with the world, and the ruler with the ruled, to say nothing of the mosque role as mass media platform characterized by honesty, beneficence, and calling for goodness and righteousness.

Right after its construction the Faisal Mosque became the point of interest for all the Muslims of Pakistan. People started coming from all over the country to pray in the mosque. People do not only pray here but visit its all parts from lower level to the top and to all its widths. They feel refreshed to see the beauty of the structure merged with the greenery of Margalla Hills. Till this time every national of the country feel honored and blessed to have prayed in this mosque. Moreover tourists from all over the world also keep this place in the To Do List whenever

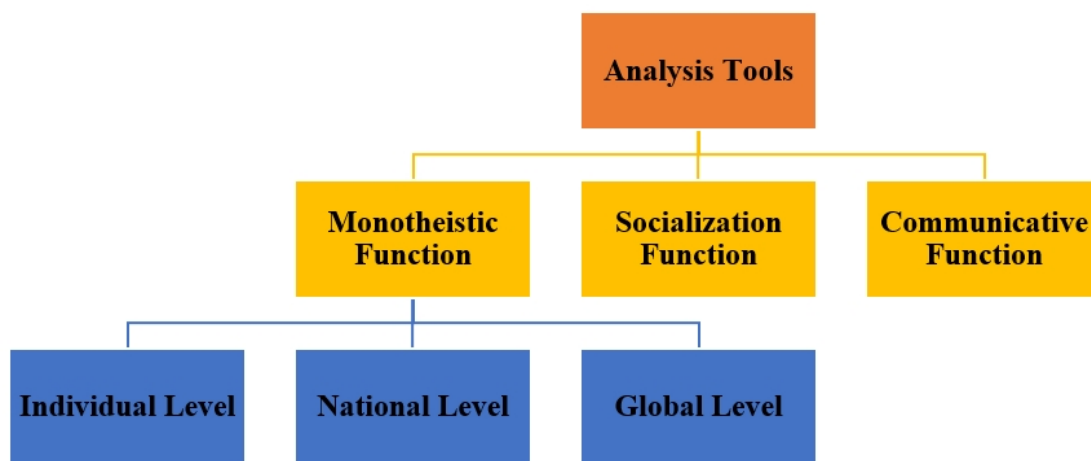


Figure 7. Analysis tools for analyzing cultural role of mosque

they visit Islamabad. The mosque also holds a large auditorium where religious related international level conferences, seminars and gatherings are arranged frequently. The mosque remains full during Ramadan, Traveeh and Eid prayers. People from all over the country travel to the Capital to perform Aitikaf (secluded stay in mosque for worship) in the mosque. During visits of the Imam Al Harmain to Pakistan, they are invited to lead the prayers at the mosque. Special announcements are made well in advance and the mosque is seen full with worshippers during such events as shown in Figure 8.



Figure 8. Worshippers praying in main prayer hall

A college of religious and Arabic studies is working in the underground floor of the mosque. Students learn various Islamic courses in native language (Urdu) and Arabic. The college admits students from all over the world and has a significant value among the global Islamic institutions. Renowned Muslim scholars are invited from all over the world who deliver lectures and provide workshops on Islamic topics. The college also arranges the courses for people of all ages who are keen to memorize the Quran and learn the rules of refined recitation under the guidance of qualified and experienced scholars. The mosque has a separate branch for female students where they are provided with equally good opportunities for learning Islamic studies. The sidewalls inside the main hall of the mosque exhibit very old and valuable scripts of The Holy Quran, well preserved in glass boxes. The mosque also has a national level library which is full of books on Islam and also it holds scripts of Quran in all languages of the world. Children are also encouraged to visit the library and mosque for their better upbringing and to develop love about the religion in their minds. After this detailed exploration of activities going on in the mosque it can be said with confidence that the Faisal Mosque satisfies the requirements of the aforementioned analysis tools.

## 5 CONCLUSION

The Faisal Mosque is a modern representation of religious monument which became a symbol of national identity and has international prominence due to its uniqueness of exterior constructive design. With typical mosques around the world to make the dome as the main element, the Faisal Mosque is a unique show with no dome. The place becomes more attractive and effective with the selection of a balanced color scheme. Its sharp contours with white dominant color give a bold impression against the soft lines of the hills at its background. There is no adverse effect of it being a dome-less mosque and it completely provides

the feeling of openness, sufficient natural light and ventilation in the main hall. The mosque is highly praised nationally as well as internationally due to its beautiful design. After performing the descriptive analysis it has also been observed that the mosque is fulfilling its religious and traditional role with success and serving all the functions effectively.

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