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The Effect of Minimalism on User Experience and Spirituality in Mosques: A Case of Bahrain

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Abstract

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Mosque architecture has continuously evolved over time; contemporary mosque designs incorporate modern trends including minimalism. This research explores the effect of minimalist architectural design on user's spiritual experience in contemporary mosques in Bahrain. The aim of this research is to study the impact of minimalism on worshippers' emotional, cognitive and spiritual engagement. The study adopts a Mixed-Methods approach supported by a theoretical framework drawing on architectural phenomenology, spirituality, minimalism in architecture, Islamic concept of humility and cognitive load theory. The theoretical framework highlights that simplified spaces reduce mental effort, enhance focus, and facilitate contemplation. The methodology includes a phenomenological analysis of three selected mosques in Bahrain, along with user survey assessing concentration and spiritual experience of worshippers. The results indicate that minimalist mosque architecture promote spirituality by lowering cognitive load, reducing sensory distractions and fostering humility, indicating it as an effective approach to contemporary mosque design in Bahrain.

Keywords: Architecture; Spirituality; Mosques; Minimalism; Phenomenology.

1. Introduction

Architecture has always been crucial to the behavior and well-being of a human being and most importantly structures which are meant for worship and meditation. Mosques are places of worship, reflection, and spiritual connections for Muslim all around the world. The main physical function of the mosque is to provide a space for five daily prayers (Al Khalifa, 2017), but it can also serve as a space for social activities (Elghonaimy & Al-Haddad, 2019). Islamic architecture focuses on forms, materials, and ornamentation in general and more so, especially in religious places such as the mosques. This is because of the need to provide the right atmosphere for worship, and spiritual elevation (Al Khalifa, 2023).

In the last few decades, the design of mosques has undergone changes in form and interior spaces (Al Khalifa, 2017), Contemporary Mosque designs have introduced new aesthetics modernizing the interiors of the mosques with minimalism, clean geometry, and abstract symbolism (Buhusain & Allani, 2024).

This raises questions as to whether the minimal mosque designs and their interiors continue to create the right atmosphere and spiritual ambience through their new aesthetics. This paper examines the link between the minimalistic designs of the mosque and users spiritual experience as well as the degree of calmness noncomplex structures of modern mosques create for the users.

Problem Statement: There is a significant lack of understanding regarding how modern mosques, characterized by minimalist ornamentation, influence the spiritual engagement and multisensory experience of worshippers in Bahrain.

1.1. Aim and Hypotheses

Aim: To explore how the minimal design of prayer spaces affects the users spiritual and sensory experience in Bahrain.

Research question: “How does minimalist design of prayer spaces enhance the spiritual experience of worshippers in Bahrain?”

Hypotheses:

- Designing a mosque using minimalistic design has been observed to generate a more peaceful environment than in using the highly detailed patterns and ornamentation.
- Factors including Spatiality, light, sounds, and textures and the alignment of the design with religious principles all alter the worshippers' state of spirituality in religious spaces.

1.2. Scope of research

The research will focus on the Contemporary minimalist interior architecture, lighting design, Materiality and alignment of design with Islamic principles in mosques of Bahrain. It will draw upon theories of phenomenology (e.g., Pallasmaa, Norberg-Schulz), and cognitive load theory (e.g., how reduced stimuli affect cognitive load and emotional state). Through literature review, case study analysis and online survey. The study will examine how layout, material simplicity and light can foster a deeper spiritual experience.

2. Literature review:

2.1. Contemporary Mosque Architecture

Throughout history, mosques have been the center of the Islamic society and due to its high importance, mosques have been made within walking distance from every residency to ensure convenience for all. (Kahera, 2007). Cultural identity and local tradition have been reflected in the design of mosques for years (Al-Bukhari, 2020). The contemporary mosque is a trend that appeared in Islamic society and has gotten a reputation after a large group of the Islamic world gained independence in the late 20th century (Alkhaled, 2019). Before the construction of the first mosque the prophet Muhammed (PBUH) and his followers prayed outdoors on journeys and in tents. The first mosque's rectangular form remained the most standard and traditional mosque architectural forms. The global spread of Islam led to an increased demand for Islamic buildings. While playing an important role in the lives of Muslims. Each mosque has its own character, which is the result of natural effects such as: local materials and the environment, followed by human-made effects such as Muslim immigrants, colonialism, financing, laws, culture, and traditions. Architectural designers are expected to maintain spiritual value and symbolic roots while involving modern ideas to provide combined styles (Mohammed, 2021). Different cultures have built different structures that accommodate the social, economic, cultural and ecological features of the region. The functional needs shape the building while the symbolic features affect the architecture (Karaman, 2017). Uzun (2010), states two main approaches of modern mosque designs; Classic and contemporary. The classic approach uses architectural forms of "Classic Era Ottoman Mosque architecture" whereas contemporary approach is a search for unique and new mosque architecture (Karaman, 2017). Kalaycı & Çelik (2014) have classified contemporary mosque design into vernacular approaches, modern regionalism, and revival styles, which have been criticized for their negative impact on spiritual and cultural continuity of Islam. For contemporary mosques, a creative combination of regional and universal characteristics was recommended instead.

Similarly mosque architecture in Bahrain has evolved over time, contemporary mosques in Bahrain exhibit a variety of designs and styles; some maintain strong references to Islamic architectural traditions as shown in Figure 4 the mosque Najat Abdullah Al-Sayed Hashim Al-Gharabali Mosque Built in 2019 , while others explore minimalist and hybrid forms that represent both local identity and global influences (Buhusain & Allani, 2024), as seen in Figure 3 , the Arcapita Mosque Built in 2017. (Buhusain & Allani, 2024)



Figure 1. (A) Image of Arcapita Mosque at Bahrain Bay (By Author), (B) Image of Najat Abdullah Al-Sayed Hashim Al-Gharabali Mosque in Um al Hassam (Source: Google Map).

2.2. Minimalism

Minimalism, usually misunderstood as just a reduction of aesthetics, is a deep philosophical design strategy rooted in clarity, order, and intentionality. Inspired by traditional Japanese design and later developed in Western architectural The core concept of minimalism overlaps with Japanese Zen philosophy since both emphasize and embrace simplicity and resourcefulness (Strickland, 2000, p. 48, 64)

thought by Tadao Ando and John Pawson, minimalism values emptiness as presence, allowing space to breathe and the user to focus inward.

Although minimalism was a trend that emerged in the 60's, it can be said that the first signals show up with the works of painters Kazimir Malevich and Piet Mondrian, the aesthetics of Marcel Duchamp and the minimalist designs of architect Mies van der Rohe. Minimalist lifestyle is the way to avoid ostentatious displays in everyday practices. Minimalist ideas emphasize understated design, produce and atmosphere, which reduce a strong sensitivity, display modest characteristics, and give plain and unadorned appearance (Jantarangsee and Krairit, 2022)

Minimalist living is a process that aims to determine what is necessary to remove excess from one's life. When the unnecessary elements are removed, it is possible to devote more time to crucial things that need to be focused on.

Minimalism helps minimize distraction and increase sacredness in religious architecture. John Pawson (2004) describes minimalist architecture as a "search for essence," which aligns with the Islamic principles of humility and modesty, as well as reflection. In this regard, light becomes a material forming rhythm, contrast, and stillness in space without the use of ornamentation. Scholars such as Bachelard (1994) also explore how intimate, sparse spaces evoke imagination and introspection. This principle is especially relevant in prayer spaces where inner silence is a spiritual goal.

The pursuit of simplicity and minimalism was predominantly felt in the 90's. With the technological advances, people were surrounded by the high-tech complex environments. Minimalist environments provide an escape for modern people who live in this complexity, crowded megapolises, reflections and lights. Lightness, delicacy, pure forms, new materials in composite structure, and objects and spaces colored by the change of light reflect the minimal understanding that emerged in this decade (Bedük,2004). Mosque designs also should be compatible with the changing social structure, opportunities and needs (Oral, 2006).

The concept of a minimalist lifestyle is in harmony with Islamic values. The Prophet Muhammad (peace be upon him) led a life of simplicity despite having access to wealth, teaching us that true richness lies in the heart, not in worldly possessions. The Prophet (PBUH) said: *"Wealth is not in having many possessions, but rather (true) wealth is feeling sufficiency in the soul"* (Sahih al-Bukhari, 6446). This hadith highlights that our worth and happiness do not come from external sources but from an internal state of contentment. Islam warns against excessive attachment to worldly goods, reminding the believers that the Dunya (this world) is temporary and that true success lies in preparing for the Hereafter. Allah (SWT) says: *"The life of this world is no more than the delusion of enjoyment"* (Surah Al-Imran 3:185)

By practicing Islamic minimalism, we shift our focus from material gain to spiritual enrichment, ensuring that our hearts remain attached to Allah rather than fleeting worldly pleasures.

2.3. Phenomenology and the experience of space

Architectural theorists such as Juhani Pallasmaa and Christian Norberg-Schulz emphasize phenomenology in architecture and advocate for a multi-sensory, experiential understanding of space. Pallasmaa (2005) critiques the dominance of the visuals in modern architecture and stresses the importance of hapticity, slowness, and silence in creating emotionally resonant spaces. He argues that architecture should not merely be seen but felt through the body, emphasizing "the tactility of light" and "the silence of materials." In the context of prayer spaces, this approach aligns with the sacred aim of enhancing presence and inwardness. Islamic tradition emphasizes the sacred role of light. The Qur'an refers to Allah as "Light upon Light" (An-Nur 24:35), and classical Islamic architecture uses filtered light (e.g., mashrabiya, domes, perforated screens) to evoke divine presence. When reinterpreted through minimalist design, this theological heritage can be preserved while adapting to modern trends.

Norberg-Schulz (1980), in his concept of "Genius Loci" (the spirit of place), argues that sacred architecture must support existential meaning by connecting users with a deeper sense of being. For him, light is not just a functional element but a metaphysical one as it shapes atmosphere, marks transitions between the mundane and sacred, and gives architecture its spiritual gravity.

Thus, Phenomenology highlights the value of simplicity, attention to materials, textures, sound and light in creating emotionally rich and spiritually engaged spaces, making it an important tool to interpret minimal mosque interiors.

2.4. Spirituality

Spirituality is a universal human phenomenon, rooted in the belief that human existence comprises both material and divine aspects, with the spiritual element holding primacy. It is considered a concept far higher than religion, encompassing broader human dimensions. In essence, spirituality is a core human quality that entails a commitment to values rooted in the spirit, guiding the individual toward perfection and closeness to a higher power (Mahdi Nejad, 2020). Spirituality is the recognition of an affective or cognitive belief that something of greater importance than the person exists, a constituent of human existence that lies beyond the limits of pure sensation, and that the most substantial of these components of this existence are of a divine nature (Al Khalifa, 2023).

Architecture and spirituality are deeply interrelated concepts that have fundamentally influenced human history and culture. Spirituality refers to a person's internal beliefs about life's meaning, purpose, and connection to the divine (Weathers, 2019). This intangible dimension is manifested in the design of sacred spaces such as mosques, churches, and temples (Sureshkumar, 2024). From a broad perspective, spirituality is a pursuit of transcendental reality, longing for something perceived as "beyond myself". It is the search for sacred elements, high consciousness, and meaning (Habibabad & Matracchi, 2021).

Spiritual architecture is less about religious symbols and more about facilitating transcendence. As theologian Louis Bouyer notes, "a sacred space is one where the ordinary is interrupted." The spatial quality of serenity, calmness, balance, and soft light can lead worshippers into a meditative state conducive to submission and spiritual awareness.

The deliberate link between the built environment and spiritual beliefs dates back to antiquity, as seen in the world's great religious monuments. Structures such as the Holy Kabbah, the Parthenon, and Notre-Dame Cathedral employ specific features to promote spiritual uplift and harmony. In the Islamic tradition, mosques are designed to evoke a profound sense of the divine through deliberate use of elements such as calligraphy, geometry, and the interplay of light and color, creating a serene atmosphere conducive to spiritual reflection. (Sureshkumar, 2024).

Psychological and Contemporary Impact:

Research confirms that spatial arrangements and architectural features significantly impact spiritual experiences. Architecture is recognized for its function in representing and ordering the world (Kent, 1993; Knott, 2005, as cited in Sureshkumar, 2024). The negative impact of poor environments on well-being underscores the importance of the

psychological effects generated by a building (Zhao, 2016). Also, architecture and design experts state that the physical, sensory, functional and socio-individual components all together affect spirituality of worshippers in mosque Architecture with sensory and physical components having the highest impact (Habibabad 2023).

Today, architects adopt a holistic approach in which symbolic motifs and sensory elements converge to evoke profound spiritual experiences, moving beyond aesthetics (Sureshkumar, 2024). This perspective seeks to reflect cultural heritage and promote wellness, exemplified by the Museum of Islamic Art's spiritual center in Qatar. The continued evolution of architecture underscores that physical design is a key factor in shaping the user's spiritual journey

2.5. Cognitive load Theory

Contemporary neuroscience offers evidence that visual clutter and overstimulation increase cognitive load, leading to stress, distraction, and fatigue (Levitin, 2014). Environments that reduce sensory input especially through visual simplicity, and controlled lighting can promote mental clarity and emotional regulation (Küller et al., 2006).

Studies on biophilic design and restorative environments (Ulrich, 1984; Kaplan & Kaplan, 1989) show that natural light and soft materials reduce heart rate and anxiety, enhancing well-being. These insights support the hypothesis that minimal mosque interiors with diffused natural light and proper use of materials may lower mental strain, aiding deeper states of spiritual focus and emotional calm.

Moreover, research show that simplified geometric shapes positively correlated with tranquility, achieving a sense of calm in mosques, while elements such as extensive glazing and extroverted features reduced tranquility in mosques, due to increased distractions (Ahmed & Fethi, 2024).

3. Materials and Methods

This research aims to investigate how minimalist mosque design in the kingdom of Bahrain affects the user experience and spirituality. And how this contemporary design trend aligns with the Islamic principles of humility to create balanced spaces with modern designs and deep spiritual meaning.

Mixed Methodology was used to achieve this aim by answering the research question:

How does minimalist design of prayer spaces enhance the spiritual experience of worshippers in Bahrain?

There are two main parts of this research: first, to explore the use of minimalist design trends in mosque architecture within the local context of Bahrain which is done by in-depth case study analysis of three representative minimalist mosques in the Kingdom of Bahrain, and second to investigate the effect of minimalist design on the worshippers spiritual experience , which is achieved through an online Questionnaire using Google forms with 224 responses analyzed using SPSS software for relative importance index and expert Interviews at Ministry of Justice, Islamic Affairs and Awqaf.

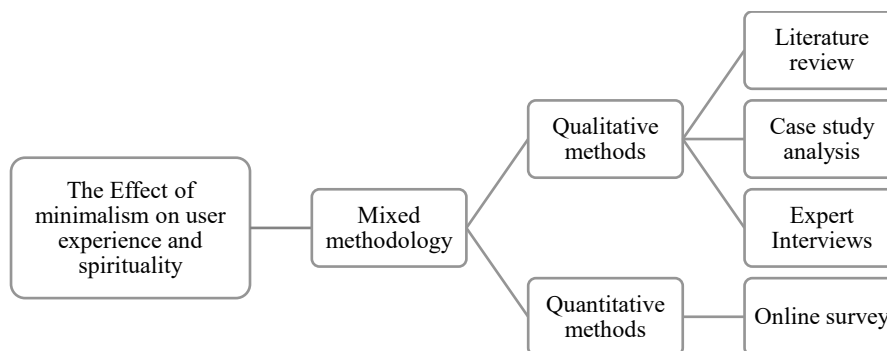


Figure 2. Structure of the Study (Developed by the Authors).

By triangulating data gathered from the literature review, case study analysis, online survey and expert interviews (figure 1), this research provides a comprehensive understanding of the efficacy of Bahraini minimalist mosques in creating balance between modern trends and the functional requirements of prayer spaces.

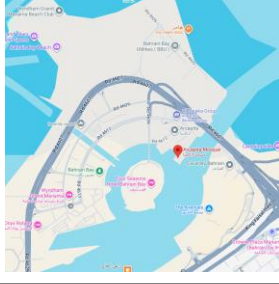
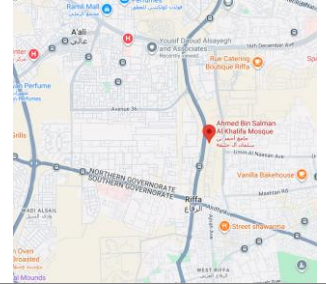
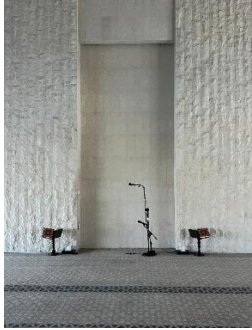
3.1. Literature Review

The literature review was conducted to establish a theoretical framework that serves as a foundation for this research. First, it investigates contemporary mosque design and minimalism to define the parameters of minimalism design, providing a baseline for the case study selection and analysis. Second it explores Islamic principles regarding simplicity and humility (Sahih al-Bukhari, 6446) to establish the cultural and religious legitimacy of minimalist design, proving that it is not just a western trend, but it aligns with Islamic values of humility and internal contentment. Third, the study incorporates architectural phenomenology (Pallasmaa, 2005; Norberg-Schulz, 1980) to justify how non- visual elements like light, texture and sounds affect Spirituality. Lastly, insights from Neuroscience and the cognitive load theory provide a scientific basis to test the hypothesis and justify that minimalist interior with reduction of visual clutter and cognitive load increase focus and improve spiritual experience. This comprehensive literature review serves as a foundation for the research.

3.2. Case Study Selection

This research Focuses on the contemporary minimalist mosque designs; hence the selection of case studies was narrowed to mosques constructed in the Kingdom of Bahrain during the last decade starting from the year 2015 till 2025. This period marks a shift in mosque architectural design, with the use of innovative and simplified design ideas. (Al khalifa, 2026)

Table 1. Selected Case studies.

Case Study	Arcapita Mosque	Adnan Abdul Malik Mosque	Ahmed Bin Salman Al khalifa Mosque
Year constructed	2010	2024	2022
Location	Bahrain Bay – Central Governorate	Bahrain Bay – Central Governorate	Riffa – Southern Governorate
Map Location			
Designed by	Skidmore, Owings and Merrill.	Yousif Daoud Alsayegh & Associates.	Mohammed Al Gharib Architects and Engineers.
Courtyard Presence	Outdoor Area with Infinity Pools and Landscaping.	Outdoor Space with Water elements and Plantations.	Courtyard with Water Element and Lattice work pathways.
Minaret	Single, rectangular minaret with glass panels and crescent	Spiral Minaret Located at center of mosque structure	Single, rectangular minaret with crescent on top
Mihrab	 Minimal, with textured wall	 Focal point with gold accent	 Wooden carved
Material Used	Stone Cladding and Glass windows.	Plastered outdoors, Marble Interior Flooring.	Marble and lattice work.
Ornaments, Calligraphy	Textured Finishes	Ornamented Mihrab	Mashrabiya – Lattice Design
Sound and Lighting Design	Water Sounds and Natural Lighting	Water and Natural Lighting	Filtered Lighting through Lattice windows
Image			

Map location Source: (Google maps, 2026) Mosque Images (by Author)

The mosques (Table 1) were chosen based on the following criteria:

- Architectural Style: Each mosque displays a different approach to achieve minimalist design.
- Minimalist Innovation: The mosques selection will focus on selecting designs which move away from heavy clutter and intricate ornamentation, with more simple and minimal designs.
- Functional Diversity: The mosques represent both high-traffic urban areas (Bahrain Bay) and community-centric residential neighborhoods (Riffa).
- Impact on Spiritual Experience: These examples provide insights into whether "visual silence" effectively fosters a deeper sense of spirituality by reducing external sensory distractions.

3.3. Online survey

An online survey was sent out using Google Forms to gain insights into the user's experience. The main objective of the survey is to move beyond the aesthetical preferences and capture the lived experiences of the users. The survey is designed to measure:

- a) Emotional regulation (Calmness): Asking users to rate how the reduction of visual clutter contributes to their sense of tranquility and reduction in mental stress.
- b) Cognitive Focus (khushu): investigating whether the minimalist interior helps in achieving deeper sense of focus and minimizes external distraction during prayer.

c) Users' acceptance and opinion on minimalist mosque designs.

The survey consists of demographic questions along with 5-point Likert scale questions categorized into Physical Components, Sensory Components and Functional Components to assess user spiritual experience (ranging from 1= strongly Disagree to 5 = Strongly Agree). This analysis allows us to quantify user experiences for subjective into measurable data. The survey target group were the Muslim population of the kingdom of Bahrain. The questionnaire was distributed to the through social media, linked in, WhatsApp and email.

4. Results

4.1 Case Studies Analysis

4.1.1. Adnan Abdul Malik Mosque

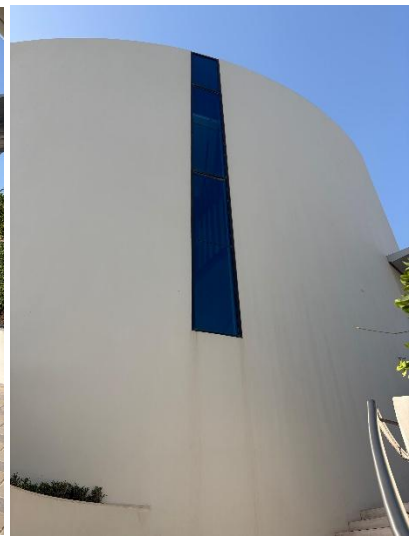
Adnan Abdul Malik Mosque shows a major shift towards contemporary, abstract and minimalist architecture. It was inaugurated in 2024 and situated in Bahrain Bay covering an area of 690 sqm and can hold 150 men and 48 women (Awqaf Navigator, 2026). The structure of the mosque is characterized by its fluid, curvilinear white massing and a spiral-inspired minaret that integrates seamlessly into the main volume (Figure a), it resembles the spiral Malwiya minaret. Spanning a modern architectural language, it prioritizes clean lines and a monochromatic palette. The building is designed based on a subtractive architectural methodology, in which light and shadow are the significant decorative components. The entrance of the mosque starts with a landscaped ramp and staircase (figure b), which physically elevates the worshipper from the street level up to the spiritual sanctuary and prepares the body to transition from secular space into the holy.



(a)



(b)



(c)



(d)



(e)



(f)

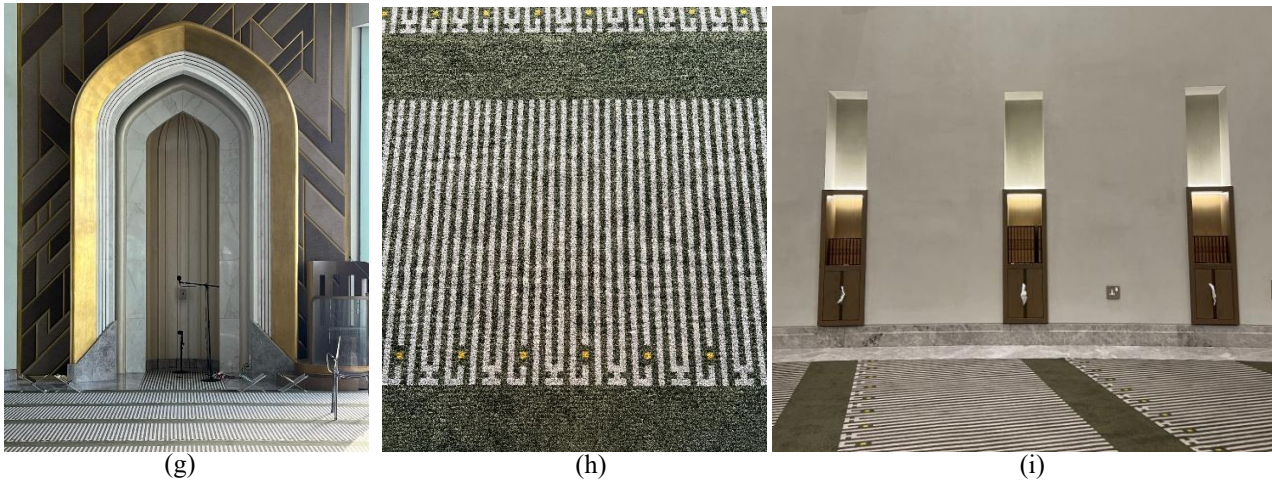


Figure 3. (a)(b)(c) Exterior Images of Adnan Abdul Malik Mosque (by Author), (d) Entrance lobby of mosque (by Author), (e) Men's prayer hall of Mosque (by Author) (f) Glazed wall in Prayer hall of mosque (Source : Sunni Waqf Directory), (g) Mihrab of mosque (by Author), (h) Floor Carpet of the prayer hall (by Author), (i) wall shelves in prayer hall (source : Google Maps).

Table 2. Analysis of bodily experiences in Mosque 1.

Mosque 1		Bodily experience Factors						
Architectural Space	Finishing Material	Light	Colour	Ornaments	Audio	Smell	Touch	Taste
Courtyard	Flooring	✓	✓	-	✓	✓	✓	-
	Walls	✓	✓	-	✓	-	✓	-
	Furniture	✓	✓	✓	✓	✓	-	-
	Ceiling	-	-	-	-	-	-	-
Ablution Area	Flooring	-	✓	-	✓	-	✓	-
	Walls	✓	✓	✓	-	-	✓	-
	Furniture	✗	✓	-	✓	-	✓	✓
	Ceiling	✓	-	-	-	-	-	-
Prayer Hall (Male)	Flooring	✓	✓	✓	✗	✗	✓	-
	Walls	✓	✓	✓	✓	-	✓	-
	Furniture	-	✗	-	-	-	✓	-
	Ceiling	✓	-	✗	✓	-	-	-
Prayer Hall (Female)	Flooring	✗	✓	✓	✗	✗	✓	-
	Walls	✓	✓	✓	✓	-	✓	-
	Furniture	-	✗	-	-	-	✓	-
	Ceiling	✓	-	✗	✓	-	-	-

Legend

✓ Utilized

✗ Absent or Unutilized

- Not Applicable

A. Architectural Spaces:

- Transition (Entrance): The entrance is characterized by transparent glass walls and smooth metal construction. The outside has a curved ramp and greenery (Figure b), which adds a natural component and a sense of "ascending."
- The Prayer Hall: The interior is spacious, brightly lit volume. The walls are curved, unlike the strict rectangularity of the traditional halls, forming a womb-like enclosure, which promotes the subjective sense of safety and tranquility. The hall has a huge glass wall with vertical fins (Figure f) which form a rhythmic play of light over the carpet.
- Verticality and Light: Narrow, vertical windows (Figure c) and recessed light niches (Figure i) highlight a vertical axis, which helps move the eye upwards. This helps to create a sacred mood with a visual association to the unseen source of light.
- Acoustics: The large, carpeted floor and smooth, plastered walls are meant to reduce harsh reverberation to ensure the sound of the prayer and the Quran recitation is clear.

B. Finishing Materials:

- Facade and Walls: The mosque uses a smooth white plaster and stone cladding which offer a neutral tactile experience. The walls on the inside are not very adorned to prevent visual distraction (Figure e).
- Mihrab: The Qibla wall makes a focal point, featuring a modern interpretation of the arch, with metallic gold and marble (Figure g), using geometric patterns that add a touch of luxury and gives clear orientation for the worshipper.
- Flooring: The carpet has a special rhythmic pattern (Figure h) which serves as a visual cue to the rows of worshippers, while its texture adds a soft, sensory layer to the bodily experience of prostration.

- Furniture and Storage Wooden niches for the Quran (Figure i) with hidden backlighting, create a blend of functionality and minimal aesthetics.

C. Architectural Patterns and Spirituality:

- The mosque uses extensive large scale Glazed walls (Figure d). This helps in adding lightness to the mass, along with an airy feel which can be spiritually uplifting.
- The incorporation of in-built planters and application of natural light via the glass fins (Figure f) helps to create connection between the built environment and the natural world, promoting sense of spirituality.

4.1.2. Arcapita Mosque

The Arcapita Mosque, located in the Bahrain Bay development, represents a contemporary departure from traditional mosque typology. Completed in 2010 as a part of the Arcapita corporate headquarters complex and opened in 2017 has a small but vertically dominant footprint and can house about 100 men and 30 women with an area of 750 (Arcapita Mosque – Mosqpedia, 2017). Arcapita mosque is defined by its monolithic cubic structure and a separate and sculptural minaret that redefines Islamic geometry in the light of a minimalistic and modern perspective.

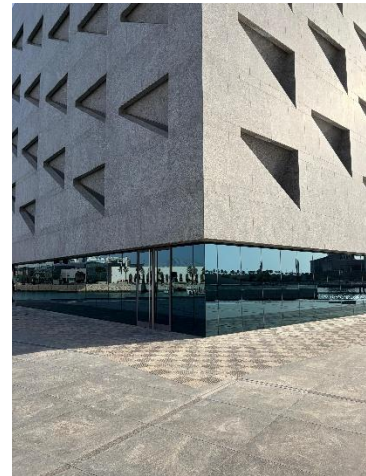
The design of the mosque is a conversation between lightness and solidity. The prayer halls are made of a concrete cube sitting on a glass-walled ground floor, giving the illusion of a floating structure. The glazed walls help create a connection between the interior space with the outer landscape.



(j)



(k)



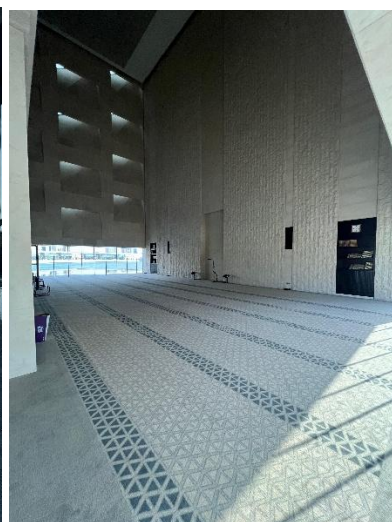
(l)



(m)



(n)



(o)

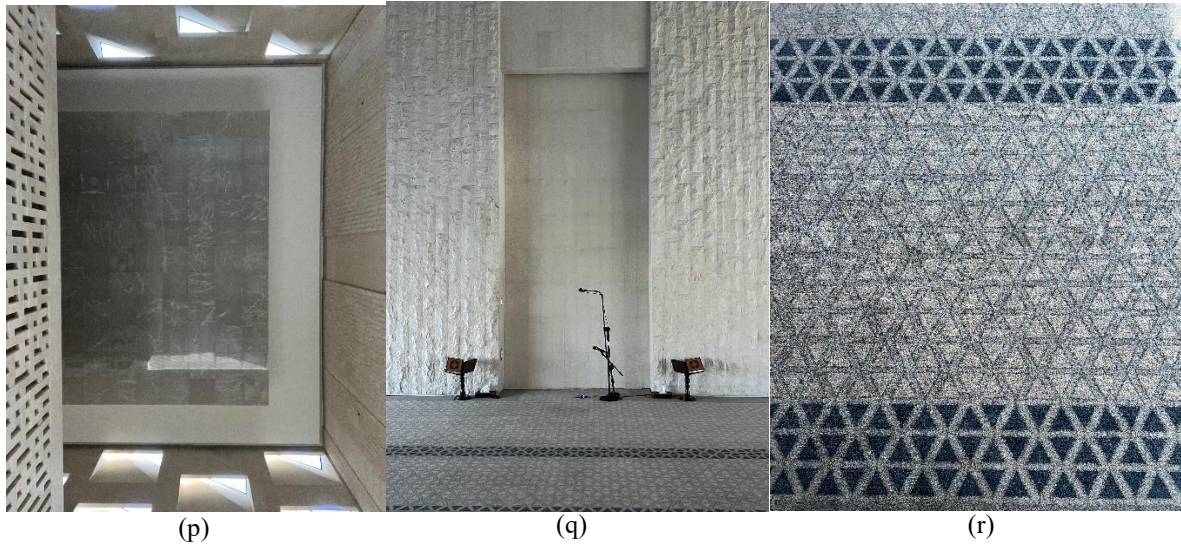


Figure 4. (j)(l) Exterior Image of Arcapita Mosque, (k) Pathway leading to mosque, (m) Minaret of the mosque, (n) Infinity pool in exterior area of mosque, (o) Men's prayer hall, (p) Ceiling of the mosque, (q) Mihrab of mosque, (r) Floor Carpet of the prayer hall (by Author).

Table 3. Analysis of bodily experiences in Mosque 2.

Mosque 1		Bodily experience Factors						
Architectural Space	Finishing Material	Light	Colour	Ornaments	Audio	Smell	Touch	Taste
Courtyard	Flooring	✓	✓	✓	✓	✓	✓	-
	Walls	✓	✓	✓	-	-	✓	-
	Furniture	✗	-	✓	-	✓	-	-
	Ceiling	-	-	-	-	-	-	-
Ablution Area	Flooring	-	✓	✓	✓	-	✓	-
	Walls	✓	✓	✗	-	-	✓	-
	Furniture	-	✓	✗	✓	-	✓	✓
	Ceiling	✓	✗	✗	-	-	-	-
Prayer Hall (Male)	Flooring	✓	✓	✓	✗	✗	✓	-
	Walls	✓	✓	✓	✓	-	✓	-
	Furniture	-	-	-	-	-	✓	-
	Ceiling	✓	✗	✗	✓	-	-	-
Prayer Hall (Female)	Flooring	✗	✓	✓	✗	✗	✓	-
	Walls	✓	✓	✓	✓	-	✓	-
	Furniture	-	-	-	-	-	✓	-
	Ceiling	✓	✗	✗	✓	-	-	-

Legend

✓ Utilized

✗ Absent or Unutilized

- Not Applicable

A. Architectural Spaces:

- The Entrance and Transition: The pathway leading to the mosque is marked by a landscaped plaza. There is an immediate transition from the exterior to the interior, through a glass walled ground floor which consists of the main prayer hall and the ablution area for men. The transparency of the glass walls enhances spatial simplicity and accessibility.
- The Prayer Hall (Male): The main prayer hall is housed in the main cube structure of the building. The inside is characterized by a double height volume that promotes a vertical linkage to the divine. Not with conventional ornamentation, but with a simple mihrab niche cut into the stone cladding.
- The Female Prayer Hall: The female section, located in an upper level, has a visual and auditory connection to the main hall. Nonetheless, like Adnan Abdul Malik Mosque, it centers on the acoustic clarity of the modern sound-damping materials and the integrated audio systems.
- Ablution Area: The ablution spaces are designed with the use of high-end natural stone and smooth, modern fixtures. It is an experience of clinical cleanliness and of modern ritual, where the sound of running water against stone provides an elevated sensory experience.

B. Finishing Materials:

- Exterior: The mosque is covered with stone, a natural material offering a tactile and earthly feel without losing a clean cut and modern look. The rhythmic triangular openings in the stone allow controlled daylight penetration in the hall.
- Lighting and Atmosphere: During the daytime filtered light enters the halls and pathways creating a play of shadows on the walls and flooring, mimicking the effect of the mashrabiya by using a modern subtractive

method. At night the mosque turns into a lantern, the interior light shines through the base in glass and the holes, emphasizing the concept of the mosque as a spiritual lighthouse.

- **Acoustics and Touch:** The interior employs the use of plush and neutral colored carpeting which gives the worshipper a soft touch feel. There is no serious ornamentation, which guarantees minimum visual distraction and facilitates a meditative state, not by addition but by the absence of decoration.

C. Architectural Design and Spirituality:

- **Materials:** The abundance of floor-to-ceiling glass, structural steel and stone that has been cut precisely reflect the use of high-level modern technologies in order to achieve a timeless spiritual atmosphere.
- **Spatial Simplicity:** Spirituality is enhanced by the elimination of visual noise. The cubic form is a representation of the Kaaba, and it brings an instant psychological connection to the epicenter of the Islamic world.
- **Natural Elements:** In contrast to Adnan Abdul Malik Mosque, the Arcapita Mosque makes use of its geographical location, the closeness to sea as a natural element. Access to the water by glass base is a form of visual access to the water that aids in linking the worshipper to the environment and the sky.

4.1.3. Ahmed Bin Salman Al khalifa Mosque

The Ahmed Bin Salman Al Khalifa is one of the best examples of the modernist abstraction in the architecture of Bahraini mosques. The mosque opened in 2022, in Riffa, Southern Governorate. The mosque structure is characterized by a main, cubic volume covered by textured stone which is the spiritual core and is framed by the lower profile perimeter structure (Figure s). The minaret is rethought as a narrow, rectangular monolith with a faint crescent cutout, with an accent on breaking the ornamental tradition and turning to pure geometric constructions.

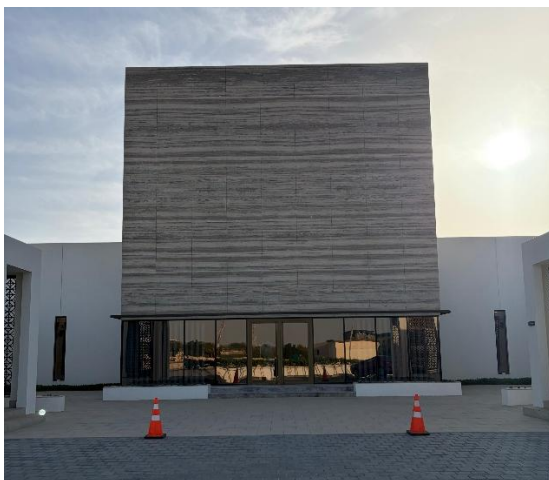
The architectural language is concerned with light and shadow and the effect of transitional spaces. A long colonnaded outdoor walkway (Figure v) highlights the hierarchy of movement, and acts as a sensory cleansing zone separating the user of the outside urban world before they enter the prayer hall.



(s)



(t)



(u)



(v)



(w)

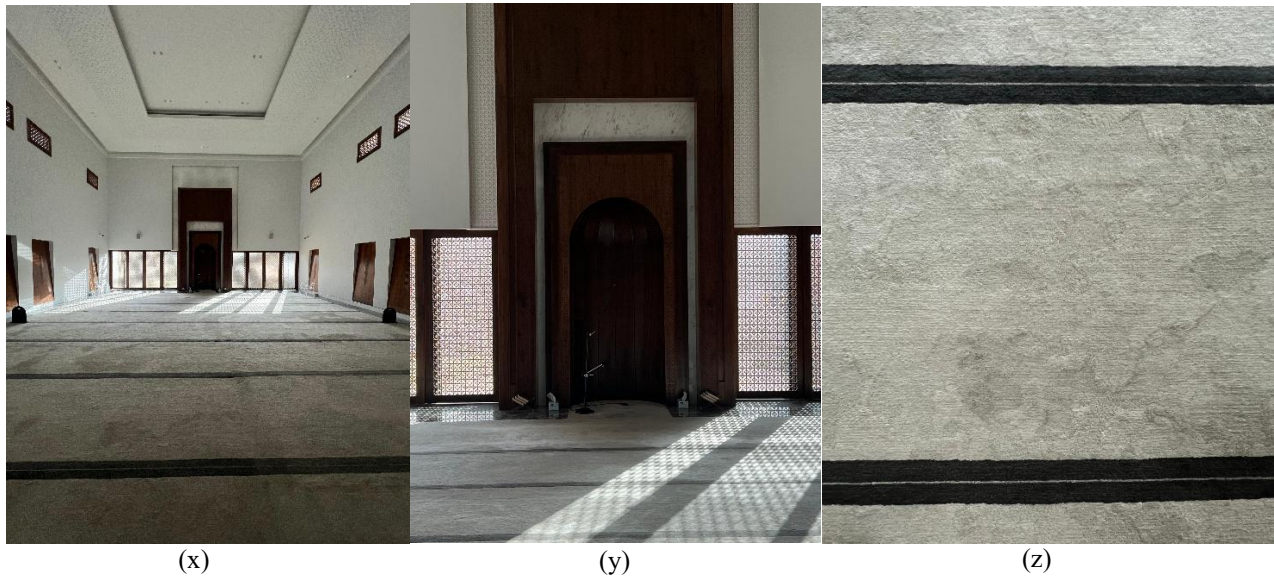


Figure 5. (s)(t)(u) Exterior Images of Mosque, (v) Pathway leading to ablution area, (w) Entrance lobby of the mosque, (x) Men's prayer hall, (y) Mihrab of mosque, (z) Floor Carpet of the prayer hall (by Author).

Table 4. Analysis of bodily experiences in Mosque 3.

Mosque 1		Bodily experience Factors						
Architectural Space	Finishing Material	Light	Colour	Ornaments	Audio	Smell	Touch	Taste
Courtyard	Flooring	✓	✓	✗	✓	✓	✓	-
	Walls	✓	✓	✓	-	-	✓	-
	Furniture	-	✓	-	-	-	-	-
	Ceiling	-	-	-	-	-	-	-
Ablution Area	Flooring	-	✓	-	✓	-	✓	-
	Walls	✓	✓	✓	-	-	✓	-
	Furniture	✗	✓	-	✓	-	✓	✓
	Ceiling	✓	-	✗	-	-	-	-
Prayer Hall (Male)	Flooring	✓	✓	✗	-	-	✓	-
	Walls	✓	✓	✓	✓	-	✓	-
	Furniture	✗	✗	-	-	-	✓	-
	Ceiling	✓	✗	✗	✓	-	-	-
Prayer Hall (Female)	Flooring	✗	✓	✗	-	-	✓	-
	Walls	✓	✓	✓	✓	-	✓	-
	Furniture	✗	✗	✗	-	-	✓	-
	Ceiling	✓	✗	✗	✓	-	-	-

Legend

✓ Utilized

✗ Absent or Unutilized

- Not Applicable

A. Architectural Spaces:

- The Transition (Colonnade and Liwan): The passageway to the ablution area and prayer hall makes use of rhythmic columns and screens (Figure v), bringing about a repetitive shadow effect that appeals to the senses of pace and time. This minimalistic theme is extended to the entrance lobby (Figure w), through a floating partition with calligraphic inscriptions to guide the visitor.
- The Prayer Hall: The hall is large with a high ceiling with a special emphasis on the simplicity of space. It is lit by light that enters through the low-level glass apertures with wooden screen creating an interplay of light and shadow on the interior walls and floor along with recessed ceiling lights (Figure x). This gives sacred concentration to the lower plane on which the worshippers are congregated, and the upper bulk is ethereal and free.
- The Mihrab: The wall (Qibla) has a heavily recessed multi-layered wooden Mihrab (Figure y). The material contrast of the use of wood in an otherwise stone and plaster setting provides a cozy focus point, which attracts the eye of the worshiper into the spiritual focus point instead of over-adornment.
- Acoustics: The open nature of the hall with its large space and the rich use of sound-absorbing carpets gives the impression of a hush. The acoustic effect is a resonant, but clear sound, which promotes the subjective impression of calmness.

B. Finishing Materials:

- Exterior Stone Cladding: The primary cube is horizontally stone banded (Figure u), which offers a sense of grounded permanence.

- **Interior Palette:** The interior has a neutral color scheme of white plaster and light gray stone. This visual neutrality is supposed to be as least distracting as possible and as a result, the attention of the user is drawn inward.
- **Wood and Metal:** Huge wooden doors, and the richly carved wooden Mihrab (Figure y) give a home-like feel and touch. The arcades in the exterior have modern metal screens which are a replication of the traditional mashrabiya, these filter light combining traditional motifs with modern fabrication techniques.
- **Flooring:** The carpet is plain light grey with black lines for the prayer rows (Sufuf) as shown in figure z. It is thick, dense and soft in texture, adding to the sensory experience of the users during prayer.

C. Architectural Patterns and Spirituality:

- **Modern Materials:** The mosque exhibits a high degree of use of precisely cut stone, glazing on a large scale, and inbuilt lighting systems. A monumental but intimate ambiance is accomplished with these technologies.
- **Spatial Simplicity:** The mosque has been reduced to basics (Spatial Simplicity) by removing the customary dome and colorful tiling and by using volume and light to foster spirituality, reflecting a contemporary Bahraini identity that values both heritage and progress.

4.2. Survey Analysis

The survey data was analysed using IBM SPSS Statistics software, the software was used to generate tables, descriptive data, reliability statistics, and Correlation analysis of collected data.

4.2.1 Demographics

This section consists of results of survey collected from 224 respondents, which consisted of 54% male and 46% female respondents as shown in figure 6. The largest number of respondents were between the ages of 20 – 30 making up almost 63% of the responses, followed by the age group 30 – 40 making up almost 17% of responses (Figure 7). While 157 (70%) of respondents live very close to mosques (Figure 8) and lastly, mosque visit frequency shows almost 32% of respondents visit daily, while 19.6% visit once a week and 48% visit occasionally, which can account for the female respondents (Figure 9).

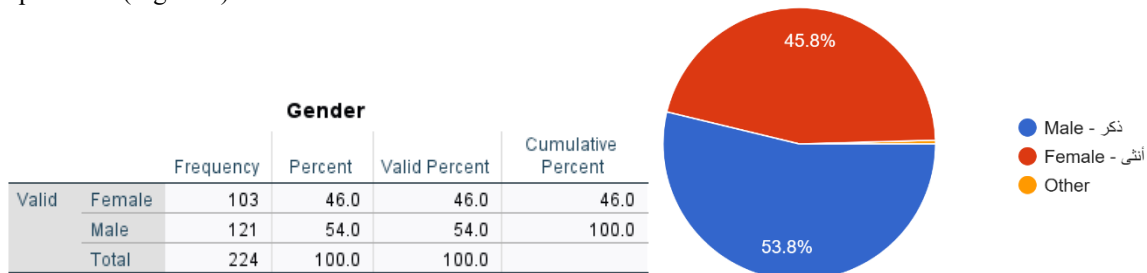


Figure 6. Gender Frequency of respondents
(Source: Generated by Author using IBM SPSS & Google forms).

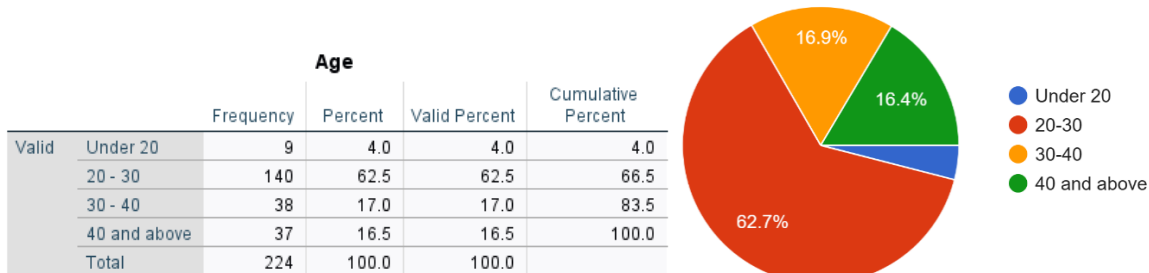


Figure 7. Age Groups Frequency of respondents
(Source: Generated by Author using IBM SPSS & Google forms).

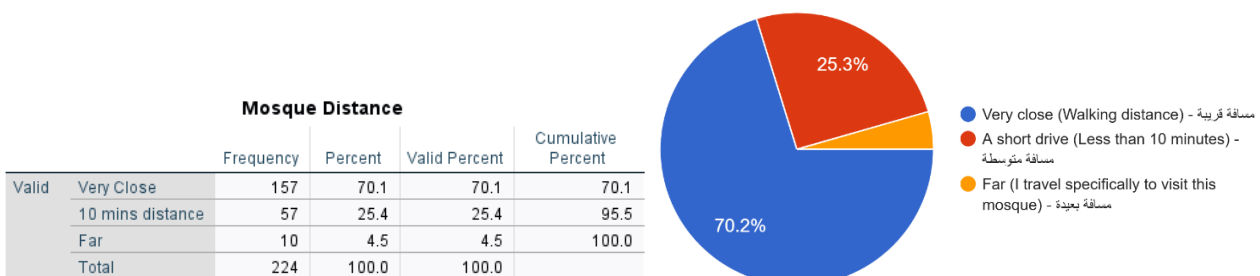


Figure 8. Frequency of Mosque distance from respondents' residence
(Source: Generated by Author using IBM SPSS & Google forms).

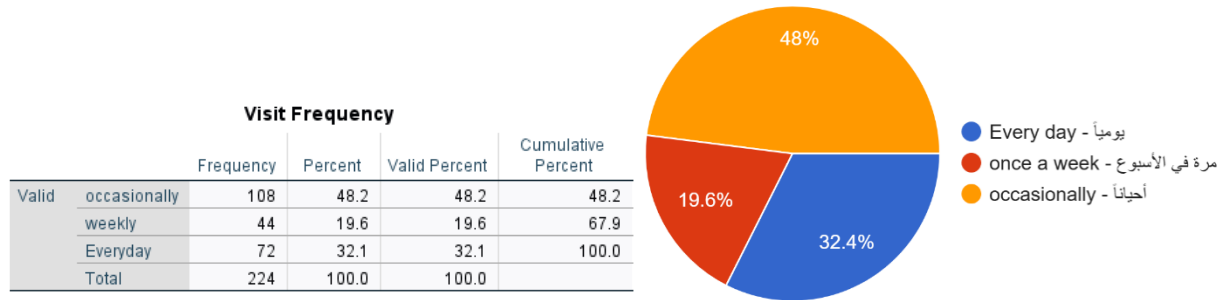


Figure 9. Respondents Frequency of Visit to Mosque
(Source: Generated by Author using IBM SPSS & Google forms).

The factors affecting user spirituality according to experts are, Physical components, sensory components, functional components and socio individual components (Habibabad 2023) hence these categorizations were used to analyse data for this study. The socio individual factors were covered in the demographics section of the study, while 15 factors categorized into physical, sensory and functional components were used in the Likert scale questionnaire. Cronbach's alpha was used to check the reliability of the questionnaire using the IBM SPSS software. Table 8 shows the reliability coefficients (Cronbach's alpha) for all factors. The values obtained are above 0.7 which shows that reliability coefficient of the questionnaire is high and acceptable for statistical analysis. The values are statistically acceptable if they are greater than or equal to 0.60 (Baper, 2024).

Table 5. Statistical reliability of questionnaire using IBM SPSS.

Factor type	No. of items	Cronbach's Alpha
Physical Factors - Exterior, Interior, Lines, Calligraphy, Mihrab	6	.840
Sensory Factors - Sunlight, Lighting, Sound clarity, Scent, Materials.	6	.910
Functional Factors – Open Halls, Carpet patterns, Temperature.	3	.729

Factors affecting user experience and spirituality were ranked by RII (Relative importance index) as shown in table 9.

Table 6. Relative Importance index (RII) table for factors effecting user Spirituality in Mosques Using IBM SPSS and Excel.

no	Factors	RII- Relative Index %	Rank
1- Physical Factors			
6	Minimalist mosque design enhances spiritual experience	75.71	8
5	Mihrab design significantly influences engagement during prayer.	74.38	10
2	Simple interior design improves concentration.	73.66	11
1	Simple mosque exteriors facilitate mental preparation for prayer.	70.63	12
3	Simple forms and clean lines enhance mosque tranquility.	65.09	13
4	Excessive wall calligraphy distracts focus during prayer.	59.73	14
	Average	69.87	
2- Sensory Factors			
1	Clear, balanced sound from the imam improves prayer engagement.	87.23	1
2	Quiet mosque environments improve concentration.	86.88	2
3	Pleasant scents enhance comfort and focus during prayer.	84.55	3
4	Sunlight in mosques enhances the sense of spirituality.	80.00	5
5	Natural materials enhance the mosque's spiritual atmosphere.	76.61	6
6	Overall mosque lighting design affects focus during prayer.	75.71	8
	Average	81.83	
3- Functional Factors			
1	Comfortable indoor temperatures maintain focus during worship.	84.20	4
2	Simple carpet patterns maintain concentration during prayer.	76.07	7
3	Column-free prayer halls improve unity among worshippers.	74.46	9
	Average	78.24	

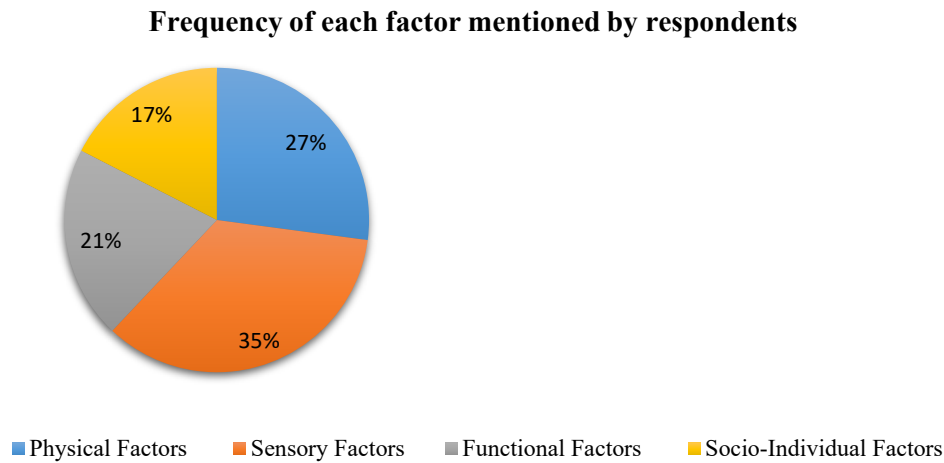


Figure 10. Pie chart showing frequency of factors from each category (Developed by Author).

Table 7. Feedback from respondents on what can help improve their experience and spirituality in mosques of Bahrain.

Category	Sub-Factor	Description
Physical Factors	Carpet Quality	Focus on thickness, softness, and smoothness to ensure comfort during long standing and prostration.
	Seating & Ergonomics	Need for sturdy, comfortable, and dignified seating instead of cheap plastic chairs, especially for the elderly and those with health issues.
	Building Volume	Preference for high ceilings (double height) and large spaces to enhance richness and physical comfort.
	Material Selection	Use of natural materials like stone and wood; maintaining dry floors in wudu and restroom areas.
Sensory Factors	Lighting	Preference for natural sunlight and warm, calm lighting; high-intensity white LEDs are distracting.
	Acoustics & Sound	Demand for balanced sound systems that avoid loud volumes, echoes, and microphone distortion.
	Thermal Comfort	Need for consistent and smart ventilation to prevent uneven cooling.
	Olfactory & Visuals	Use of incense (bakhour); preference for minimal eye-level design with more elaborate elements at higher levels.
Functional Factors	Circulation & Flow	Wider gates and side pathways to prevent disruption of those still praying.
	Transitional Zones	Inclusion of courtyards, lobbies, or buffer zones to prepare worshippers mentally before prayer.
	Universal Accessibility	Integration of elevators and ramps within the design for inclusive access.
	Ablution/Restroom Layout	The ablution areas should be close to the prayer halls, with separate toilets section to maintain cleanliness and purity.
Socio-Individual Factors	Inclusivity for Women	Creating women's prayer halls which have audio- visual connection to the main prayer hall to create a better spiritual space for women.
	Child Management	Provision of soundproof kids' areas or nurseries to minimize disruption.
	Etiquette & Education	Systems to remind worshippers to silence phones; inclusion of educational spaces.
	Community Integration	Creating multipurpose spaces for study and social interaction, making the mosque a community hub.

The feedback from respondents on what can help improve their experience and spirituality in mosques of Bahrain (Table 7) shows that the user experience in mosques is a multilayered phenomenon with physical, sensory, functional and socio-individual factors among which the sensory and physical factors (103 mentions) as shown in figure 10 are the most effective factors for spiritual experience of users. The main design challenge lies in the proper management of the microenvironment, inconsistencies in thermal regulation, acoustic performance, and lighting quality which have a direct impact on the worshipper's concentration and level of spirituality.

In addition, the functional and socio-individual factors affect the success of the mosque in the long run as a community hub. Although they are not mentioned as often, these themes point to pressing systemic requirements, including how women can be integrated spatially and how auditory distractions can be reduced by soundproof spaces. Finally, the findings indicate that the design of mosques in Bahrain should no longer be confined to aesthetic beauty but instead adopt the more human approach, where all aspects of design, such as the smell of the hall or the flow of the entrance are aimed at reducing cognitive load and increasing the spiritual connective of the worshipper.

4.3. Expert Interview Analysis: Ministry of Justice, Islamic Affairs and Awqaf

To confirm the results of the survey and to fill the gap between academic research and practical application, an interview was conducted with Eng. Abdallah Rashid, Head of Engineering and Maintenance at the Ministry of Awqaf.

A. Reclaiming Bahraini Vernacular Mosque Architectural design

A primary takeaway from the interview is that the Ministry actively strives to revive the old Bahraini values of architecture. Eng. Rashid describes as minimalist in nature. He noted:

- There is a strategic move towards avoiding what may be excessively ornamented which is the case with imported Turkish or Persian, or high-baroque styles.
- Authentic Bahraini Mosque architecture is defined by its clean lines and geometric purity rather than domes. The single "Manara" (minaret) and the "Liwan" (arcade/open court) are the primary traditional elements being revived to define local identity while also indirectly promoting minimalism.

B. Sensory Engineering & Environmental Comfort

The interview emphasized that the Sensory Factors that were most highly rated in the user survey (81.83% RII) are already being considered in terms of specific technical standards:

- Natural Light and Ventilation: The Ministry does not apply large heat-gaining windows, but on the contrary, the windows have been positioned only 20cm off the ground level to allow a maximum amount of airflow and light to pass through the prayer space.
- Indirect Light To promote spirituality, without heat or glare, light is provided indirectly by using skylights and geometric wall niches, which creates a shade and shadow effect.
- Green Technology: New mosques will be identified as Green Buildings whereby the perimeter greenery uses treated greywater, which has a dual advantage of both ecological sustainability and passive cooling of the micro-environment of the prayer hall.

C. Functional Evolution: The Mosque as a Community Center

In agreement with the Socio-Individual factors that influence spirituality, Eng. Rashid affirmed that the mosque is now considered as a multi-purpose community center by the ministry.

- New locations like those found in Salman city are planned with built-in Majlis area, stores and even children's nurseries.
- Perimeter walkways in and around new mosques help to promote physical activity. Women, and elderly spatial studies have become a required part of the pre-design stage.

D. Impact on Focus: The Plain Carpet Strategy

More importantly, the Engineer confirmed that the Ministry has realized the distracting aspect of intricate designs. The replacement of carpets with plain and neutral ones in new projects is clear in both the traditional and new contemporary projects. This further confirms the information presented in the survey, where basic patterns in carpets were cited among the leading needs in ensuring focus during prayer.

5. Discussions

The findings of this research show a critical overlap of modern architectural trends, user needs and authoritative changes in the kingdom of Bahrain, which means that shift towards modern and traditional minimalism doesn't only bring an aesthetic change but also a practical solution for creating a distraction free space. The quantitative RII analysis establishes the sensory factors as the main determinant of spirituality with the sound clarity (87.23%) and quietness (86.88%) being the top priorities of worshipers. This information is directly related to the subtractive philosophy of the Adnan Abdul Malik Mosque where the careful elimination of the traditional visual noise lets the sound and light of the environment to prevail. The expert interview with Eng also validates these findings. Abdallah Rashid, who affirmed that the Ministry of Awqaf is actively on the path towards technical standardization to accommodate these requirements, especially by utilizing plain, neutral carpets that will aid in the improvement of user's spiritual experience and reduce the cognitive load. Another important theme that has come out of this study is the redefinition of Bahraini Minimalism. Although the Arcapita and Ahmed Bin Salman Al Khalifa mosques case studies can be considered as a form of modernist abstraction, the ministerial approach shows that the true Bahraini vernacular is minimalistic. The lack of domes in the past and the use of geometrical purity in the traditional Bahraini mosques indicate that contemporary minimalism is not about going away but returning to local influences. This Authentic Minimalism is a bridge between the aesthetic values of the younger generation, who constituted 63% of the surveyed people, and the traditional identity that is dictated by the State. Moreover, the study indicates a change in the role of the mosque as a mere worship place into a multi-purpose community center. Transition zones like the colonnaded walks in the Ahmed Bin Salman Mosque are sensory cleansing zones, which mentally prepare the user before prayer. The fact that the Ministry is already shifting towards incorporating multipurpose spaces into the Mosques is even more evidence that the future of Bahraini mosque architecture is based on a human-centric design, which focuses on the holistic well-being of the worshipper. Finally, the design of a mosque is successful by its capacity to enhance the spiritual experience through the planning of the micro-environment of light, sound and temperature to ensure that the space supports the spiritual journey of the community it serves.

5.1. Strengths and Limitations of Research

5.1.1. Strengths

- Contemporary Context: The study addresses a major gap by emphasizing the concept of the Minimalist Shift in Bahraini mosque architecture, offering a new approach to the topic compared to previous studies.
- Mixed-Method Rigor: Relative Importance Index (RII), interview with authorities and case studies in detail can give a complete picture of the subjective needs of worshipers as well as the objective spatial solutions of the architects.
- High Engagement: The large number of respondents (224) and the presence of open-ended qualitative feedback, the data set provide a rich and nuanced data.
- Professional Validation & Impact: One of the key strengths of the study is that the author directly communicated with the Head Engineer of the Ministry of Justice, Islamic Affairs, and Awqaf, Eng Abdallah Rashid. The

researcher could balance the user identified problems like acoustic distortion, lighting and intricate carpet patterns with the existing ministerial projects through a professional semi structured open ended interview. The Head Engineer confirmed that the Ministry is technically standardizing these sensory factors and pointed out that such information as obtained in this research would be considered in the planning of future designs, which gave the study a great practical and policy level of practical use.

5.1.2. Limitations

- Subjectivity of Spirituality: While the RII helps rank the factors affecting the user spiritual experience in the mosque, the spiritual experience is highly individual and personalized, and it is hard to generalize the results.
- Demographic Bias: The proportion of the respondents that were between the age of 20 and 30 (63 %) is likely to bias the results towards more modernism and minimalism than older generations who might be inclined towards more traditional architectural styles.

5.2. Implications of study on professional practice in Kingdom of Bahrain

The findings of this study can be applied to architects, interior designers, and the Ministry of Justice, Islamic Affairs and Awqaf in Bahrain:

- It is important that the designers focus on the functional and user experience of the spaces and not just the aesthetics and physical structure. This includes use of proper acoustic systems to remove echoes and smart ventilation and air conditioning to have better thermal control in space.
- Professionals should make sure that visual noise and excessive ornamentation is decreased, while all the functional requirements and user needs are addressed and the main essence of the mosque is preserved.

6. Conclusions

This research investigates how contemporary minimalism influence the spiritual experience in Bahraini Mosques. Through qualitative case studies of the Adnan Abdul Malik, Arcapita and Ahmed Bin Salman Mosques, supported with qualitative data from a survey of 224 participants and interview with the Authorities, the study concludes that minimalist design can help foster spirituality by decreasing cognitive load. The Relative importance index (RII) shows that sound clarity (87.23%), and no background noises (86.88%), and simple carpets with minimal designs are the most essential factors for users focus and spirituality in mosques. These findings confirm the hypothesis that minimal design creates more relaxed environment. Most importantly, this research shows that the shift towards minimalist mosque architecture is not foreign trend or western influence, but it is closely related to the traditional Bahraini mosque architecture, with its natural simplicity and favor of purity. Finally, the study confirms that the functional micro-environment should be engineered to make sure that modern architecture of the mosque should focus on the quality of the atmosphere to help the modern community connect with God more profoundly.

6.1. Future Directions

To broaden the scope, future studies may use this methodology in a comparative study on both traditional restorative mosques and modernist mosques to observe the effects of architectural development on the behavior of the community over time. Moreover, the contribution of Sustainable and Biophilic design (e.g., plantations and water features) can be explored as a sub-factor in improving the tranquility and spiritual experience in religious spaces.

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Conflicts of Interest

The Authors declared that there is no conflict of interest.

Data Availability Statement

The survey Questionnaire and Interview Data can be obtained at request.

Credit Author Statement

Conceptualization of study: Z.M.; drafted the manuscript: Z.M.; Methodology: Z.M.; Analyzed data: Z.M.; Provided results and Discussion: Z.M.; Supervised the study: H.K.; Reviewed and edited the final manuscript: H.K.; Resources: H.K.; All authors read and approved the final version of the manuscript.

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