



Original Research Article

Ceramic Tile Misapplication in Institutional Buildings: Safety, Durability, and Aesthetic Implications

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ABSTRACT

Ceramic tiles are among the most widely used finishing materials in contemporary Nigerian architecture due to their affordability, durability, and aesthetic appeal. However, their misuse in public buildings has raised significant concerns regarding safety, functionality, and aesthetics. This paper critically examines the inappropriate use of wall and floor tiles in two case-study buildings at the University of Benin: the Bursary Office and the Faculty of Environmental Sciences. Employing a qualitative case-study methodology, the research integrates on-site observations, photographic documentation, and literature review. The findings reveal recurring patterns of tile misuse, including poor material selection, disregard for slip resistance in high-traffic zones, aesthetic disharmony, and lack of adherence to professional standards. These practices compromise safety, shorten material lifespan, and diminish architectural integrity. The study concludes that misuse of tiles in Nigerian public buildings results from a combination of poor regulation, weak professional oversight, and inadequate artisan training. Addressing these challenges requires concerted effort involving regulators, professionals, and academic institutions to ensure material suitability, standards compliance, and design coherence in public building projects.

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1. INTRODUCTION

In Nigeria's architectural landscape, ceramic tiles have become a dominant material for floor and wall finishes. Their affordability, availability in diverse styles, and durability under tropical conditions have positioned them as a preferred alternative to terrazzo, marble, or natural stone (Akinola, 2019). Tiles are now almost universally employed in both residential and public buildings, often considered a mark of modernity and prestige. However, this popularity has also led to indiscriminate applications,

including the use of unsuitable tile types in high-traffic or moisture-prone environments, or excessive tiling that distorts original design intentions.

Globally, the proper use of ceramic tiles is guided by standards such as ISO 13006 and ASTM C373, which define specifications for water absorption, surface resistance, and installation methods (Chen and Li, 2021). When ignored, the results often manifest as accidents, premature wear, or aesthetic degradation. In Nigeria, misuse is exacerbated by the circulation of substandard imports, lack of institutional enforcement, and dependence on untrained artisans (Ogunbiyi and Lawal, 2020). The problem is further compounded by procurement systems that often prioritize low cost over technical quality, allowing non-compliant materials to enter the market (Samuel and Oni, 2023).

This study is situated within the discourse of architectural material culture, where building finishes not only serve functional purposes but also communicate values, identity, and aesthetics (Adeyemi, 2018). Misuse of materials is therefore not simply a technical flaw but a cultural one, revealing the disconnect between architectural intentions and construction practices. Scholars have documented the increasing reliance on ceramic tiles in institutional projects across Africa. Ezenwa (2017) highlights how tiles are often selected for their low maintenance requirements but warns against over-reliance without considering context. Adebayo and Ajayi (2020) stress that slip-resistant tiles are non-negotiable in public corridors and staircases, yet Nigerian institutions rarely enforce such standards. In their study of tiling practices in Ghana, Mensah and Opoku (2019) found that inappropriate finishes led to higher accident rates among users of government buildings. Similar concerns have been raised in Asia, where indiscriminate tiling in public hospitals resulted in costly retrofitting to correct earlier errors (Wang and Zhou, 2022). These studies underscore the universality of the problem while highlighting the need for context-specific interventions.

In Nigeria, very few studies directly interrogate the misuse of tiles in public institutions, leaving a significant gap in architectural scholarship. This paper, therefore, builds on the limited existing work to offer a case-based analysis in Benin City.

2. MATERIALS AND METHODS

2.1. Study Area and Case Selection

This study employed a qualitative case-study methodology, focusing on two selected buildings within the University of Benin campus: The Bursary Office (a high-traffic administrative facility) and The Faculty of Environmental Sciences (an academic facility with extensive student and staff use). These buildings were selected due to their high public usage and representative nature of institutional architecture in Nigerian universities.

2.2. Data Collection

Data were obtained through multiple methods between January and August 2025:

1. Direct observation: On-site visits were conducted to examine tiling patterns, defects, and user interactions. Systematic observation focused on material performance, installation quality, and user safety issues.
2. Photographic documentation: A comprehensive photographic record was created to capture evidence of material misuse, poor detailing, and aesthetic inconsistencies. All photographs were taken with proper consent and under appropriate lighting conditions.
3. Literature review: Secondary data from journals, standards, and policy documents were used to contextualize findings and establish a theoretical framework.

2.3. Analytical Approach

The data were analysed thematically, focusing on three critical dimensions: safety, durability, and aesthetics. These themes were cross-referenced with international standards and scholarly findings to identify gaps and implications. The analytical process involved pattern recognition, comparative analysis, and standards compliance checking.

3. RESULTS AND DISCUSSION

3.1. Safety Concerns

One of the most evident misuses observed was the installation of glossy, smooth-surfaced tiles in staircases and corridors of the Faculty of Environmental Sciences (Figure 1). These tiles, though visually appealing, become dangerously slippery when wet, leading to multiple near-accident reports among students and staff. The lack of slip-resistant finishes violates established safety standards, and it reflects a broader neglect of functional suitability in material choice. Similar trends have been reported by Adebayo and Ajayi (2020), who warn that accidents in tiled environments are often preventable through proper specification.



Figure 1: Slippery glossy tiles installed on staircases, Faculty of Environmental Sciences and the Bursary Office Building (Photo-montage and modified by K.J. Eweka 2025)

3.2. Durability Issues

At the Bursary Office, extensive cracking and detachment of floor tiles were observed, particularly in high-traffic waiting areas (Figure 2). This was linked to poor substrate



Figure 2: Detached and cracked floor tiles at the UNIBEN Bursary Office Building (Photographed and modified by K.J. Eweka 2025)

preparation and the use of a low-quality adhesive. Some areas also showed hollow sounds when tapped, indicating voids beneath the tiles. Studies have directly linked such failures in the humid Nigerian climate to inadequate curing of screeds and the use of incorrect adhesive formulations (Oluwole and Adekoya, 2023). Durability problems compromise not only aesthetics but also institutional resources, as constant repairs inflate maintenance costs. Ogunbiyi and Lawal (2020) attribute such failures to poor quality control in procurement and lack of professional oversight during installation.

3.3. Aesthetic Disharmony

The study also identified visual inconsistencies where different tile patterns and colours were arbitrarily combined. In the Faculty building, brightly coloured wall tiles clashed with subdued floor finishes, creating an atmosphere of visual discord (Figure 3). This undermines architectural coherence and detracts from the professional image of the institution. Adeyemi (2018) argues that aesthetics are central to the cultural role of architecture, and poor material harmony diminishes a building's ability to convey institutional identity. This visual chaos has been shown to negatively impact user perception and satisfaction in institutional settings, as noted in studies on Nigerian public architecture (Nwosu, 2022).



Figure 3: Poorly matched wall and floor tiles in the faculty's lobby (Photographed and modified by K.J. Eweka 2025)

4. CONCLUSION

The misuse of ceramic tiles in public buildings at the University of Benin demonstrates broader systemic challenges in Nigerian construction practice. The observed issues—safety hazards, durability failures, and aesthetic disharmony—are the outcomes of poor regulation, weak professional oversight and inadequate artisan training. This study contributes to the discourse on architectural material culture in Nigeria by drawing attention to how everyday finishing choices shape user experience, safety, and institutional identity. The findings suggest that addressing tile misapplication requires a multi-dimensional approach. First, material selection must be guided by functional requirements rather than merely aesthetic or cost considerations. Second, adherence to established standards must be enforced through proper professional oversight. Third, the skills gap among artisans must be addressed through structured training programs. Fourth, aesthetic considerations should be integrated into the procurement and installation process through design review mechanisms. Future research should explore the development of context-specific guidelines for tile selection and installation in tropical environments, as well as the economic implications of premature tile failure in public buildings. By addressing these challenges through collaborative efforts between regulators, professionals, and academic institutions, Nigerian public buildings can achieve the safety, durability, and aesthetic quality that users deserve.

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6. CONFLICT OF INTEREST

There is no conflict of interest associated with this work.

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