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An architectural analytical study of contemporary minaret design in Kuwait

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ABSTRACT

The minaret is considered the symbol of Islam and a prominent feature in Muslim communities. In Kuwait, almost every mosque, regardless of its size, includes one or more minarets. Minaret architecture has attracted considerable attention, both scholarly and from the public. Previous studies about mosque and minaret architecture have been restricted to architectural styles. The principal objective of this paper was to investigate the minaret's validity as an essential feature in contemporary mosque architecture by analyzing several aspects of minaret's architecture such as its function, number, prominence, placement of minaret to the mosque, minaret's main components, and minaret's decoration. Based on ten selected case studies representing the six governorates of Kuwait, the study attempts to understand further essential elements of minaret and the extent to which architects can redesign/transform the minaret without risking its symbolic and historic value. The findings indicate that the minaret continues to play an important role and is considered a significant element in contemporary Kuwaiti mosque architecture. The minaret's prominence within mosque design is dependent on its number, location, size, articulation, and decoration's subtlety. Furthermore, while the square plan is most common in minaret's base, the octagonal shaft plan is the most common in contemporary minarets. This research provides a timely and necessary study of minaret design that contributes to contemporary Mosque architecture, directing architects, designers, and mosque's patrons.

Keywords: Minaret; Mosque; Contemporary mosque architecture; Kuwait.

INTRODUCTION & LITERATURE REVIEW

For more than a century, Islamic historians have been interested in defining the origin and function of the minaret; however, the subject is still obscure. On the one hand, many architectural historians agreed that minaret was not an original element in the early mosques of Islam (Bloom, 2013, p. 20). The first probable appearance of the minaret was "in connection with the mosque of Medinah under the Umayyad Walhd ibn 'Abd al-Malik (86-96 A. H.)" (Gottheil, 1910, p. 135). On the other hand, a tall minaret is not practical for calling the *adhan*. Hillenbrand asserted that tall and celebrated minarets beyond 15 meters "seem on the whole unrelated to its function of *adhan*,…especially in a noisy urban setting, from the top of such celebrated minarets as the Giralda in Seville or the Qutb Minar in Delhi." (2000, p. 129). Another substantial reading of minaret origin and function might be that minaret, similar to the Dome of the Rock, was of a political value since the "intrusion of political concerns into the forms of early Islamic religious architecture was to be a hallmark of the Umayyad period." (Hillenbrand, 2000, p.

131). Whatever the origin and function of the minaret are, all scholars agree that the minaret has become the symbol of Islam.

Although extensive research has been carried out on the origin and function of the minaret, much of the research has been descriptive in nature and has predominantly been concerned with its historical styles. While some research has been carried out on minaret architecture, few studies have attempted to investigate minaret architecture systematically. Kasim's (2012) study is important to this research, because it provided an analytical framework examining aspects of the minaret. The framework has been a model for this study and adjusted and conformed as needed to focus mainly on Kuwait's Mosques. One drawback of Kasim's study is that it concentrated only on historical minarets in Iraq. The current research emphasizes more on contemporary designs.

Taher's (2017) research is a more recent study, which utilized a similar analytical framework as Kasim's study. It examined nine minarets in mosques that have won the prestigious Aga Khan Award for Architecture in different cycles. However, Taher's research covers a vast geographical area with examples from India, Turkey, Arabia, and Africa. Such comparison did not consider regional or local differences that significantly impacted minaret architecture in a given place. However, these two studies provided a significant analytical formwork for systematically comparing and examining minaret architecture.

This paper continues the approaches of prior studies. It uses Kuwaiti Mosques as a case study; therefore, the findings are specific to Kuwait architecture. It intends to answer important contemporary epistemological paradigms and mosque and minaret design discussions raised by various designers and Islamic architecture scholars. For example, what are the main components of the minaret? What is the standard number of minarets, if any, in a given mosque? Is there a correct placement of the minaret concerning the prayer hall or qibla wall? What are the features that contribute to minaret's prominence in mosque design? Furthermore, if minaret is an essential component in mosque architecture, is it possible for architects to manipulate its design without risking its symbolic and historic value? This research aims to shed light on the contemporary practice of mosque architecture in Kuwait, giving particular attention to the minaret. The selected minaret case studies are architecturally examined and evaluated to reach a satisfying conclusion. This research intends to benefit architects, designers, and mosque patrons to be more sensitive and innovative in designing contemporary mosques.

Kuwait's Mosques:

In 1995, Kuwait had only 820 mosques (al-Rashoud, 1995). This number has doubled within two decades, and today, there are more than 1700 mosques in Kuwait (Affairs, 2021). All mosques in Kuwait have at least one minaret. In contrast with their contemporary counterpart, traditional mosques of Kuwait are known for their short minaret, often standing a few meters above the roof of the prayer hall. Before Kuwait's modernity in the early 1950s, "the only vertical structure to punctuate the flat, monotonous horizon was the graceful shape of the minaret" (al-Rashoud, 1995, p. 199). Back then, the minaret's function was simply utilitarian, as the *muezzin* had to climb up the minaret five times a day to call for prayer, often from the minaret's circular balcony or gallery. The Saeed mosque is the best-preserved example of Kuwait's traditional mosques, as it preserved many of its original features, especially its original minaret (Figure 1). Unlike contemporary mosques, Saeed mosque's minaret is not an independent tower but rather incorporated into the prayer hall's rooftop and can be reached by a narrow staircase from the mosque's *sahn* (Alajmi, 2009, 138). With the establishment of Awqaf Public Authority in 1950, most of the old shrot minarets have been replaced by new taller minarets (خليفوه, 2011). Besides their hieght, the new minarets carried new features such as balcony and windows. Furthermore, the shaft of the new minarets often carried decorative geometric pattern that have not been seen before in Kwuaiti mosques (Figure 2).

Figure 1. Minaret of Saeed mosque (also known as Abbas Al-Haroun mosque). Source: (Al-Rashoud, 1995).

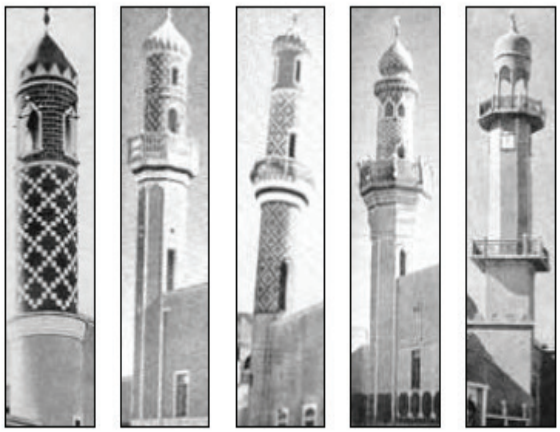
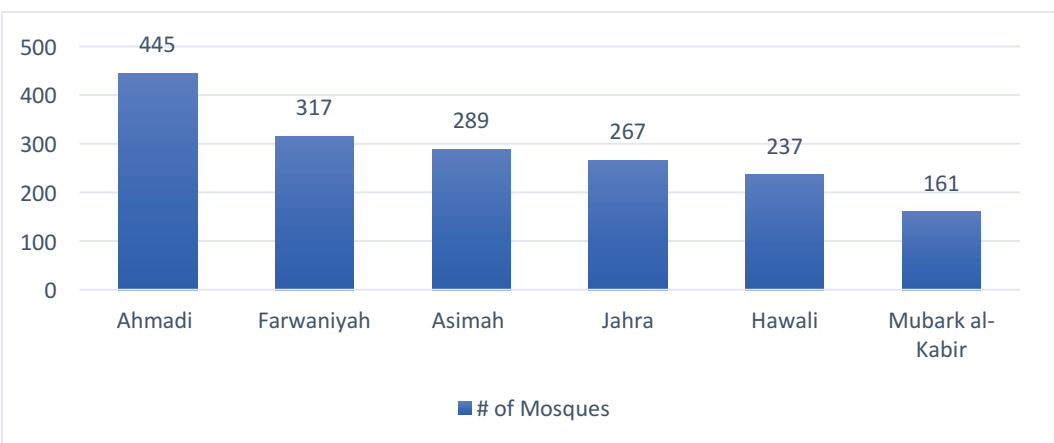


Figure 2. The New minarets in the 1950s. Source: (Khalifoh, 2001).

Selected Case Study Mosques in Kuwait

The selected mosques represent Kuwait's six geographical governorates. Kuwait has about 1716 mosques distributed among these six governorates as shown in Table 1. Al-Ahmadi governorate contains 25% of the mosques in Kuwait with 445 mosques; therefore, two case study mosques represent al-Ahmadi governorate: Bilal mosque and Deaj al-Salamn mosque. Bilal mosque (Figure 6-E) is selected because it is a prototype local, or neighborhood, mosque that has been designed and built by the Public Authority for Housing Welfare. In Sabah Al-Ahmad City, a new city located in the south of Kuwait, more than 50 mosques have been built according to this prototype mosque, which resulted in homogenous and undistinguishable neighborhood mosques. Deaj al-Salman mosque is the second mosque from al-Ahmadi governorate. It is located at the city center of al-Sabahiyah City and is considered one of the largest mosques in this governorate that can accommodate more than 3500 prayers (Figure 5-A).

Table 1. Number of mosques in each of the six governorates. Source: Ministry of Awqaf and Islamic Affairs, https://oneline.to/masajidalkuwait



Most of the early modern mosques in Kuwait have been built in al-Asimah (the Capital) governorate; therefore, three case study mosques represent it. Fatima mosque (Figure 6-B) is the best example and the most controversial of these early modern mosques. Located in Abdallah Al-Salem at Kuwait city, it was designed by Pan Arab Engineering Consultants and was inaugurated in 1976 (Fabbri, et al., 2015, p. 204). It is one of the early iconic modern mosques in Kuwait's quest for modernity. The mosque features unusual elements such as its circular prayer hall, in which a conical dome-like shape raises to a considerable 20 meters high. Its minaret is also another salient feature. In 1977, Dr. Mones discussed Fatima mosque in Al-Arabi Magazine and observed that "since the late 1960s, new mosques appeared in Kuwait that are far from being or representing a mosque, some of these new mosques look like Buddhist-temples or churches, and others are more like an opera house than a worship place."[1] (Mones, 1977, p. 81).

Al-Saddah mosque (Figures 3 & 6-A), the second mosque in al-Asimah governorate, is also located in Abdallah Al-Salem city. A rehabilitation work carried on in 2016 by architect Jasem al-Saddah, in which a new GRC *mashrabiya*-like is based on the damascene pattern of six circles to cover up the dome, minaret, and exterior surfaces of the prayer hall (Al-Saddah, 2017). Such treatment conceals the old traditional mosque features behind the newly installed Islamic geometric pattern creating a simple and ultra-modern mosque façade. The third mosque from al-Asimah governorate is Al-Faris mosque. It is located in Kuwait City and was inaugurated in 2009. It has two spiral minarets following the shape of the well-known historical Malwya minaret of Abbasid Sammura, albeit much smaller in size. The mosque presents a postmodern façade treatment of white stone exteriors, buttress walls, and a mixture of round and segmented arches (Figure 5-D).

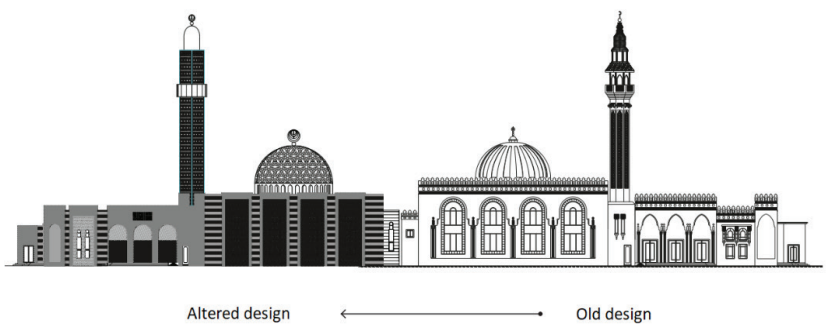


Figure 3. Al-Saddah mosque. Old and altered designs. Source: Bab nim nim Design Studio, Kuwait.

Two case study mosques come from al-Jahra governorate. Mattar mosque (Figure 5-B) was inaugurated in 2014 in the *Kabid*, an agricultural area about 30 kilometers away from Kuwait City. Its overall shape and features resemble historical mosque architecture: pointed arches with '*ablaq'* marble techniques, a dome over the prayer hall, and two minarets with acquainted features. Al-Hajraf mosque (Figure 5-E) is located in al-Jahra city, about 35 kilometers away from Kuwait City, and it was inaugurated in 2020. It is one of the large mosques in Kuwait in terms of the number of prayers accommodated and building size. According to its patron, the mosque has the tallest minarets in Kuwait, reaching up to 56 meters (al-Hajraf, 2017).

Each of the other three governorates is represented by one case study mosque. Al-Zahrra mosque, located in al-Farwaniya governorate, known as Kuwait's Taj Mahal, is almost an exact copy of the celebrated Taj Mahal in India. It was opened in 2011 and has a central bulbous dome that is forty meters high, taller than its minarets, a rare precedent in mosque architecture (Figure 5-C). Modhi mosque is located in Hawally governorate and was inaugurated in 2015. With a prayer hall of over 3000 square meters, it can accommodate up to 3750 prayers; thus, it is considered one of

[1] Translated from the Arabic text by the authors.

the large mosques in Kuwait. Thanks to its hierarchical, theatrical-like exteriors and well-balanced symmetrical shape, the mosque captures the attention of many prayers and visitors (Figure 6-F).

Mubarak al-Kabir is the latest of the six governorates to emerge in Kuwait; therefore, it has the fewest mosques, only 161 mosques. However, most of its mosques present a new design trend in mosque architecture, specifically in the formal and external treatment and minaret features. This is probably because most of these mosques are being designed and built by private patrons other than the Ministry of Awqaf and Islamic Affairs (MAIA), which is in charge of designing and managing all mosques in Kuwait, an important topic that deserves an investigation, but beyond the scope of this research. Eissa al-Othman mosque in this governorate, shown in Figure 6-C, is an example of the growing trend in patrons' mosque design in this governorate.

The modernity has made significant changes to Kuwait's culture and architecture. Many of Kuwait's traditional architecture have since disappread and have been replaced by new ones. Others have been transformed and adapted to, or absorbed by, modern architecture such as the courtyard (Al-Haroun & Alajmi, 2018, 73; Al-Haroun, 2019, 4). The minaret is one of the few traditional elements that have persisted and kept its original architectural identity into the modern world.

RESEARCH METHODOLOGY

This research utilizes the comparative analysis method to examine minaret architecture, particularly in Kuwait mosques. A case study approach was adopted to provide an in-depth understating and detailed illustration of Kuwait's contemporary minaret architecture. Therefore, ten mosques, distributed among the six Kuwait's governorates, were selected as case studies in this research. The study utilizes several analyzing tools adapted from different resources as shown in Figure 4. The first methodology, adapted from Serageldin & Steele (1996), investigates the mosque design approach. Their method categorizes mosques according to their design typologies into five design approaches as shown in Table 2. The second method, which deals with the minaret form and components, is adapted from Kasim (2012) and Taher (2017), which share similar analyzing tools. Three criteria have been developed to analyze minaret and its elements. The first examines the minaret's prominence in mosque's composition, the second discusses minaret's main components, and the third analyzes the minaret's section gradation.

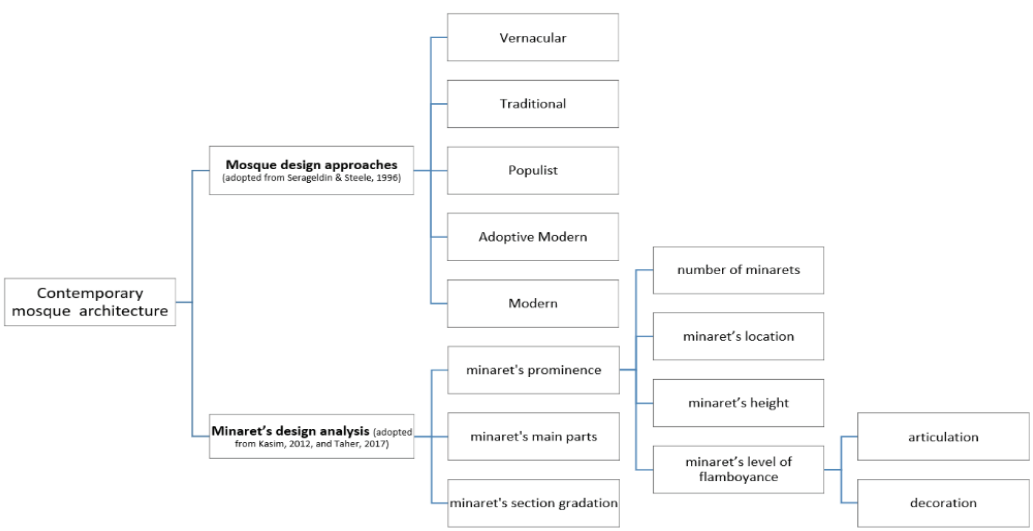


Figure 4. Research methodology and structure.

FINDINGS AND DISCUSSION

Mosque Design Approaches:

The five-mosque-design-approach classification begins with a minaret and/or a dome in the mosque. These two elements, minaret and dome, are key elements in mosque architecture that "speak to all Muslims (and even non-Muslims) with a powerful symbolism that transcends space and time." (SERAGELDIN & STEELE, 1996, p. 14). Moreover, the extent of assimilating historical mosque features determines the design approach used in the examined case study mosques. For example, al-Zahrra mosque in this study is categorized under two approaches; the second, Historical/Traditional, and the third, Populist approach, because it assimilates the historical example (in this case Tag Mahal) in all features such as mosque's proportion, domes, arches, gateways, and minaret's elements.

Table 2. Mosque design typology

Mosque's Name	Governorate	Mosque size type	Vernacular approach	Historical/Traditional approach	Populist approach	Adaptive modern approach	Modern/experimental approach
Al-Saddah	Asimah	Local mosque				✓	
Fatimah	Asimah	Local mosque				✓	✓
Mattar	Jahra	Local mosque		✓			
Al-Zahraa	Farwaniya	Major landmark mosque		✓	✓		
Modhi	Hawally	Central mosque			✓	✓	
Al-Faris	Asimah	Local mosque		✓		✓	
Al-Hajraf	Jahra	Central mosque		✓			
Bilal	Ahmadi	Local mosque				✓	
Deaj Al-Salman	Ahmadi	Central mosque		✓			
Eissa Al-Othman	Mubarak Al-Kabier	Local mosque				✓	

Accordingly, the first approach in mosque design is the Vernacular approach, in which the design of a mosque is identified by "the use of a traditional indigenous architectural language, with building work undertaken by the local mason and community rather than an architect in the modern sense of the word." (p. 16) Because our study is focused on contemporary mosques that are designed and built with modern materials, this approach does not apply to any of the examined mosques; hence, this typology is not relative to this research. The second is the Historical/Traditional approach, in which registered architects "choose to work in either the vernacular or historically relevant traditional architectural language." (p. 17) This approach is common in the contemporary mosque's design in Kuwait. There are many features of this mosque typology; however, the key elements are minaret and dome. Five of the ten case study mosques implemented this approach as shown in Figure 5.

Al Hajraf mosque (Figure 5-E) is the largest mosque of the ten examples. It presents the Historical/Traditional approach, where the dome and the two minarets follow the historical mosque architecture. Al-Faris mosque (Figure 5-D & 6-D) adapted Islamic architectural features with modern additions and materials (i.e., windows and doors comprise segmented arches). At the same time, its twin spiral minarets are very similar, though smaller in size, to the Great Mosque of Samarra's Malwiya minaret, thus adopting two approaches at once. Finally, Mattar mosque is a typical example of many contemporary Kuwait mosques that follow archetypal and historical mosque architecture (Figure 5-B). The proportion of the prayer hall, the dome, the minarets, pointed-arch windows and portals, and the external finish of ashlar marble technique are all conventional mosque features.

Figure 5. Five case study mosques identified with Traditional approach

Populist is the third approach; though similar to the first approach, the Vernacular, it embraces "a wider gamut of popular formal references and imagery." (SERAGELDIN & STEELE, 1996, p. 17). Al-Zahrra mosque is a new iconic mosque located on a busy highway. Its form replicates the famous Indian Taj Mahal with its bulbous dome, four massive minarets, and the sixteen tiny small minarets atop the prayer hall. Al-Zahrra mosque is the only case study out of the ten examined mosques that fits into the Populist typology (Figure 5-C).

The fourth approach, and the most common in contemporary mosque design in Kuwait, is the Adaptive Modern approach, in which the architect "seeks to assimilate traditional vocabulary into a modern approach." Six out of ten case study mosques are identified with this approach, as shown in Figure 5. The best example of this approach is the innovative Fatima mosque (Figure 6-B). Although it was built in 1976, the Fatima mosque is still one of Kuwait's boldest architectural experimentation in mosque architecture. The most innovative elements are its circular plan and

minaret. Fatima mosque "became a landmark on the city skyline due to its candle-shaped minaret." (Fabbri, et al., 2015, p. 204). Furthermore, its dome takes a conical form that directly raises up from the prayer hall circular walls without any transitional drum.

Al-Saddah mosque (Figure 6-A) is a renovated old mosque. New and modern articulation introduced incasing the old mosque with a GRC *mashrabiya-like* that includes Islamic geometric patterns and covers the entire dome's surface, minaret's shaft, and the facades of the mosque. The old minaret, inspired by Mumluk architecture, was transformed or incased behind modern geometric patterns, thus losing its historical features and becoming a modern element. Finally, Modhi mosque design (Figure 6-F) takes the Adoptive-Modern approach. Its prayer hall presents a new and unexpected steeped interior space. At the same time, the reddish exterior volume with the ripped bulbous dome and the two lofty minutes feature historical Islamic stylistic elements.

Figure 6. Six case study mosques identified with Adoptive-Modern approach.

The fifth is the Modernist approach; contrary to the Historical/Traditional approach, the Modernist approach to mosque design "places originality and use of modern vocabulary, form and technology at the fore." This approach is rarely found in Kuwait's contemporary mosques; however, some mosques can be partially identified with Modernist approach. Suppose that a minaret is found and identified as an expressive and essential feature of a mosque. In that case, it cannot be categorized under the Modernist, an approach that advocates experimental and nontraditional features. To some degree, Fatima mosque might serve as an example of this approach in Kuwait; however, the best example of Modern approach would be Zaha Hadid's unbuilt mosque design for the Avenues Mall (Figure 7). Zaha's mosque design aims to liberate mosque from its historical form of "cube-with-a-dome idiom," while maintaining a "subtle reference to the essence of Islam" (Arch20, 2021) by the vertical minaret-like element that emerges from three elliptical courtyards and reaches into the sky.

Figure 7. Unbuilt Zaha Hadid's mosque design for the Avenues Mall in Kuwait, 2009.
Source: https://www.arch2o.com/avenues-mall-mosque-zaha-hadid

Minaret's prominence in mosque's design:

Minaret prominence depends on four factors: the number of minarets in a mosque, the location of the minaret in relation to the mosque, the height of the minaret, and the minaret's flamboyance. Figure 8 draws a comparison between historical and contemporary minaret's components. Historical minaret tends to have several recognized elements such as base, transitional segment, shaft, balcony, gallery, neck, spire, and alem (Kasim, 2012). In contrast, contemporary minarets often lack some or many of these features. Table 3 shows the minaret's prominence within the mosque architectural composition. The majority of surveyed mosques (6 out of 10) have two minarets, three mosques with one minaret each, and one mosque with four main minarets and 16 tiny minarets. The number of minarets in Kuwait is not associated with the type of mosque, such as *jame'* or central, which are usually larger and can accommodate the Friday Prayer. For example, the State's Grand Mosque, the largest in Kuwait, has one minaret only.

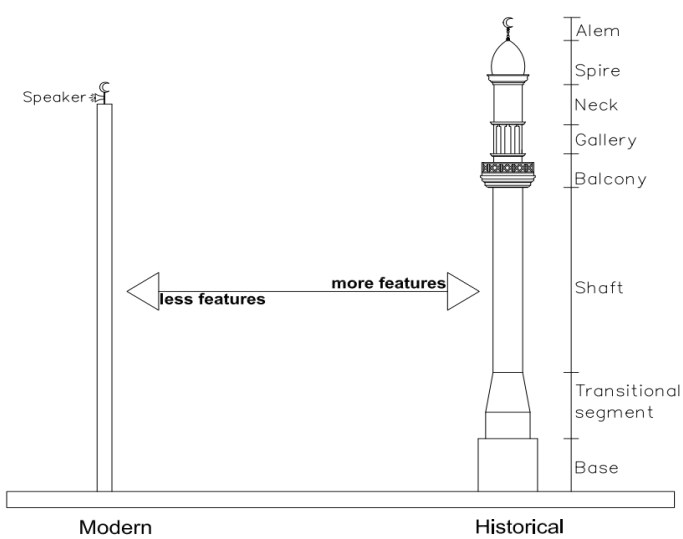


Figure 8. Minaret's main parts in historical and contemporary mosques.
Adapted by the authors from Taher, 2018.

Although the design guidelines of the Ministry of Awqaf and Islamic Affairs (MAIA) recommend that a minaret, if only one, should be located to the right of the haram (prayer hall) (Khattab, 2002, p. 152). In Fatimah's mosque, the minaret is situated behind the prayer hall at the center and slightly to the right of the dome. The attachment of the minaret into the prayer hall is a typical pattern that stands out in Table 3 in all the mosques except for al-Zahraa and al-Deaj mosques. While al-Zahraa's four minarets are separated from the main prayer hall and placed each at a corner of the square platform, in al-Deaj, the two minarets are apologetically detached from the main prayer hall building.

Another critical pattern found in Table 3 is that most of the minarets, except those in Al-Zahraa mosque, are located at the wall opposite to the *qibla* wall, i.e., to the back of the mosque and near the main entrance. Comparing the findings with those of other studies done on Kuwait traditional mosques' minaret confirms that placing the minaret nearby the entrance and within the *sahn* area is a typical pattern in mosque architecture in Kuwait (Khattab, 2002, p. 147).

The height of minaret is another critical factor in its prominence; the taller the minaret is, the more prominence it will get. The MAIA guidelines indicate that the proper height of a minaret in relation to the height of the prayer hall should be 3:1 (Affairs, 2012, p. 17). However, the guidelines did not provide any architectural, nor historical justification for such a ratio. If Al-Hajraf mosque (which has the tallest minarets of 56 meters) would follow the MAIA guidelines, its prayer hall height should have been at 18.6 meters high, while in reality, it is only 12.5 meters high.

While the majority of the examined mosques (six out of ten) have strong minarets prominence, three (al-Hajraf, al-Zahraa, and Mattar) can be classified as having dominating minaret prominence, and one (al-Saddah) with normal minaret prominence. In Al-Hajraf mosque, the two staggering tall minarets dominate the mosque. Indeed, with each reaching up to 56 meters (with the alim and crescent, it reaches 60 meters), they are the most towering minarets in Kuwait. Al-Zahraa mosque, replicating Taj Mahal proportions, stands as a monument overlooking the surrounding residential area. Its four giant minarets are detached from the mosque, each freestanding and reaching up to 40 meters high, while sixteen smaller minarets are placed atop the prayer hall. Finally, the two bulky minarets in Mattar mosque stand above the mosque. With 26 meters in height and 4 meters in diameter, they dominate the mosque composition due to their sheer mass size in relation to the prayer hall.

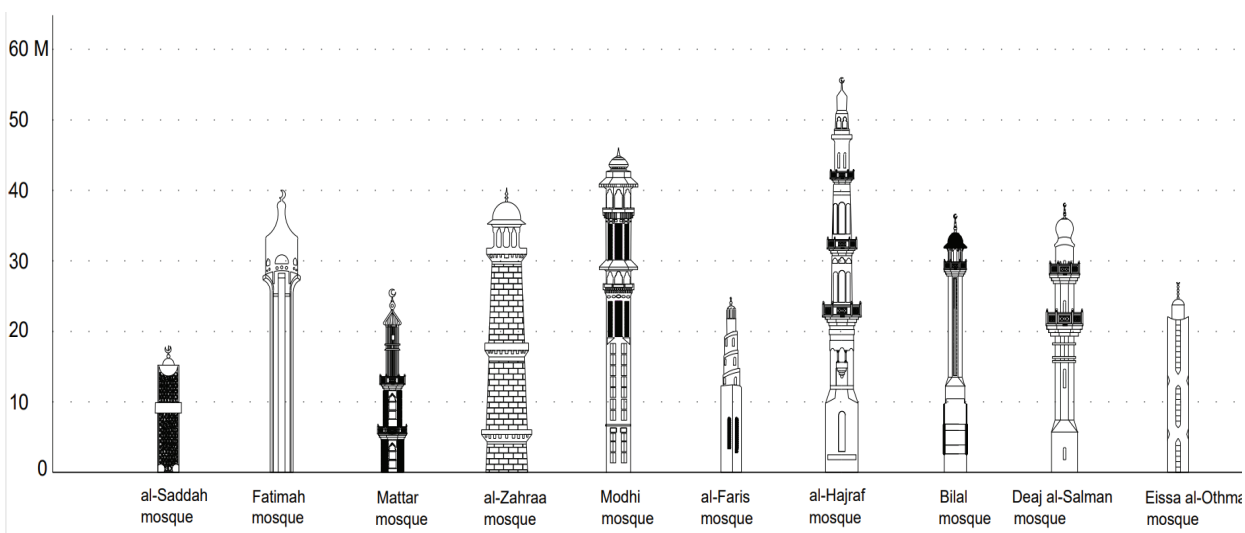
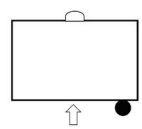
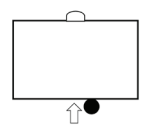
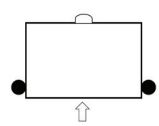
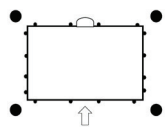
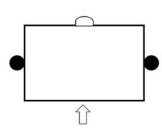


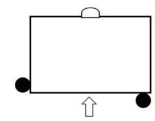
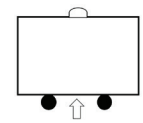
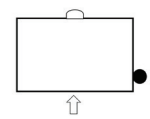
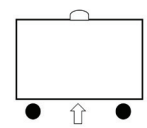
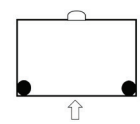
Figure 9. Ten case study minarets compared in terms of height and main features. Source: authors.

Six out of the ten examined mosques have strong minaret prominence. The twin minarets of Modhi mosque, with their height reaching up to 46 meters on both sides of the prayer hall, undeniably make a strong presence. In al-Faris mosque, the size of the two minarets, only 20 meters, is not as crucial as the minarets' shape. The two spiral minarets recall the famous historical Malwya minaret of Abbasid Sammura. Historical referencing is what makes the presence of the Al-Faris's two minarets strong.

Fatimah mosque has one minaret that reaches up to 40 meters high. Its candle-like and elegant shaft creates a strong presence within the mosque composition, while, in Bilal mosque, although it is a small local mosque, its minaret reaches up to 36 meters high, an overpowering tall minaret for a small size mosque. However, the mosque circular plan counteracts its minaret's height, resulting in a strong minaret prominence of an otherwise dominating one. Deaj mosque has twin massive minarets flanking its main entrance and reaching up to 38 meters; each has a middle strap of geometric and circular patterns, and double balconies. For a mosque of its size and centrality, Deaj minarets should have been taller. Eissa mosque also has twin minarets of 25 meters high and is located at its entrance. The two minarets have no decorations on their shafts except for the long diamond-shaped windows that speak to the mosque's strongest feature, the bold Arabic calligraphy on its exterior walls.

Table 3. Minaret's prominence in mosque's composition

§	Weak	Normal	Strong	Dominating	Number of minarets	Height=m	Location of minarets (diagrams not to scale)
Al-Saddah mosque		✓			One	18	
Fatimah mosque			✓		One	40	
Mattar mosque				✓	Two	26	
AlZahraa mosque				✓	Four large free-standing minarets, 16 small attached minarets	40	
Modhi mosque			✓		Two	46	

Al-Faris mosque			✓		Two	25	
Al Hajraf Mosque				✓	Two	56	
Bilal mosque			✓		One	36	
Deaj Al-Salman mosque			✓		Two	38	
Eissa Al-Othman mosque			✓		Two	25	

Minaret's Level of Flamboyance: Articulation and Decoration:

Table 4 identifies the level of articulation and decoration in the surveyed minarets. The majority, eight out of the ten, of the examined minarets have windows and basic articulation on their shafts. The two exceptions are al-Saddah and al-Zahrra mosques. Contemporary white GRC of geometric patterns entirely covers Al-Saddah's minaret. In al-Zahrra's mosque, while the four minarets each have three bands of dark marble decorations on its shaft, they are surprisingly windowless, despite the MAIA's guidelines that recommend introducing natural as well as artificial lights to illuminate the spiral staircase inside the minaret shaft (Affairs, 2012, p. 17).

Mattar mosque has two simple minarets with no decoration except for the colored courses of stone and the long vertical windows. The minarets of Modhi mosque, although massive in size, the thin columns of its galleries, and long vertical windows on each side of the octagonal shaft convey relatively light and airy towering minarets (Figure 6-F). In al-Faris mosque, the most impressive feature in its minarets is the spiral shape that leads up to its spire, an imitation to the famous Abbasid's Malwiya minaret in Samarra. Al-Hajraf mosque's minaret with its three-tier balconies, with each tier having different gradation, resembles the Mamluki's minarets in Cairo. The single minaret in Bilal mosque has an elongated uninterrupted shaft, along with vertical windows, which ends at the balcony. The minaret of Deaj mosque combines traditional and modern features: it has two balconies in its shaft with no gradation, while gradation occurs at its neck. Minaret's body is almost free of any decoration except of a band of modern patterns before its first balcony. Eissa mosque's minaret might be the most modern minaret in the ten examples; it has no balcony, gallery, gradation, and decoration. Three mosques' minarets can be identified with an edifice scale minaret. This is mainly due to the staggering size and height of the minarets in Al-Hajraf, Al-Zahrra, and Fatima mosques, 56, 40, and 40 meters, respectively.

Table 4. Minaret's level of flamboyance: articulation and decoration

Mosque	Absence of minaret	Simple minaret	Articulation & windows	Ornamented	Arabic calligraphy	Edifice scale
Al-Saddah mosque				✓		
Fatimah mosque			✓			✓
Mattar mosque		✓	✓			
AlZahraa mosque				✓		✓
Modhi mosque			✓			
Al-Faris mosque			✓			
Al Hajraf Mosque			✓			✓
Bilal mosque		✓	✓			
Deaj Al-Salman mosque			✓			
Eissa Al-Othman mosque			✓		✓	

Minaret's main components:

According to Kasim (2012) and Taher (2017), a minaret in a traditional mosque often includes five main elements: base, shaft, balcony, neck, and spire. After examining several historical minarets, this study found that, besides the five main elements that make a minaret, other important components significantly contribute to minaret design: a transitional segment, gallery, and alem. Although not necessarily found altogether in one historical minaret, these elements are significant in minaret's design in many historical and modern mosques. This study compares the selected minarets in modern mosques in the six components: base, shaft, balcony, gallery, neck, and spire. The base is where the minaret superstructure begins above the ground level and extends, often with a transitional segment, to the shaft of the minaret. It could be circular, octagonal, or square base. The shaft part begins at the top of the base and extends to the neck; thus, it is the most elongated element in the minaret body. It is often a tapering cylindrical or octagonal tower, especially in historical mosques. The shaft contains a spiral staircase leading to the balcony or neck of the minaret. Balcony is a projecting platform from the minaret's shaft and enclosed by a railing or a parapet.

A minaret may have more than one balcony. A gallery is a small colonnaded dome-shaped pavilion/chhatri above the balcony. The neck in the minaret is often the extended shaft's body beyond the last balcony. Spire is a tapering domical or pyramidical structure surmounting the minaret.

The transitional segment and the alem are not included in this comparative analysis for two reasons; first, these two elements are the least visually recognized in minaret components. Second, the two elements are often included within a more prominent component; the transitional segment is often included in the base design, while the alem is within the spire body.

Table 4 examines minarets components. The first finding is that all contemporary minarets have distinctive components and a base, shaft, and spire. Indeed, the very definition of the term 'minaret' tends to be used to refer to "a lofty, slender tower" (Ching, 2012, p. 270). Therefore, the base and shaft make a minaret in the first place, and both are essential components. The balcony is present in six out of the ten mosques; thus, the balcony is an optional element. Furthermore, Al-Hajraf mosque minarets each have three balconies, while two balconies are found in Modhi, Mattar, and Deaj mosques, and one balcony in Al-Zahraa and Bilal mosques. Finally, gallery and neck are found in only four out of the ten mosques, indicating that these elements are less essential than the base, shaft, and spire that can be seen in all the examined contemporary mosques.

Table 4. Minaret's main components

Mosque	Base	Shaft	Balcony/ #	Gallery	Neck	Spire
Al-Saddah mosque	✓	✓			✓	✓
Fatimah mosque	✓	✓				✓
Mattar mosque	✓	✓	✓ two		✓	✓
Al-Zahraa mosque	✓	✓	✓ one	✓		✓
Modhi mosque	✓	✓	✓ two	✓		✓
Al-Faris mosque	✓	✓				✓
Al Hajraf Mosque	✓	✓	✓ three	✓	✓	✓
Bilal mosque	✓	✓	✓ one	✓		✓
Deaj Al-Salman mosque	✓	✓	✓ two		✓	✓
Eissa Al-Othman mosque	✓	✓				✓

Minaret's Plan Gradation:

Table 5 shows the minarets' plan in each element, beginning with the base and ending in the spire. Clearly, there is a trend in the minaret base plan toward a square base as it is found in seven out of the ten surveyed mosques, even though only one mosque's minaret out of the ten cases has a square shaft. A possible explanation for this trend is that a square plan at the base level would be more practical to integrate with the rest of the mosque's spaces than a circular or octagonal base that might result in unfunctional spaces or acute-angled walls. The most common is the octagonal plan in the minaret shaft, as it is found in seven of the ten mosques' minarets. This result accords with Khttab's study (2002, p. 152), who also found that eight out of the twelve examined traditional Kuwait mosques' minarets have octagonal shaft plans.

Balcony follows the shaft's plan except in Al-Hajraf mosque, where its balcony diverges from the octagonal shaft plan into a circular. Minaret's neck was recognized in four mosques out of the ten case studies. Interestingly, the neck plan in three minarets is circular even though their shafts were octagonal. Gallery, regarded as extraneous element (Khan, 2009), is only found in four mosques: Al-Hajraf, al-Zahraa, Modhi, and Bilal. Spire is present in all the surveyed minarets. The typical spire plan is circular in seven of the ten examples, while three mosques have an octagonal spire plan. Table 5 concluded that, out of the ten surveyed mosques' minarets, three have varying gradation sections that start from the base to the spire. Such gradation is found in three mosques' minarets: Al-Zahrra, Al-Faris, and Al-Hajraf. In Mattar and Deaj mosques, gradation occurs only from the neck to the spire, while, in Modhi mosque, gradation happens only in the transition from the base to the shaft. Thus, most of the examined minarets have continuous minarets without any significant gradation.

Table 5. Minaret's plan gradation

Mosque	Base	Shaft	Balcony	Gallery	Neck	Spire	The Result
Al-Saddah mosque							No change in the shaft
Fatimah mosque							No change in the shaft
Mattar Mosque							Gradation happens only at the neck
AlZahraa mosque							Gradation

Modhi mosque							Gradation happens only between the base and the shaft
Al-Faris mosque							Gradation
Al Hajraf Mosque							Gradation
Bilal mosque							No change in the shaft
Deaj Al-Salman mosque							Gradation happens only at the neck
Eissa Al-Othman mosque							No change in the shaft

IMPLICATIONS OF THE FINDINGS

The findings highlight how the minaret remains an essential physical and symbolic feature in mosque architecture in Kuwait. It also points out that most mosques' have two minarets. The reason behind this is still unclear but may indicate how smaller mosques may seem more significant when having two minarets. As a result, an impression of a more extensive form is created and reflected strongly on the worshippers and passers-by alike. Furthermore, architects may add two minarets to create a more balanced architectural form for the mosque. Future research is needed to investigate further the reasoning behind using two minarets by architects and mosque patrons.

Another critical finding is that all the studied minarets have shaft and base, and almost all have a spire. Indeed, the shaft and the base are the two most essential elements in minaret architecture in Kuwait's contemporary mosques. It also shows how, today, the form supersedes function in minaret designs. This is a complete cut from the past, where the function of the minaret was to call people to prayer. Today, the muezzin calls the azan while in front of the mihrab, and the call to prayer is spread through speakers installed in the minaret. The question remains unanswered, if minarets' primary function is not utilized today, do we still need them? Although their physical function may have diminished, minarets historical symbolic connection with the identity and image of a mosque makes it still a

significant design element in mosque architecture. In contrast, the balconies and other features have no functional role. They only provide aesthetic connections with historical mosque designs, making them more prone to disappear from contemporary designs.

Finally, the high-rise minarets in some mosques are a direct consequence of the size of the mosque. It seems that the larger the mosque, the higher the minaret. This proportional architectural consideration is essential in all buildings. There are some height restrictions from the municipality in certain areas but usually are accommodating for higher minarets. In traditional Islamic communities, high and tall minarets were often preserved only for grand mosques of the city or state, representing the heart of the community. Visitors would see them dominating the skyline like needles in the horizon far beyond the city limits. Higher minarets reflect this grandeur and splendid mosque architecture and Islamic identity.

Today, high-rise minarets may be seen in almost every residential area in Kuwait. This study highlighted that most of the mosques in the case studies have tall minarets. However, to what extent did the changing function of the minaret correspond to its increasing height? How did modernity with modern materials and technologies impact mosque architecture and minaret design in all its aspects? And how do government regulations, mosque patrons, and architects influence mosque architecture and minaret heights? This study attempted to examine and discuss some of these ideas and now asks more questions than answers. Therefore, further research is needed to understand to what extend the higher minarets are altering people's perceptions of mosque designs.

CONCLUSION

The study has presented case studies of various mosques in Kuwait with particular attention to their minarets. It is apparent that the minaret is a significant mosque architectural element and is considered essential in contemporary Kuwaiti mosque designs despite being transforming from a function element to an aesthetic one. After this exploratory study, it is clear that architects have limited to no creative alternatives to replace the minaret. Instead, they can abstract its form using the shaft and base, reducing ornamentation. They can play with the heights and add materials, color, and inscriptions, but the study's findings show no mosque without a minaret in Kuwait. Further research is imperative to explore other design experimentation and perhaps introduce a new form of minaret that is more suitable for the present and future mosque architecture.

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