Quest Journals
Journal of Architecture and Civil Engineering
Volume 10 ~ Issue 8 (August 2025) pp: 137-146
ISSN(Online): 2321-8193
www.questjournals.org

Research Paper

Designing For Perception: How Facades Influences First Impressions of Office Buildings

BELLO I. BELLO[1]., DR Adekunle O. OGUNNAIKE[2], Adekunle S. BABAMBONI[3] DR Obafemi A. IBITOYE[4]
Caleb University, Department of Architecture, Imota, Lagos.
Corresponding : 0009-0006-2738-6005;

ABSTRACT
Façade design shapes first impressions of office buildings, influencing perceptions of transparency, scale, materiality, and identity. This study examines how façade elements impact user perception by analyzing aesthetic, psychological, and functional aspects. Using a structured questionnaire, data were collected from building occupants, pedestrians, and design professionals. Findings reveal that while glass façades symbolize modernity and openness, concerns about excessive transparency and lack of uniqueness persist. Material choices influence perception, with concrete linked to security, brick to tradition, glass to innovation, and metal to technological advancement. Uniqueness and functionality were prioritized over aesthetics, emphasizing the need for balance. However, gaps remain in addressing durability, maintenance, and cultural influences. Policy and urban planning considerations were briefly acknowledged but require deeper exploration for contextual relevance. The study recommends integrating adaptive façade technologies, biophilic design, and optimized daylighting while incorporating cultural and urban planning perspectives. Future research should explore the long-term impact of façade design on occupant well-being, AI-driven façade optimization, and strategies aligned with environmental conditions and cultural expectations. Understanding the interplay between architecture, perception, and sustainability is crucial for designing office buildings that are visually compelling, functional, and contextually responsive.

Keywords: *Façade design, perception, transparency, materiality, office buildings.*

***R**eceived 08 Aug., 2025; **R**evised 19 Aug., 2025; **A**ccepted 21 Aug., 2025 © The author(s) 2025.*
P**ublished with open access at **www.questjournas.org

I. INTRODUCTION

1.1. Background of Study

The role of façades in architecture has evolved significantly, transitioning from purely structural elements to dynamic components that influence both perception and functionality. Historically, façades symbolized power, stability, and permanence, as seen in classical and neoclassical architecture, which emphasized grandeur through intricate ornamentation and solid forms (Chamilothori, Wienold, Moscoso, Matusiak & Andersen, 2022). The advent of modernism introduced minimalist façades that prioritized transparency and simplicity, particularly through the adoption of glass curtain walls, aiming to enhance natural light integration and spatial openness (Hosseini, Mohammadi, Rosemann, Schröder & Lichtenberg, 2019). More recently, sustainability and technological innovations, such as adaptive and kinetic façades, have emerged as key considerations in façade design, improving energy efficiency, thermal comfort, and occupant well-being (Nassimos & Attia, 2023). The integration of biophilic elements further enhances these benefits by fostering a connection with nature, reinforcing that façade design is no longer merely about aesthetics but also about long-term building performance and user experience (Tabadkani, Shoubi, Soflaei & Banihashemi, 2019).

Beyond physical functionality, façades play a crucial psychological and cultural role in shaping first impressions of office buildings. Different materials, forms, and compositions evoke distinct emotional responses, with transparency often associated with modernity, while heavier materials like concrete convey security (Malewczyk, Taraszkiewicz& Czyż, 2024). However, the perception of façade design is context-dependent, as cultural factors influence how architectural elements are received in different regions. For example, while glass façades symbolize progressiveness in Western contexts, they may be less desirable in

tropical climates like Lagos, Nigeria, where shading, natural ventilation, and material durability are more critical (Xie, Sawyer, Ge & Li, 2022). Despite growing recognition of these factors, existing discussions tend to focus on aesthetics and theoretical analysis rather than practical implementation. Addressing feasibility concerns, such as material sourcing, construction constraints, and long-term maintenance, is essential to ensuring façade designs remain functional, sustainable, and contextually appropriate (Lu, Lin & Wang, 2020). Consequently, architects must balance visual appeal with practical usability, ensuring that façade innovations align with environmental conditions, urban policies, and cultural expectations.

1.2. Relevance of First Impressions

First impressions significantly shape how individuals perceive and interact with office buildings, with façades serving as the first point of visual engagement. Architectural elements such as symmetry, proportion, texture, and color influence cognitive and emotional responses, affecting how a company's identity is perceived (Yıldırım,Hidayetoğlu& Unuvar, 2021). For example, a glass façade may convey openness, while a concrete exterior suggests strength. Additionally, the orientation and layout of façades impact users' assessments of environmental factors, emphasizing the need for thoughtful design (Xie et al., 2022). Beyond aesthetics, functional aspects like accessibility, lighting, and energy efficiency contribute to a positive perception. Office buildings with well-integrated daylight access and biophilic elements are often viewed as more inviting and conducive to productivity (Lu,Lin& Wang, 2020).

The psychological and physiological impacts of façade design extend beyond aesthetics to influence overall user experience. Studies show that biophilic elements, such as natural views and optimized daylight exposure, make office spaces feel more comfortable and spacious (Xie et al., 2022). Curved façades, for instance, enhance daylight efficiency by distributing natural light more effectively, improving occupant well-being (Lu et al., 2020). Conversely, monotonous or uninviting façades can create negative impressions, deterring clients, employees, and investors. With growing emphasis on workplace well-being and sustainability, understanding how façade design influences perception is crucial for architects and corporate decision-makers. Prioritizing both aesthetics and functionality in façade design can help reinforce corporate identity while enhancing the user experience.

1.3. Problem Statement

The role of façade design in shaping perceptions of office buildings is often limited to discussions on aesthetics, environmental impact, and structural efficiency, with minimal exploration of psychological, social, and cultural influences (Chamilothori et al., 2022; Xie et al., 2022). While existing research acknowledges the significance of façade elements in forming first impressions, it lacks a structured approach to evaluating how different architectural styles influence user perception. This gap is particularly evident in rapidly urbanizing cities, where economic priorities often favor cost efficiency over distinct architectural identity. The proliferation of uniform glass towers, for instance, has contributed to a homogenized urban landscape, diminishing the individuality and contextual responsiveness of office buildings. Furthermore, research on façade design tends to emphasize theoretical frameworks without adequately considering real-world implementation challenges such as durability, maintenance requirements, and climate-specific adaptations (Lu et al., 2020). Given the increasing focus on sustainable and user-centered design, a more comprehensive analysis that integrates psychological responses, material longevity, and contextual factors is necessary.

Additionally, current methodologies in façade perception studies often lack transparency in participant selection and case study justification. Without a clear rationale for how respondents are chosen; whether based on professional expertise, demographic diversity, or urban exposure, the validity and applicability of research findings remain limited (Yıldırım et al., 2021). Moreover, while elements like daylight optimization and biophilic integration have been explored in isolation, their combined effect on user experience remains underexamined (Chamilothori et al., 2022). This lack of interdisciplinary assessment presents challenges for architects, who must navigate complex decision-making processes to create façades that are not only visually appealing but also functional and culturally relevant. Addressing these gaps requires a holistic research framework that evaluates façade performance through psychological, social, and environmental lenses, ensuring that design strategies are both innovative and sustainable (Nassimos & Attia, 2023).

1.4. Research Aim and Objectives

The aim of this study is to examine how façade design influences first impressions of office buildings, exploring the interplay between architectural elements, perception, and user experience. By analyzing different façade typologies and their effects on people's cognitive and emotional responses, the research seeks to establish key design principles that can enhance the visual and functional appeal of office buildings. The following objectives will be pursued in order to achieve the aim of this study:

i. To investigate the psychological and emotional impact of different façade materials, forms, and compositions on first impressions of office buildings.
ii. To evaluate real-world case studies of office buildings with distinct façade designs, assessing their reception among users and visitors.
iii. To propose design recommendations that optimize façade aesthetics and functionality while enhancing positive first impressions.

II. LITERATURE REVIEW

2.1. Historical Evolution of Façades

The evolution of building façades has been shaped by a combination of technological, cultural, and environmental factors, reflecting the changing priorities and advancements in construction methods over time. Historically, façades were designed primarily as protective barriers against the elements, with their appearance largely influenced by the materials and techniques available at the time. In ancient and classical periods, façades often served symbolic functions, conveying messages of power, authority, and cultural identity through the use of grand elements such as columns, pediments, and decorative reliefs. These architectural features were not only functional but also embedded with social and political meanings, as seen in Greek and Roman temples, where imposing façades communicated divine power and civic pride (Hosseini et al., 2019). During the Renaissance and Neoclassical periods, façades continued to assert the wealth and status of their patrons, with an emphasis on symmetry, formality, and the timelessness of the structure's design. This traditional approach to façade design gradually shifted in the 20th century with the advent of modernism, which championed minimalist principles and the use of industrial materials such as steel and glass to achieve sleek, functional, and transparent façades (Chamilothori et al., 2022).

The 20th century also saw the rise of the International Style, which embraced unadorned façades with large glass expanses to maximize natural light and blur the boundaries between the interior and the exterior, marking a pivotal shift away from the ornate designs of previous architectural periods. In more recent decades, the focus has shifted towards sustainability and energy efficiency, driving the development of adaptive and kinetic façades that respond dynamically to environmental conditions. These modern façades not only improve the building's energy performance but also contribute to occupant comfort by regulating light, temperature, and air quality (Tabadkani,Roetzel, Li& Tsangrassoulis, 2021). The integration of smart technologies and materials has further transformed façades into sophisticated systems that enhance the overall building performance while aligning with contemporary priorities of environmental responsibility and user-centric design (Tabadkani et al., 2019; Lu et al., 2020). This ongoing evolution demonstrates the broader shift in architectural thinking, as façades are now designed to function as both aesthetic elements and dynamic systems that optimize environmental and human factors, ensuring buildings are visually appealing, environmentally responsible, and capable of adapting to the needs of their occupants.

2.2. Psychological Impact of Façades on Perception

The psychological impact of building façades on perception is a key area of architectural research, as these external elements significantly shape how individuals feel and interact with a space. The façade is often the first visual and physical interaction between a person and a building, influencing initial emotional responses and forming lasting impressions. According to studies, the materials, form, scale, and transparency of a façade can trigger a wide range of emotions, from trust and comfort to anxiety or alienation. Smooth, reflective surfaces and expansive glass elements are frequently linked to modernity, openness, and transparency, creating an inviting and accessible atmosphere (Xie et al., 2022). On the other hand, opaque façades made of heavy materials might communicate security and authority, yet if not well-balanced, they can seem intimidating or unapproachable. The psychological effect of façades extends beyond mere aesthetics, as the visual weight of architectural elements also plays a crucial role. Symmetrical, balanced elements tend to evoke order and stability, while more fragmented, irregular designs might suggest energy, tension, or creativity (Malewczyk et al., 2024). These factors highlight the profound influence façades have on shaping the emotional context of a building, furthering the need to consider how these elements affect user experience.

Furthermore, the integration of natural elements into façade design is an increasingly significant consideration, with research suggesting that such features can enhance both psychological well-being and occupant satisfaction. Biophilic design, the incorporation of greenery, natural light, and views of the outside world, has been shown to improve mood, reduce stress, and even boost cognitive function (Tabadkani et al., 2019; Xie et al., 2022). Daylight penetration and visual connections to nature, facilitated through thoughtful façade design, are linked to greater productivity and overall comfort in office environments (Chamilothori et al., 2022; Lu et al., 2020). These insights suggest that façades are not merely external skin, but essential elements in fostering positive emotional experiences and productivity. The psychological impact of façades is thus a crucial factor for architects to consider when designing office buildings, as it directly influences how users perceive and

engage with their surroundings, reinforcing the importance of integrating human-centered design principles in façade strategies.

In addition to the emotional responses triggered by visual and material aspects of façades, the role of cultural and contextual factors in shaping perception is significant. Different societies and environments attribute distinct meanings to certain design elements, such as color, texture, and scale, which influence how façades are perceived. For example, in some cultures, bright colors and ornate detailing might be seen as a sign of vibrancy and openness, while in others, minimalism and neutral tones might suggest sophistication and elegance (Xie et al., 2022). This cultural dimension underscores the importance of designing façades that resonate with the local context, while also addressing universal design principles that evoke positive emotions across different user groups. Additionally, the surrounding urban environment can heavily influence how a façade is experienced. In dense city centers, façades might need to balance the need for visibility and identity with sensitivity to the surrounding architectural fabric. The interplay between building design and its urban setting, therefore, further complicates the psychological impact of façades, requiring architects to consider both the immediate user experience and broader public perception when making design decisions. This holistic approach ensures that façades not only enhance user engagement but also contribute meaningfully to the identity and dynamics of the built environment.

2.3. Architectural Theories and Design Principles

Architectural theories and design principles have significantly influenced how façades are conceptualized, particularly concerning their role in bridging form, function, and human perception. Vitruvius' classical principles of *firmita*, *utilitas*, and *venustas*; which means strength, utility, and beauty, remain foundational in the study of façades, emphasizing the need to balance structural integrity, functionality, and aesthetic appeal in architecture. These principles shaped early architectural works, where façades were primarily functional and symbolized authority, power, or permanence. In contrast, modernist architecture, championed by figures such as Mies van der Rohe and Le Corbusier, shifted the focus to transparency, simplicity, and efficiency. The façade became a functional skin mediating between the building and its environment, reducing unnecessary ornamentation and emphasizing a straightforward, minimalistic design (Hosseini et al., 2019; Chamilothori et al., 2022). This transformation reflects a broader shift from façades serving as mere protective barriers to becoming integral components that define a building's identity and influence its interaction with both occupants and the external environment.

More recently, architectural theories have evolved to address the growing concern for sustainability and adaptability in design, with a particular emphasis on façades as dynamic and responsive systems. The modern imperative for sustainability has led to the integration of environmental factors into façade design, making it not only an aesthetic and functional element but also a system that actively responds to external variables such as light, temperature, and airflow (Nassimos & Attia, 2023). This shift has been facilitated by advancements in parametric design, which allows architects to create highly adaptable façades optimized for specific environmental conditions. For example, parametric design enables the use of complex geometries and shapes, allowing façades to better adapt to varying climatic conditions and contribute to a building's energy efficiency (Tabadkani et al., 2019; Lu et al., 2020). The incorporation of interdisciplinary knowledge; merging insights from psychology, environmental science, and engineering, has further advanced façade design, resulting in innovative solutions that cater to both functional and experiential needs (Tabadkani et al., 2021). This modern approach signifies a shift towards façades that not only enhance the visual appeal of buildings but also respond interactively to their environment, contributing to a more holistic and user-centered design process.

The evolving role of façades in contemporary architecture illustrates a broader trend toward more contextually sensitive and interactive architectural solutions. In particular, adaptive and responsive façades that change based on environmental factors, such as temperature or sunlight, reflect a growing awareness of the need for sustainable design practices. As cities become more crowded and environmental challenges intensify, this shift towards responsive façade design ensures that buildings are not only functional and energy-efficient but also aligned with modern human expectations for comfort, aesthetics, and sustainability. Furthermore, the psychological impact of these evolving façades is becoming increasingly significant. Façades no longer merely serve as a boundary but engage occupants on a deeper level, fostering a connection between the interior and the surrounding environment, which can enhance user satisfaction and engagement (Tabadkani et al., 2021). By addressing both functional needs and psychological well-being, contemporary façade design exemplifies a more integrated, holistic approach to architecture.

2.4. Case Studies and Examples

The integration of innovative façade design elements plays a crucial role in shaping both the perception and user experience of office buildings. Case studies such as the Apple Park campus in Cupertino, California, designed by Foster + Partners, highlight the influence of transparency and natural integration with the

environment in enhancing occupant comfort and promoting a forward-thinking corporate identity. The building's expansive glass curtain walls not only maximize daylight penetration but also symbolize openness and collaboration, key attributes for a modern, progressive company (Tabadkani et al., 2019). The thoughtful use of natural materials and biophilic design elements further strengthens the connection between the indoor and outdoor environments, contributing to a more comfortable and psychologically supportive atmosphere for its users. This approach exemplifies how façade design can not only address environmental factors but also create a seamless transition between built spaces and the natural world, which is essential in modern office environments that prioritize employee well-being and productivity.

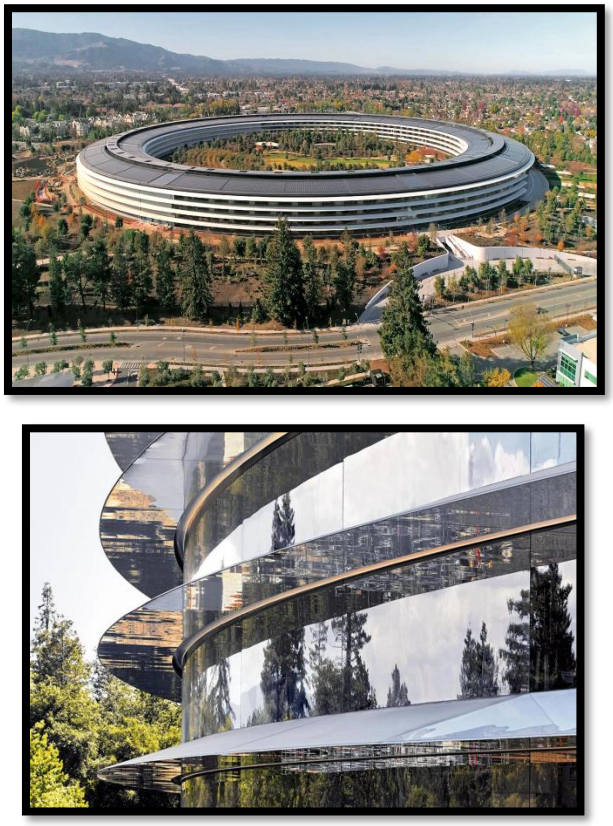

Figure 1: Apple Park in Cupertino, California byFoster + Partners.
Source: Arquitectura Viva (2018).

In contrast, the Leadenhall Building, also known as the Cheesegrater, in London, designed by Rogers Stirk Harbour + Partners, offers a compelling example of how façades can convey strength and authority while remaining responsive to their urban context. The building's angled glass façade reflects the surrounding cityscape, creating a dynamic visual connection with its environment while also enhancing the building's modern, robust identity (Chamilothori et al., 2022). The structural steel frame provides both form and function, emphasizing the building's structural integrity while making a powerful first impression. This balance between transparency and solidity illustrates the ability of façades to represent a building's identity, whether progressive and innovative or solid and authoritative, while responding to its surroundings (Hosseini et al., 2019).

Figure 2: The Leadenhall Building, London with St. Andrew Undershaft at front.
Source: Andy, Nigel, Andy & Brian (2013). Case Study: The Leadenhall Building, London. CTBUH Journal. Issue II. ctbuh.org/papers.

Similarly, other innovative façade systems, such as kinetic façades that adapt to environmental conditions, demonstrate how façades can serve multiple functions, from energy efficiency to aesthetic appeal (Hosseini et al., 2019; Tabadkani et al., 2021). These case studies underscore the significance of façade design in both shaping first impressions and addressing broader architectural challenges, such as sustainability, energy efficiency, and occupant comfort. The diverse applications of façade design in contemporary architecture reveal the potential for façades to go beyond simple aesthetic considerations, becoming dynamic, responsive, and integral components of modern buildings.

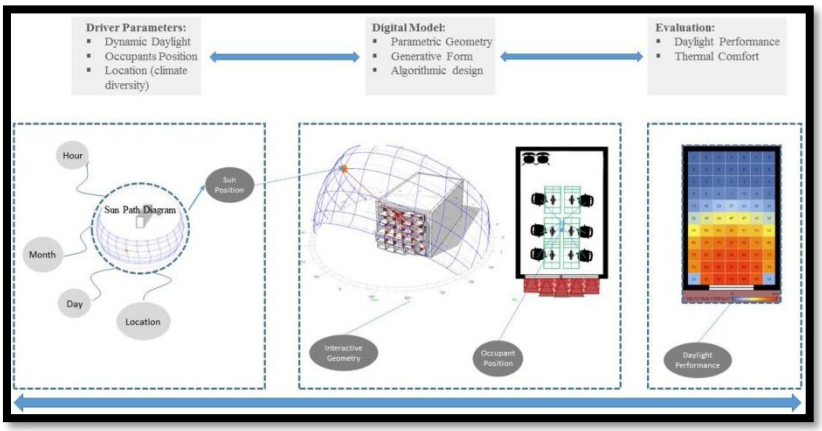

Figure 3: Algorithmic workflow for digital modeling and parametric evaluation in kinetic façade.
Source: Hosseini, Mohammadi, Rosemann, Schröder, & Lichtenberg (2019). A morphological approach for kinetic façade design process to improve visual and thermal comfort: Review. Building and Environment.
https://doi.org/10.1016/J.BUILDENV.2019.02.040

2.5. The Role of Façades in Urban Contexts

Façades are not isolated elements of individual buildings; they interact with the broader urban fabric and influence the perception of entire neighborhoods. In dense urban areas, where buildings are in close proximity, the design of façades plays a crucial role in defining the visual character of a city and contributing to its identity. Façades can reinforce or challenge the surrounding architectural context, helping to create a sense of place and contribute to the overall urban experience (Xie et al., 2022). For example, in areas with historical architectural styles, contemporary façades that respect the scale, rhythm, and materials of the existing buildings can foster a sense of continuity and cultural heritage, while more experimental designs might serve to signal innovation and change.

The role of façades in urban contexts also extends to their ability to shape public perception and behavior. Research has shown that buildings with inviting and visually engaging façades attract more pedestrian traffic and create a sense of accessibility, while uninviting or monolithic façades can discourage interaction and contribute to social isolation. This has significant implications for urban design, particularly in mixed-use developments where the façade must not only reflect the identity of the building's occupants but also engage with the broader public realm. The design of façades in these contexts must therefore strike a balance between private needs and public perception, contributing to a vibrant, dynamic urban environment that fosters positive interactions and enhances the overall city experience.

III. METHODOLOGY

This study adopted a quantitative research approach utilizing structured questionnaires to investigate the influence of façade design on first impressions of office buildings. A combination of closed-ended and open-ended questions was employed to gather both statistical data and qualitative insights, ensuring a comprehensive analysis of participants' perceptions. Closed-ended questions focused on specific façade attributes such as materiality, transparency, scale, and form, while open-ended questions allowed respondents to elaborate on their emotional and cognitive reactions to different façade designs. This mixed-method approach enabled a broader understanding of how façade elements impact users' psychological.

A purposive sampling strategy was implemented to select office buildings with diverse façade typologies, including modern glass structures, conventional brick façades, and hybrid material designs. Participants were drawn from multiple cities, particularly Lagos and Abuja, ensuring a varied urban context for perception analysis. The sample included office workers, pedestrians, and design professionals, providing both user and observer perspectives on façade design. However, to enhance the study's credibility and applicability, expanding the participant pool to include policymakers and facility managers would offer valuable insights into façade maintenance and regulatory constraints.

Data collection yielded a total of 93 responses, which were analyzed using both descriptive statistics and thematic coding. The quantitative data from closed-ended questions were processed using statistical methods to identify perception trends regarding façade materials, transparency, and scale. Qualitative responses were analyzed using thematic coding to extract patterns in participants' cognitive and emotional experiences. Despite this robust approach, the justification for sample size requires further clarification, particularly in terms of how the number of respondents aligns with the study's broader objectives. Addressing this would strengthen the research's methodological rigor and applicability to real-world façade design practices.

IV. FINDINGS AND DISCUSSIONS

4.1. Analysis

i. Demographic Insights: The study sampled a diverse group of respondents, with the largest age category being 36–45 years old (29 respondents), followed closely by those aged 26–35 (24 respondents). The youngest (18–25) and oldest (46+) age groups had an equal number of participants (20 each). In terms of gender, there were more female respondents (53) compared to males (40). The occupational distribution showed a balanced representation, with office workers (24) being the most prevalent group, followed by business owners (21), visitors (19), students (15), and architects (14).

ii. Findings on Transparency Perceptions: Responses regarding glass façades and transparency varied significantly. 30 participants associated glass façades with elegance and modernity, while 27 respondents expressed concerns about excessive exposure. A notable 19 individuals found glass-heavy designs unoriginal, whereas 17 participants valued the improved natural lighting they provide.

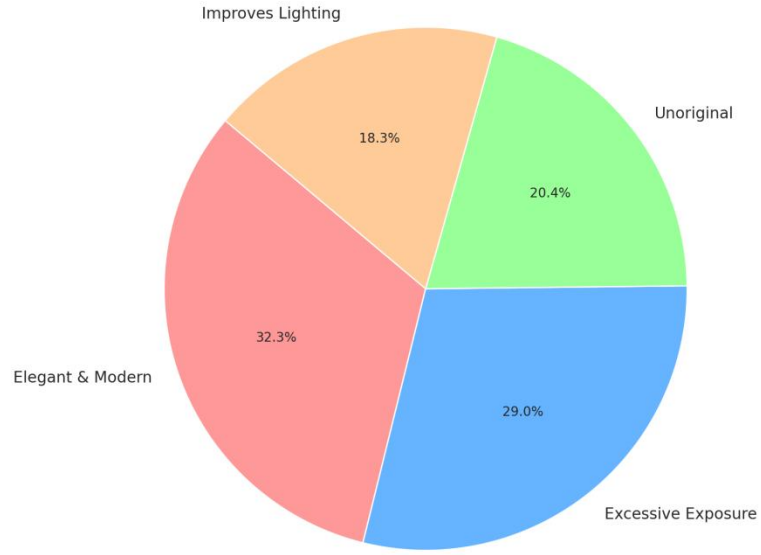

Chart 1: Perception of Transparency

iii. Findings on Scale & Functionality Preferences: When evaluating façade priorities, uniqueness (25 responses) and functionality (24 responses) ranked highest, indicating a preference for both distinctiveness and practicality. Similarly, aesthetic appeal (24 responses) was equally important, while user comfort (11 responses) and energy efficiency (9 responses) were considered less critical.

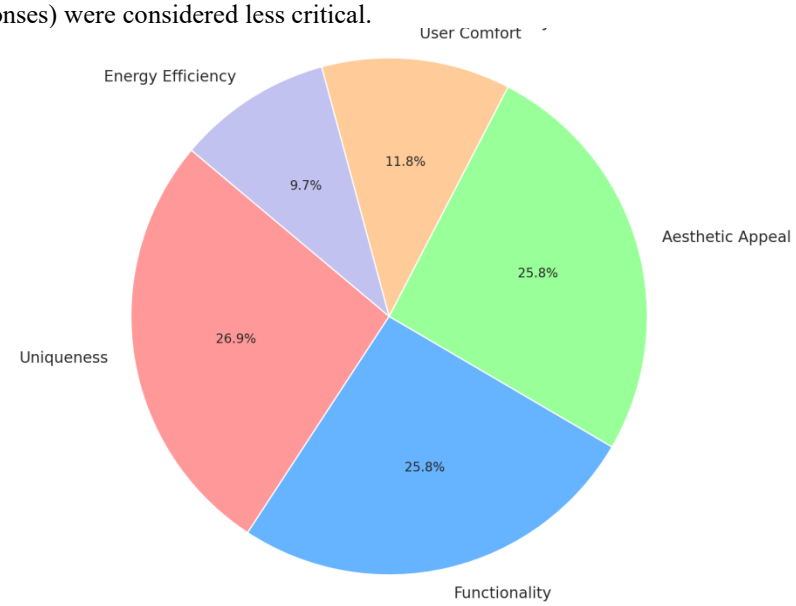

Chart 2: Preference of Scale and Functionality

iv. Findings on Material Perceptions: In terms of material choices, 33 participants associated concrete with a sense of security, while 21 respondents viewed brick as traditional. Glass (21 responses) was favored for its modern appeal, and 18 individuals linked metal with technological advancement.

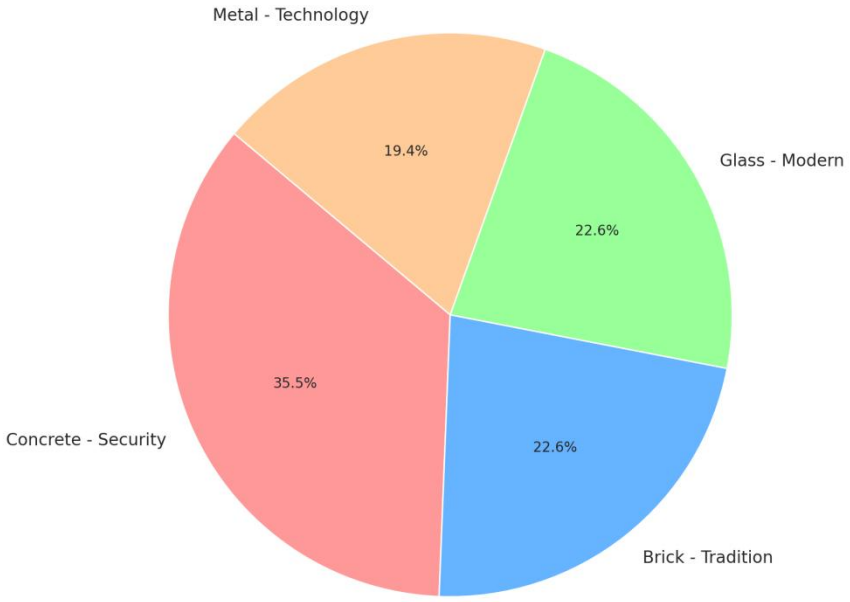

Chart 3: Material Perception Trends

v. Thematic Analysis of open-ended questions: categorizes participants' open-ended responses into key themes, providing insights into recurring perceptions and preferences regarding office building façades. This table highlights the dominant themes identified, illustrating common sentiments on transparency, scale, and material choices.

Theme	Description	Example Responses
Aesthetic Appeal	Participants emphasized the visual impact and uniqueness of façades.	"The design should stand out while blending with the surroundings."
Functionality	The importance of practical elements like ventilation, shading, and durability.	"A good façade should regulate indoor climate and be easy to maintain."
Transparency & Light	Mixed opinions on glass façades, with some praising natural lighting benefits and others criticizing excessive exposure.	"Glass façades improve daylighting but can feel too open and overexposed."
Material Perception	Preferences for secure, modern, or traditional materials.	"Concrete gives a sense of security, while glass is more stylish."
Energy Efficiency	The role of façades in reducing energy consumption.	"Using smart materials can help in controlling indoor temperatures."

4.2. Key Findings

Findings indicate that while glass façades are widely associated with modernity, concerns about excessive exposure and lack of originality persist. However, the study does not address the implications of these preferences in regions where extreme sunlight and heat make glass façades less practical without adequate shading systems. Future discussions should explore context-specific design strategies that balance transparency with climate-responsive features.

Additionally, material preferences such as concrete symbolizing security and brick conveying tradition highlight the importance of cultural influences on perception. However, the study does not explore how these materials perform over time in urban environments prone to pollution, humidity, and temperature fluctuations. A discussion on maintenance requirements for different façade materials, especially in high-density cities, would be beneficial.

4.2 Policy and Urban Planning Considerations

The role of policy and urban planning in façade design is not sufficiently discussed. Building codes, zoning regulations, and sustainability mandates shape façade choices, influencing how office buildings integrate into their urban contexts. For example, Lagos State has emerging green building regulations aimed at reducing energy consumption in commercial buildings). Understanding these regulations can help architects design façades that comply with urban policies while maintaining aesthetic appeal. A section on policy-driven façade innovations, such as incentives for sustainable materials or tax breaks for energy-efficient designs, should be included to strengthen the discussion.

V. CONCLUSION AND RECOMMENDATIONS

Façade design plays a crucial role in shaping first impressions of office buildings, influencing perceptions of transparency, scale, and materiality. Transparency is often associated with openness and modernity, but excessive exposure raises concerns about privacy and glare. Scale and proportion affect uniqueness and functionality, emphasizing the need for well-balanced massing and articulation. Material choices also impact identity, with concrete symbolizing security, glass representing modernity, and metal conveying technological advancement. To enhance user perception, architects should integrate natural elements, optimize daylight without compromising thermal comfort, and consider cultural and environmental contexts in façade design. Key recommendations include adopting adaptive façade technologies, incorporating biophilic design, and striking a balance between transparency and enclosure to ensure both aesthetic appeal and practical function. Future research should explore how façade design influences long-term occupant behavior and productivity, as well as the potential of AI-driven façade optimization and parametric design in improving performance. Additionally, cross-cultural studies could provide deeper insights into regional preferences and climatic conditions, helping architects develop more context-sensitive and user-centric façade solutions.

REFERENCES

[1]. Andy Y., Nigel A., Andy B.& Brian S. (2013). Case Study: The Leadenhall Building, London. CTBUH Journal. Issue II. ctbuh.org/papers.

[2]. Chamilothori, K., Wienold, J., Moscoso, C., Matusiak, B., & Andersen, M. (2022). Regional Differences in the Perception of Daylit Scenes across Europe Using Virtual Reality. Part II: Effects of Façade and Daylight Pattern Geometry. LEUKOS, 18, 316 - 340. https://doi.org/10.1080/15502724.2021.1999257

[3]. Hosseini, S., Mohammadi, M., Rosemann, A., Schröder, T., & Lichtenberg, J. (2019). A morphological approach for kinetic façade design process to improve visual and thermal comfort: Review. Building and Environment. https://doi.org/10.1016/J.BUILDENV.2019.02.040

[4]. Lu, S., Lin, B., & Wang, C. (2020). Investigation on the potential of improving daylight efficiency of office buildings by curved facade optimization. Building Simulation, 13, 287-303. https://doi.org/10.1007/s12273-019-0586-5

[5]. Luna-Navarro, A., Fidler, P., Law, A., Torres, S., & Overend, M. (2021). Building Impulse Toolkit (BIT): A novel IoT system for capturing the influence of façades on occupant perception and occupant-façade interaction. Building and Environment, 193, 107656. https://doi.org/10.1016/J.BUILDENV.2021.107656

[6]. Malewczyk, M., Taraszkiewicz, A., & Czyż, P. (2024). Visual Perception of Regularity and the Composition Pattern Type of the Facade. Buildings. https://doi.org/10.3390/buildings14051389

[7]. Nassimos, M., & Attia, S. (2023). An expert decision support tool for office buildings facades during early design stages: A parametric approach. Building Simulation Conference Proceedings. https://doi.org/10.26868/25222708.2023.1260

[8]. Tabadkani, A., Roetzel, A., Li, H., & Tsangrassoulis, A. (2021). Design approaches and typologies of adaptive facades: A review. Automation in Construction, 121, 103450. https://doi.org/10.1016/j.autcon.2020.103450

[9]. Tabadkani, A., Shoubi, M., Soflaei, F., & Banihashemi, S. (2019). Integrated parametric design of adaptive facades for user's visual comfort. Automation in Construction. https://doi.org/10.1016/J.AUTCON.2019.102857

[10]. Xie, J., Sawyer, A., Ge, S., & Li, T. (2022). Subjective Impression of an Office with Biophilic Design and Blue Lighting: A Pilot Study. Buildings. https://doi.org/10.3390/buildings13010042

[11]. Yıldırım, K., Hidayetoğlu, M., & Unuvar, S. (2021). The effects of location and layout of offices on perceptual evaluations of users. Facilities. https://doi.org/10.1108/F-11-2020-0123