

The Architecture of Sacred Spaces: Exploring How form, Light and Materiality Shape Spiritual Experience in Catholic Churches in Ibadan, Nigeria

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ABSTRACT

This chapter examines the relationship between architectural design and spiritual experience in Catholic churches within Ibadan, Nigeria, with a focus on how spatial configuration, natural lighting, and materiality influence worshippers' perception of sacredness. Using a quantitative research approach, data were collected from 102 respondents across multiple churches through a structured questionnaire comprising demographic, perceptual, and experiential variables. The data were analyzed using descriptive statistics, Pearson and Spearman correlation tests, and Analysis of Variance (ANOVA). The findings revealed that each architectural element investigated significantly contributes to enhancing spiritual experiences. Spatial configuration, particularly the altar's location and the layout of interior spaces, was found to positively correlate with focus and reverence during worship. Natural lighting emerged as the most impactful factor, with a very strong positive correlation to spiritual upliftment, confirming that light is not only a functional element but a medium of divine symbolism. Materiality specifically the use of natural, textured, and symbolically meaningful materials such as wood, stone, and marble was also found to significantly shape the sacred atmosphere of the church interior. While minor differences in architectural perception existed across churches, ANOVA results indicated that these differences were not statistically significant, suggesting a broadly shared experience of sacredness among the respondents. These insights align with recent theoretical perspectives that integrate phenomenology, symbolism, and architectural determinism in sacred space design. The study concludes that thoughtful integration of spatial configuration, natural lighting, and materiality is essential for enhancing spiritual engagement, sacred perception, and emotional connection within Catholic worship environments. It recommends that architects and religious leaders work collaboratively to prioritize lighting, spatial harmony, and material symbolism in church architecture. Further research is encouraged to include qualitative methods and inter-denominational comparisons for a more comprehensive understanding of sacred architecture.

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Introduction

Sacred spaces have played a significant role in religious and cultural practices throughout history. The design of religious buildings, particularly Catholic churches, has been deeply influenced by theological principles, historical contexts, and cultural traditions [1]. Architecture serves as a medium for spiritual expression, where spatial configuration, natural light, and materiality contribute to the perception of the divine presence [2]. In Catholic churches, the interplay of form, light, and materiality creates an environment that enhances worshippers' spiritual experiences [3]. In Nigeria, particularly in Ibadan, Catholic Church architecture has evolved through different historical periods, incorporating elements from both indigenous and Western architectural traditions. Despite the growing interest in the impact of church architecture on religious experience globally, empirical studies focusing on Nigerian Catholic churches remain limited. This study seeks to bridge this gap by examining how form, light, and materiality shape spiritual experiences in these sacred spaces.

While several studies have examined the role of architecture in religious experiences globally, little attention has been given to the specific context of Catholic churches in Ibadan, Nigeria. Many of these churches blend traditional and contemporary architectural styles, yet their impact on worshippers' spiritual engagement remains underexplored [3, 4]. Additionally, the role of natural light, spatial configuration, and material choices in evoking a sense of divine presence has not been adequately analysed. This study, therefore, seeks to address the following questions: How does spatial configuration influence spiritual experiences in Catholic churches in Ibadan? What is the role of natural light in enhancing worshippers' perception of the divine? How does the choice of building materials contribute to the sacred atmosphere within these churches?

The primary objective of this study is to examine how architectural elements contribute to the spiritual experience of worshippers in Catholic churches in Ibadan. The specific objectives are to analyse the impact of spatial configuration on worshippers' religious experience, to evaluate the significance of natural lighting in shaping spiritual perceptions, and to assess the role of materiality

in reinforcing sacredness within church architecture. This study tested the following hypotheses:

H1: Spatial configuration significantly influences the spiritual experience of worshippers in Catholic churches.

H2: Natural lighting has a positive impact on worshippers' perception of the sacred.

H3: The use of specific materials in church architecture enhances the sense of divine presence.

This book chapter focuses on Catholic churches in Ibadan, Nigeria, analysing how their architectural elements contribute to worshippers' spiritual experiences. The study specifically examined spatial configuration, lighting, and materiality in selected churches. Data were collected through structured questionnaires and field observations, to provide a quantitative analysis of the relationship between these architectural features and religious experience. Understanding the relationship between architecture and spirituality in Catholic churches has significant implications for architects, religious leaders, and scholars. For architects, the findings can guide the design of future religious spaces that enhance worshippers' spiritual engagement. For religious leaders, insights from this study can inform decisions regarding church renovations and modifications to improve worship experiences [1]. Furthermore, this research contributes to the academic discourse on sacred architecture by providing empirical data on the role of form, light, and materiality in shaping spiritual experiences in Nigerian Catholic churches.

Theoretical Background to the Study

The Phenomenology of Sacred Spaces

The phenomenological approach to sacred architecture emphasizes the lived experience of individuals within these spaces, focusing on how architectural elements evoke spiritual responses. Recent interdisciplinary studies have integrated neuroscience and architecture to empirically analyze these experiences. For instance, Bartolomei, Conti, and Cattaneo employed advanced eye-tracking technology to observe how worshippers interact with sacred environments [5]. Their findings suggest that specific spatial configurations and lighting conditions can elicit profound spiritual reactions, highlighting the importance of intentional design in fostering a sense of the divine.

Symbolism and Meaning in Church Architecture

Symbolism remains a cornerstone in church architecture, serving as a conduit for theological narratives and spiritual engagement. Contemporary analyses have explored how modern churches incorporate symbolic elements to convey religious themes. For example, McAllister discusses the use of circles to represent community, twelve pillars symbolizing the people of God, and sunburst roof structures denoting resurrection and glory [6]. These design choices enrich the spiritual experience by embedding deeper meanings within the architectural fabric. In the context of Ibadan's Catholic churches, understanding and integrating such symbolism can enhance the connection between worshippers and their sacred spaces [7].

Architectural Determinism and Spatial Configuration

Architectural determinism explores how built environments influence human behavior and perception. Zheng, Liu, and Tang investigated the spatial characteristics of ancestral halls in Guangdong, China, emphasizing how spatial arrangements contribute to a sense of place and cultural identity [8]. Although focused on a different cultural context, their findings provide insights applicable to sacred architecture, suggesting that deliberate spatial configurations can shape worshippers' experiences and

perceptions of the sacred.

Light as a Spiritual Medium

Light has long been recognized as a vital element in sacred architecture, symbolizing divine presence and enlightenment. The restoration of Notre-Dame Cathedral in Paris underscores the transformative power of light within sacred spaces. The interplay of natural light with the cathedral's gothic architecture creates an atmosphere that elevates the spiritual experience, demonstrating how thoughtful lighting design can enhance the perception of the divine [9]. This principle is pertinent to the study of Catholic churches in Ibadan, where the strategic use of natural light can significantly impact worshippers' spiritual engagement. (The Guardian)

Materiality and Sacred Atmosphere

The choice of materials in church architecture contributes to the sacred atmosphere by appealing to the senses and reinforcing theological themes. The La Sagrada Familia in Barcelona exemplifies this through its use of organic shapes and intricate façades that narrate biblical stories, creating a multisensory spiritual experience [10]. In Ibadan, selecting materials that resonate with both indigenous and ecclesiastical traditions can create a sacred environment that is both culturally relevant and spiritually uplifting. (Architectural Digest)

These contemporary studies provide a modern framework for analyzing how architectural elements such as spatial configuration, lighting, materiality, and symbolism influence spiritual experiences in Catholic churches in Ibadan.

The Conceptual Framework

The conceptual framework proposes that spatial configuration, natural lighting, and materiality are the principal architectural determinants of worshippers' spiritual experiences within Catholic churches in Ibadan. The framework assumes that carefully designed spatial arrangements enhance focus and reverence during worship, natural lighting strengthens perceptions of divine presence and sacredness, while meaningful material choices contribute to emotional and spiritual engagement. Collectively, these architectural elements influence the extent to which worshippers experience sacredness, spiritual connection, emotional upliftment, and a sense of divine presence within the church environment.

The dependent variable in this study is the spiritual experience of worshippers, which refers to the extent to which individuals perceive sacredness, divine presence, emotional upliftment, reverence, focus, and spiritual connection while participating in worship activities within Catholic Church environments. Spiritual experience is influenced by the physical and sensory qualities of the worship space, which can either enhance or diminish worshippers' engagement with the sacred.

The first independent variables considered in this study is spatial configuration which refers to the organization, arrangement, and relationship of spaces within a church building. It includes architectural elements such as the placement of the altar, seating arrangement, circulation patterns, ceiling height, spatial hierarchy, and overall layout of the worship space. The indicators are altar placement, church layout, seating arrangement, ceiling height, spatial hierarchy, visual focus and orientation.

The second independent variables is the natural lighting which refers to the use and distribution of daylight within the church interior through windows, skylights, clerestories, stained-glass

openings, and other architectural features. It include architectural element such as daylight penetration, Light intensity, Light patterns and shadows, Visual emphasis on sacred elements, Perceived spiritual upliftment and Atmosphere of sacredness.

The third independent variables considered in this study is materiality which refers to the selection, texture, colour, symbolism, and sensory qualities of building materials used in church construction and interior design. Materials such as wood, stone, marble, stained glass, and other natural finishes contribute to the physical character and symbolic meaning of sacred spaces.

The indicators are use of natural materials, texture and finishes, symbolic materials, visual quality, cultural relevance and sense of sacredness. See Figure 1.0 as discussed as discussed above.

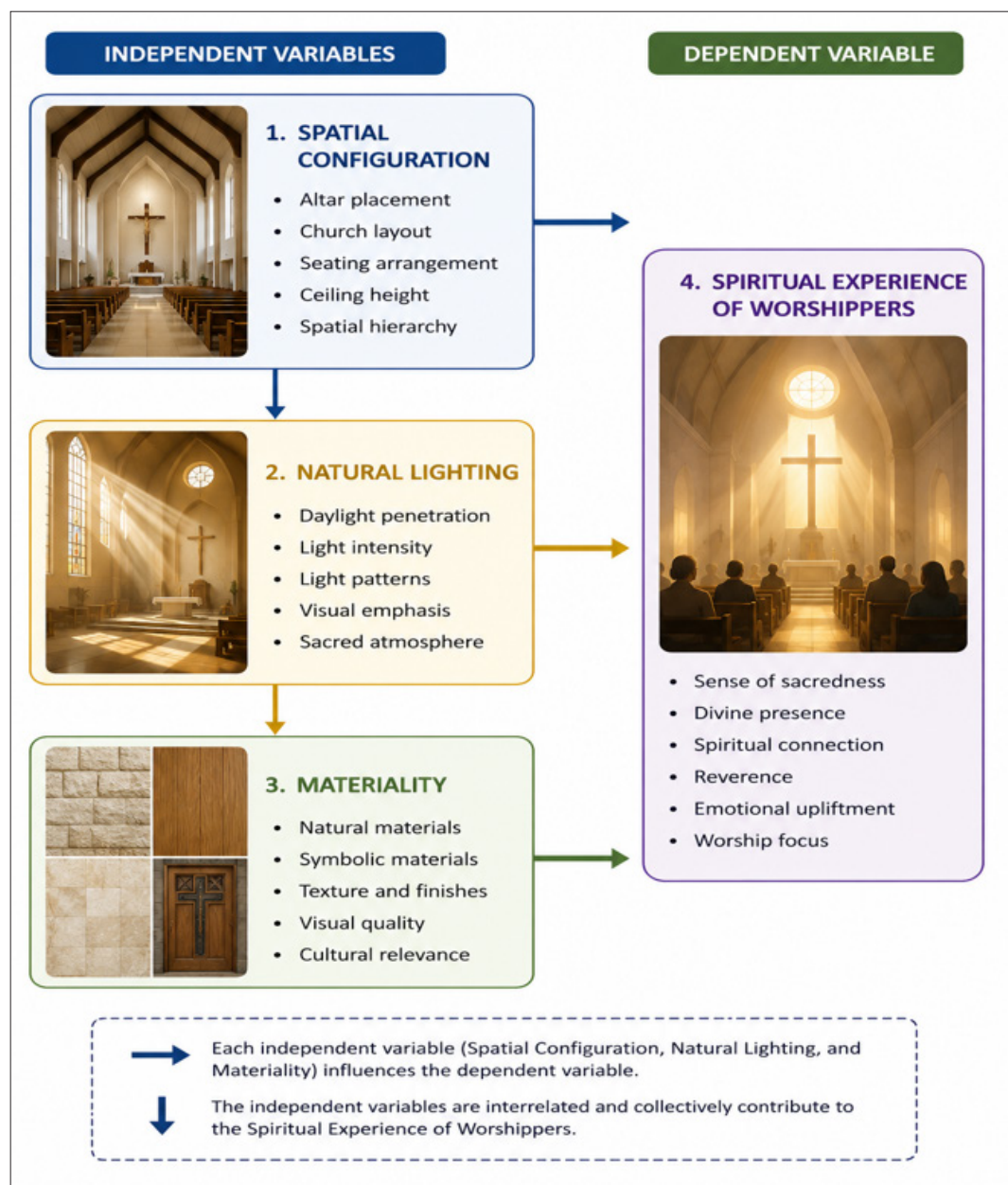


Figure 1: Conceptual Framework Showing the Relationship between Architectural Elements and Spiritual Experience in Catholic Churches in Ibadan, Nigeria.

Source: Researcher's Field Survey, 2016

Methodology

This study adopts a quantitative research approach to examine the impact of architectural elements on worshippers' spiritual experiences in Catholic churches in Ibadan. A cross-sectional survey design was employed, allowing for the collection of data at a single point in time to analyse the relationships between spatial configuration, light, materiality, and spiritual perception. The research was conducted in selected Catholic churches in Ibadan, Oyo State, Nigeria. Ibadan, being home to numerous historic and contemporary Catholic churches, making it an ideal location for investigating the evolution and impact of sacred architectural features. The study population comprised worshippers who regularly attend these churches, as well as clergy members in some instances.

Respondents were conveniently sampled with an attempt at randomness. To address the objectives of the study, primary data was collected through structured questionnaires. The questionnaire was designed in six sections. The first section (A) solicits information regarding demographics of the respondents. These include age, gender, educational level, name of church attended as well as the duration of frequency of attendance in respective parishes. Subsequent sections (B-D) sought to determine the influences of spatial configuration and architectural form, lighting and illumination and materiality and symbolism respectively on the respondents' perception of sacredness of their churches. Respondents were also asked to rate their overall spiritual experiences in Section E. Sections B-E were structured according to a 5-point Likert scale (1 being strongly disagree and 5, strongly agree). Respondents were then asked to provide any open-ended feedback they may have regarding the study in the final section F.

Paper questionnaires were handed to respondents as they exited mass or while they were generally within church premises. An identical, online Google Form® link was distributed on social media and messaging platforms such as WhatsApp®. A total of 102 respondents were contacted across multiple churches using these means.

The collected data was analysed using descriptive and inferential statistical methods. Descriptive statistics such as mean, standard deviation, and frequency distribution were used to summarize respondents' perceptions. Inferential analysis, including correlation and regression tests, were conducted using IBM SPSS 27® software to examine the relationships between architectural elements and spiritual experience. The study adhered to ethical research standards by obtaining informed consent from participants, ensuring anonymity, and maintaining confidentiality.

Results and Discussion

This chapter presents the analysis of data gathered from the questionnaire administered to worshippers in selected Catholic churches in Ibadan. The focus of this chapter is to examine how spatial configuration, natural light, and materiality influence the spiritual experiences of worshippers. The responses were subjected to statistical analysis using descriptive statistics, correlation analysis, and analysis of variance (ANOVA). The results are interpreted and discussed in relation to the research objectives and existing literature.

The demographic profile of the 102 valid respondents as displayed in table 1.0. revealed that 53.9% were male, 45.1% were female, and 1.0% preferred not to disclose their gender. Majority of the respondents were aged 18 to 25, accounting for 55.9%, followed by those aged 26 to 35 (23.5%) and those below 18 (14.7%). Over half of the respondents (51%) had attended their current church for more than seven years, while 77.5% reported attending church services weekly. This indicates a sample with consistent church engagement, providing a reliable basis for evaluating perceptions of church architecture.

Descriptive statistics of the responses on the architectural elements showed that participants responded favourably to most statements. The statement "I feel more spiritually connected when the space uses natural materials" received the highest mean score ($M = 4.13$) as displayed in table 1.0, indicating strong agreement. Similarly, high scores were recorded for "The location of the altar creates a strong spiritual focal point" ($M = 4.08$) and "The architectural form makes the space feel like a holy place" ($M = 4.02$). These results suggest that spatial and material elements are positively perceived in terms of their contribution to sacredness. Conversely, lower mean scores were recorded for statements suggesting repulsion from churches due to architectural form or lighting, indicating fewer negative experiences.

Table 1.0: Showing the Descriptive Statistics of the Data

	N	Minimum	Maximum	Mean	Std. Deviation
Spiritually connected when the space uses natural materials	99	1.00	5.00	4.1313	5.15801
Location of the altar creates a strong spiritual focal point	102	1.00	5.00	4.0784	1.00184
Architectural form makes the space feel like a holy place	101	1.00	5.00	4.0198	1.02937
Good balance between natural and artificial lighting	99	1.00	5.00	3.9495	.90772
Textures and finishes of the walls, floors and ceiling make the space feel reverent	99	1.00	5.00	3.8586	.97948
Symbolic use of materials helps me connect spiritually	99	1.00	5.00	3.8586	1.04988
Quality of natural light in the church is spiritually uplifting	99	1.00	5.00	3.8081	.92225
Light patterns in the church evoke a sense of sacredness	99	1.00	5.00	3.7980	1.00995
Arrangement of pews/seating improves my sense of connection	102	1.00	5.00	3.7745	1.04272
Materials used in the church contribute to its sacredness	99	1.00	5.00	3.7576	1.14367
Attracted to a parish on account of its architectural form	102	1.00	5.00	3.7157	1.22981
Overall shape and layout of the church enhances my spiritual focus	102	1.00	5.00	3.7157	1.12027
Church environment helps me concentrate more during worship	99	1.00	5.00	3.4848	1.04249
The space makes me feel emotionally and spiritually uplifted	99	1.00	5.00	3.6869	.98609
Lighting makes the altar area feel more divine	99	1.00	5.00	3.6869	1.05605
Deep spiritual connection due to the church's design	99	1.00	5.00	3.6768	1.04811
Height of the ceiling makes the space feel uplifting and sacred	102	1.00	5.00	3.5882	1.26141
The church environment helps me concentrate more during worship.	99	1.00	5.00	3.4848	1.14610

The church architecture enhances my sense of divine presence	99	1.00	5.00	3.4343	1.10806
Attracted to a parish due to the materials and finishes used	99	1.00	5.00	3.4242	1.19600
The way sunlight enters the church enhances my worship experience	99	1.00	5.00	3.2828	.97980
Attracted to a parish on account of its lighting	99	1.00	5.00	3.0303	1.19056
Attracted to a parish due to the overall spiritual experience I feel from its design and environment	99	1.00	5.00	2.7374	1.25833
Repulsed from a parish due to the materials and finishes used	99	1.00	5.00	2.6970	1.18196
Repulsed from a parish on account of its architectural form	102	1.00	5.00	2.6863	1.20215
Repulsed from a parish on account of its lighting	99	1.00	5.00	2.3333	1.09731
Valid N (listwise)	97				

Source: Researcher's Field Survey, 2026.

Correlation analysis revealed statistically significant relationships between architectural variables and spiritual experience as displayed in table 2.0. Spatial configuration demonstrated a strong positive relationship with spiritual experience ($r = 0.638$, $p < 0.01$), indicating that respondents who perceived better spatial arrangements also reported a heightened sense of spirituality. Natural lighting showed the strongest correlation with spiritual experience, with a Spearman correlation coefficient of 0.735 ($p < 0.01$), highlighting its profound impact on emotional and spiritual perception. Materiality was also positively and significantly associated with spiritual experience (Pearson's $r = 0.553$; Spearman's $\rho = 0.746$, $p < 0.01$), confirming the influential role of textures, materials, and finishes in creating a sacred environment.

Table 2.0 : Showing the Correlations Level

			Mean_Natural_Light	Mean_Overall_Spiritual_Experience
Spearman's rho	Mean_Natural_Light	Correlation Coefficient	--	
		Sig. (2-tailed)	.	
		N	99	
	Mean_Overall_Spiritual_Experience	Correlation Coefficient	.735**	--
		Sig. (2-tailed)	.000	.
		N	98	99
**. Correlation is significant at the 0.01 level (2-tailed).				

Source: Researcher's Field Survey, 2026.

To examine whether these perceptions varied across different church locations, an Analysis of Variance (ANOVA) was conducted. The ANOVA results as indicated in table 3.0 shows that there were no statistically significant differences between churches regarding the perceived influence of spatial configuration ($F = 0.684$, $p = 0.686$), natural light ($F = 1.393$, $p = 0.218$), materiality ($F = 0.625$, $p = 0.734$), or overall spiritual experience ($F = 0.694$, $p = 0.677$). This suggests that despite minor variations in architectural styles, the perception of sacredness among worshippers remained generally consistent across the surveyed churches. Although slight differences were observed among the surveyed churches, ANOVA results showed that the variations were not statistically significant ($p > 0.05$), indicating a relatively homogeneous perception of sacred architectural qualities across the churches.

Table 3.0 : Showing the Result from ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Mean_Spatial_Configuration_and_Form	Between Groups	2.494	7	.356	.684	.686
	Within Groups	48.996	94	.521		
	Total	51.490	101			
Mean_Natural_Light	Between Groups	4.174	7	.596	1.393	.218
	Within Groups	38.964	91	.428		
	Total	43.138	98			
Mean_Materiality	Between Groups	6.259	7	.894	.625	.734
	Within Groups	130.231	91	1.431		

	Total	136.490	98			
Mean_Overall_Spiritual_Experience	Between Groups	2.828	7	.404	.694	.677
	Within Groups	52.940	91	.582		
	Total	55.768	98			

Source: Researcher’s Field Survey, 2026.

Although the differences across churches were not statistically significant, mean comparisons yielded insightful patterns. For example, St. Thomas, Agbowo recorded the highest average score for overall spiritual experience (M = 3.90), while St. Mulumba Catholic Church, Alakia had the highest mean for materiality (M = 3.83). Our Lady Seat of Wisdom, University of Ibadan, which had the largest number of respondents, scored moderately high across all architectural variables, reinforcing the role of church design in fostering spiritual engagement.

These findings support all three hypotheses of the study. First, spatial configuration significantly influences worshippers’ sense of reverence and focus, echoing the phenomenological principles outlined by Bartolomei et al. [5]. Second, natural light not only contributes to the aesthetic quality of the space but also evokes a sense of divine presence, confirming insights from Moore [9] on the emotional resonance of light in sacred spaces. Third, the choice and use of materials especially natural and symbolically meaningful ones have a clear impact on worshippers’ spiritual connection, aligning with studies by Hartanto and Supriadi [11].

In conclusion, the results affirm that spatial arrangement, lighting, and materiality are all significant contributors to the spiritual experiences of worshippers in Catholic churches in Ibadan. The integration of these elements plays a crucial role in enhancing worship, creating sacred atmospheres, and deepening emotional and spiritual engagement with the divine. These insights provide valuable guidance for architects, church planners, and religious leaders in the design and renovation of sacred spaces.

Conclusion and Areas of Further Research

This study investigated how spatial configuration, natural lighting, and materiality shape spiritual experiences in Catholic churches in Ibadan, Nigeria. Through quantitative methods involving structured questionnaires and statistical analysis, the study revealed that these architectural elements significantly influence worshippers’ perception of sacredness, emotional upliftment, and spiritual connection.

The findings confirm that spatial configuration, particularly the placement of the altar and general layout of the church interior, fosters focus and enhances sacred ambiance. Natural lighting was found to be the most impactful element, consistently associated with heightened spiritual experiences. Materiality, including the use of natural elements like wood, stone, and marble, also demonstrated a strong positive effect on how sacred and spiritually engaging a space feels.

Despite differences in church identity, ANOVA results revealed no significant variation in how worshippers from different parishes perceived these elements. This underscores a universal appreciation of architectural qualities that evoke sacredness, regardless of the individual church context.

Based on these insights, it is recommended that church architects and planners incorporate more intentional design strategies that emphasize spatial harmony, the creative use of light, and the selection of meaningful materials. Parish leaders are also encouraged to prioritize architectural renovation and interior improvements as part of their pastoral agenda to enrich the spiritual lives of their congregations [12, 13].

For future research, scholars could explore longitudinal studies to assess how architectural changes over time affect worshippers’ experiences. Further investigations could also adopt qualitative methods such as interviews and focus groups to uncover deeper psychological and emotional interpretations of sacred space. Additionally, comparative studies involving churches of other denominations or other religions practiced in Nigeria, would provide broader insights into the universal and unique attributes of sacred architecture.

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