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UNHEARD STAKEHOLDER VOICES: EVALUATING THE FUNCTIONAL PERFORMANCE OF MANNING MARKET BUILDING

Upeksha Hettithanthri[1] and Nalaka Krishantha[2]

ABSTRACT

Understanding how end users experience a building and evaluating its performance are essential for linking design decisions with actual operational behavior. This study investigates how architectural design influences user experiences and performance at Manning Market Complex in Peliyagoda, Sri Lanka. Using a qualitative approach, data was collected through observations and semi-structured interviews with market users. Thematic analysis identified patterns related to building performance and user experiences. Results showed architectural changes caused social, environmental, and health challenges, impairing its function as a market. Five themes emerged i.e. (i) operational contradictions, (ii) support issues, (iii) environmental vulnerabilities, (iv) architectural–functional misalignment, and (v) waste/hygiene problems. The building's design poorly responds to Sri Lanka's tropical climate, causing heat, rain disruptions, and discomfort. Its high-roofed structure and environmental features conflict with market needs, while waste management issues hinder hygiene and operations. Overall, the study reveals that current architectural solutions fail to meet market needs, negatively affecting user experience and performance. The findings highlight the need for user-centered and context-aware design in future markets.

Keywords: *Architecture of a Building; End User; Functionality; User experiences.*

1. INTRODUCTION

The architecture of the building gives life to its occupants (Vischer, 2008). The structure, designed by the architect and a team of architects, possesses the potential to influence the lifestyle of its inhabitants. Buildings are not merely physical structures; they are dynamic environments that continuously interact with their users, activities, and surrounding conditions. The success of an architectural design is determined not only by its aesthetic qualities or technical composition yet by its ability to support intended functions, enhance user experiences, and respond effectively to environmental and operational demands (Boissonneault & Peters, 2025). Therefore, evaluating the performance of a building after occupation is essential to understanding how architectural decisions translate into real-life experiences and functional outcomes. Post-occupancy evaluation provides valuable insights into the relationship between design intentions and actual building performance, revealing whether a built environment successfully accommodates user requirements or

[1] Department of Design Studies, NSBM Green University, Homagama, Sri Lanka , upeksha@nsbm.ac.lk
[2] Nalaka Krishantha Architects, Mount Lavinia, Sri Lanka , nalakakrishanthaarchitects@gmail.com

creates unintended challenges (Hay et al., 2018). The building's design must address the complex needs of its users. These needs extend beyond mere spatial requirements and include socio-cultural and economic aspects of the dwellers. In the discipline of architecture, the design process begins with understanding the user and exploring contextual demands and scenarios. The primary principle of the design process is to commence with empathising, which involves exploring user needs, requirements, and understanding the underlying human requirements behind the proposed functionality (Kanstrup, 2012; Castillo et al., 2022). Therefore, conducting thorough investigations of user needs, requirements, and comprehending the complexities and consequences beforehand are regarded as fundamental responsibilities of the architect (Hart et al., 2022; Luck, 2007).

Public market buildings represent a unique category of functional spaces where architectural design must respond to complex social, economic, environmental, and operational requirements (Francis & Griffith, 2011). Unlike conventional commercial buildings, markets are highly dynamic environments characterised by continuous movement of people, frequent exchange of goods, intensive daily activities, and changing environmental conditions (Ruiz, 2025; Hay et al., 2018). The effectiveness of a market facility depends on its ability to provide appropriate spatial organisation, environmental comfort, hygiene, accessibility, and operational efficiency (Hart et al., 2022; Kaminer, 2023; Luck, 2007; Pervaiz et al., 2025). Particularly in tropical climates, market buildings require careful consideration of climatic responses such as ventilation, solar heat control, rain protection, and waste management to ensure healthy and comfortable working conditions for both vendors and customers (Chen et al., 2023).

In Sri Lanka, public market complexes serve a vital function in facilitating local economic activities, especially in the distribution and sale of fresh agricultural commodities. Nevertheless, numerous market facilities face challenges related to climatic exposure, overcrowding, insufficient infrastructure, waste buildup, and suboptimal spatial configurations. These concerns underscore the necessity of investigating how architectural design impacts the daily experiences of users and whether such environments adequately fulfill their designated roles.

1.1 ARCHITECTURE OF THE MANNING MARKET AND ITS USABILITY

The Manning Market in Peliyagoda serves as a primary commercial hub specialising in vegetables and fruits within Sri Lanka. It functions as a vital node within the nation's food distribution infrastructure. The market operates as an active center and a congregation point for various stakeholders, including farmers, as well as retail and wholesale buyers and sellers of produce. The principal aim of this complex is to provide adequate shelter for the trading activities conducted on-site. Its structure is characterised by a substantial form, distinguished by a prominent roof at its upper levels. The architecture exerts a commanding presence in the surrounding environment, demonstrating significant architectural prominence through its massing. Architecturally, the Manning Market was designed with an open-plan layout to accommodate high volumes of trade. Although the building complex comprises several floors, only two levels are exclusively designated for purchasing and selling activities. The basement, designated for parking, and the ground level are primarily utilised for loading and unloading operations.

The large two-winged structures extend outward, forming substantial volumes. The roof features a curved steel truss, enhancing the feeling of openness inside. Natural elements

like air, wind, heat, and rain enter freely without barriers. However, the structure shows limitations in fulfilling its primary purpose. The building's orientation, span, height, and openness have heightened disturbances for the daily users involved in the buying and selling process.

Figure 1: Excessively utilized ground floors and abandoned upper floors at Manning Market

The investigation into the building performance at Manning Market in Colombo is warranted owing to its essential function as one of Sri Lanka's major wholesale produce distribution centers. This facility experiences high daily user density, intense commercial activities, and persistent logistical operations. As a longstanding urban marketplace, it faces considerable environmental and operational challenges, rendering it an exemplary case for assessing the performance of traditional market typologies under modern requirements.

From a performance perspective, the building exhibits potential challenges related to occupancy, ventilation efficiency, hygiene and waste management, spatial congestion, and circulation inefficiencies. These issues are further intensified by Colombo's tropical climate, high humidity, and heavy rainfall patterns, which directly impact both user experience and product quality. Additionally, the market represents an important intersection of formal infrastructure and informal economic practices, providing a relevant context to assess how architectural design supports or constrains operational efficiency. Therefore, this study aims to generate empirical insights that can inform future market redesigns, urban regeneration strategies, and climate-responsive public infrastructure development.

1.2 PROBLEM STATEMENT

Architecture is expected to support the activities it accommodates by responding to functional, environmental, and user requirements (Mustafa, 2017). In public buildings such as markets, architectural design directly influences operational efficiency, user experiences, product quality, and overall building performance (Altomonte et al., 2021; Hay et al., 2018). Particularly, wholesale markets handling fresh produce require specific environmental conditions, including protection from excessive heat, sunlight, rain, effective ventilation, hygiene, and efficient spatial organisation. Therefore, the success of a market building should be evaluated not only through its visual or spatial qualities yet through its ability to support its intended function (Debrah et al., 2025; Simelane et al.,

2024). Public markets represent complex functional environments where architectural performance directly influences economic activities, user interactions, product quality, and operational efficiency (Bertaud, 2024). Unlike conventional commercial buildings, wholesale markets dealing with fresh produce require specific environmental conditions, including controlled exposure to sunlight, protection from adverse weather conditions, effective ventilation, hygiene management, circulation efficiency, and appropriate spatial organisation (Sinha & Choudhury, 2023; Aramburu, 2024). The architectural configuration of such spaces has a direct impact on preserving the quality of perishable goods, facilitating transactions, and supporting the daily activities of vendors, buyers, and service providers. Therefore, the success of a market building cannot be evaluated solely based on its physical appearance or spatial arrangement but must be assessed through its ability to support the intended function (Anabtawi & Bleibleh, 2025).

The Manning Market Complex in Peliyagoda, Sri Lanka, provides an important context to examine the relationship between architectural design decisions and functional performance. Although the building was designed as a modern wholesale market, its architectural and structural solutions appear to have limited contribution towards enhancing its core function of buying and selling fresh produce. The market deals with perishable goods that are highly sensitive to environmental conditions; however, the existing design, which emphasises openness and natural exposure through its large roof structure and spatial arrangement, may contribute to increased heat exposure and monsoon rain penetration. These conditions can negatively affect product preservation, user comfort, and daily market operations.

Previous studies have extensively examined architectural design principles, building performance evaluation, and user satisfaction in other countries (Anabtawi & Bleibleh, 2025; Bertaud, 2024; Hay et al., 2018; Sinha & Choudhury, 2023; Pervaiz et al., 2025). However, limited attention has been given to understanding how architectural characteristics influence users lived experiences and functional performance in public market environments, particularly within the Sri Lankan context. There is a lack of empirical research investigating whether architectural decisions continue to support the intended functions of market buildings after implementation.

Therefore, this study addresses this gap by investigating the influence of architectural design on user experiences and the functional performance of the Manning Market Complex. By examining existing architectural conditions, user experiences, and observed building performance, the study aims to identify how effectively the building design supports or hinders the operational requirements of a wholesale market.

The study was conducted aiming to answer the following research question:

1. How does the architectural design and spatial configuration of the Manning Market building influence its functional performance as a wholesale market?

2. RESEARCH METHODOLOGY

To investigate the identified research problem, a qualitative research approach was adopted, incorporating both direct observation and semi-structured interviews with open-ended questions. This approach enabled an in-depth understanding of user experiences, behaviours, and perceptions within the market context.

2.1 DATA COLLECTION

This study used a qualitative method to explore how architectural design relates to the actual use of Manning Market Complex in Peliyagoda, Sri Lanka. The approach focused on understanding users' experiences, perceptions, and behaviors, as architectural performance depends on human interaction, spatial practices, and context. Direct engagement with users and observing real-time activities were key to capturing the link between design and use. The selected market represents a highly active public facility where architectural decisions directly influence daily commercial activities, user movement, environmental comfort, hygiene conditions, and operational efficiency. Data collection was conducted over a continuous three-day period through a combination of participant observations, semi-structured interviews, photographic documentation, and video recordings. The integration of multiple data collection methods enabled methodological triangulation, improving the reliability and depth of the findings by examining building performance from both observed and user-experienced perspectives.

2.1.1 Participant Selection and Sampling Strategy

A total of 50 participants were selected via convenience sampling: 25 vendors and 25 buyers actively engaged in the market during data collection. These groups were chosen because vendors and buyers, as primary users, experience the building differently, vendors through activities e.g. display, storage, and waste management, and buyers through circulation, accessibility, environment, and purchasing. Including both offered a comprehensive view of the building's functional performance from operational and experiential perspectives.

The sample included 33 males and 17 females aged 30-60, representing diverse perceptions of spatial usability, environmental conditions, and challenges. As the focus was on user experiences rather than statistical generalisation, the purposive sampling of active users ensured participants had direct knowledge of the building's daily operation. Prior to data collection, participants were informed about the objectives, procedures, and scope of the study (Mertens & Ginsberg, 2009). Ethical principles were maintained throughout the research process. Participation was voluntary, informed consent was obtained before conducting interviews and audio recordings, and participants were assured that their identities and personal information would remain confidential (Comstock, 2013). All collected information was anonymised during analysis and reporting to protect participant privacy.

2.1.2 Observation

Systematic observations were conducted within the natural operational setting of the market to understand actual patterns of spatial use, user behavior, circulation flows, functional conflicts, and environmental responses (DeWalt & DeWalt, 2010). Particularly in architectural research, direct observation is considered an effective approach for understanding how users appropriate, adapt, and negotiate spaces after buildings become operational (Cross & Cross, 1995; DeWalt & DeWalt, 2010). The researchers conducted immersive observations within the market environment to investigate how architectural spaces were occupied and modified by users during daily market activities (Bertaud, 2024; Sinha & Choudhury, 2023). This approach aligns with the principles of post-occupancy evaluation, where buildings are assessed based on their actual performance and users' experiences rather than solely based on the original design intentions (Hay et al., 2018). Observation was conducted during the active operational period of the market,

from 4:00 a.m. to 3:30 p.m. on a weekday, allowing the study to capture variations in building performance throughout different stages of market activity, including peak operational hours. Field notes were recorded systematically to document observed behavioral patterns and environmental conditions.

2.1.3 Semi-structured Interviews

Semi-structured interviews were used to explore users' experiences and perceptions of the Manning Market Complex's functional performance (Bryman & Burgess, 1999). This method balances structure with flexibility, capturing subjective evaluations that physical observation cannot. The interview protocol focused on architectural performance aspects like spatial functionality, circulation, comfort, efficiency, adaptability, and maintenance (Zhang et al., 2023). Questions encouraged participants to reflect on their interactions, current issues, and how architecture supports daily activities, covering their roles, interaction durations, and building familiarity.

Interviews were conducted face-to-face at the market, linking responses to spatial features for validity. Participants were informed about the study's purpose, confidentiality, and consent was obtained. Sessions lasted 15–30 minutes, with open-ended questions to elicit honest responses. Data included audio recordings, notes, and reflections, later transcribed and analysed thematically.

2.2 DATA ANALYSIS

The data from multiple sources were analysed using a six-phase thematic approach (Braun & Clarke, 2006; Guest et al., 2023; Hoskyns, 2016). The process began with data identification and organisation, allowing systematic pattern recognition. Data from diverse sources and techniques were prepared independently. Familiarization involved reviewing and filtering non-textual data, with textual data including observation summaries, field notes, participant narratives, transcribed interviews, and chat extracts, while photos, images, diagrams, and sketches were categorised as non-textual. The second phase, generating initial codes, involved reviewing the entire data set, with the researcher coding and categorising data using colour codes. Subsequently, primary codes were examined, and meaningful codes were grouped into secondary codes. The third step in the thematic analysis, c) search for themes, involved synthesising and reviewing the primary and secondary codes. The fourth step, d) reviewing and refining the themes, was carried out by the researcher. The identified themes were then e) defined and appropriately titled based on the underlying meanings, constituting the final step of the thematic analysis. To reduce researcher bias and improve reliability, an intercoder analysis was used where two researchers independently coded interview transcripts with a developed coding framework. After independent coding, differences were discussed and refined until consensus was reached, enhancing data consistency and dependability. Researchers maintained reflexivity by reflecting their assumptions and distinguishing participant meanings from researcher interpretations, supported by multiple data sources.

The triangulation of multiple data sources further strengthened the validity of the findings. Interview data were compared with direct observations and visual documentation to confirm whether reported experiences corresponded with actual conditions within the building environment. For example, user perceptions regarding environmental discomfort, circulation difficulties, or waste management issues were examined alongside observed spatial conditions and photographic evidence.

2.3 LIMITATIONS OF THE STUDY

This study has methodological limitations, mainly in stakeholder representation, focused on end users, vendors, and buyers, whose experiences offered valuable insights into the building's performance. While this provided rich, contextual data, it centered on user perspectives. The study did not include interviews with the original designers or consultants of the Manning Market Complex, so insights into design intent, decision-making, spatial strategies, and technical constraints were missing. This limits comparison between intended outcomes and actual performance. Still, focusing on vendors and buyers is valuable, as they are the most frequent users, offering essential insights into operational performance. Future research should include architects, engineers, facility managers, and local authorities for a more comprehensive evaluation and better understanding of how design matches functional outcomes.

3. RESULTS

The thematic analysis identified eleven subcategories, six main categories, and five themes to address the research question. The results show the major influences on building performance caused by the architectural design. This theme captures the inconsistencies between the intended function of the Main Market building and its actual operational performance. Although the facility was designed to support commercial activities and improve market operations, stakeholders reported multiple contradictions between the physical infrastructure and the practical needs of users. The findings suggest that the building structure has failed to adequately respond to user requirements, operational workflows, and health and safety considerations. Consequently, stakeholders experience significant challenges in conducting their daily activities, indicating a mismatch between the built environment and its intended purpose (refer Figure 2).

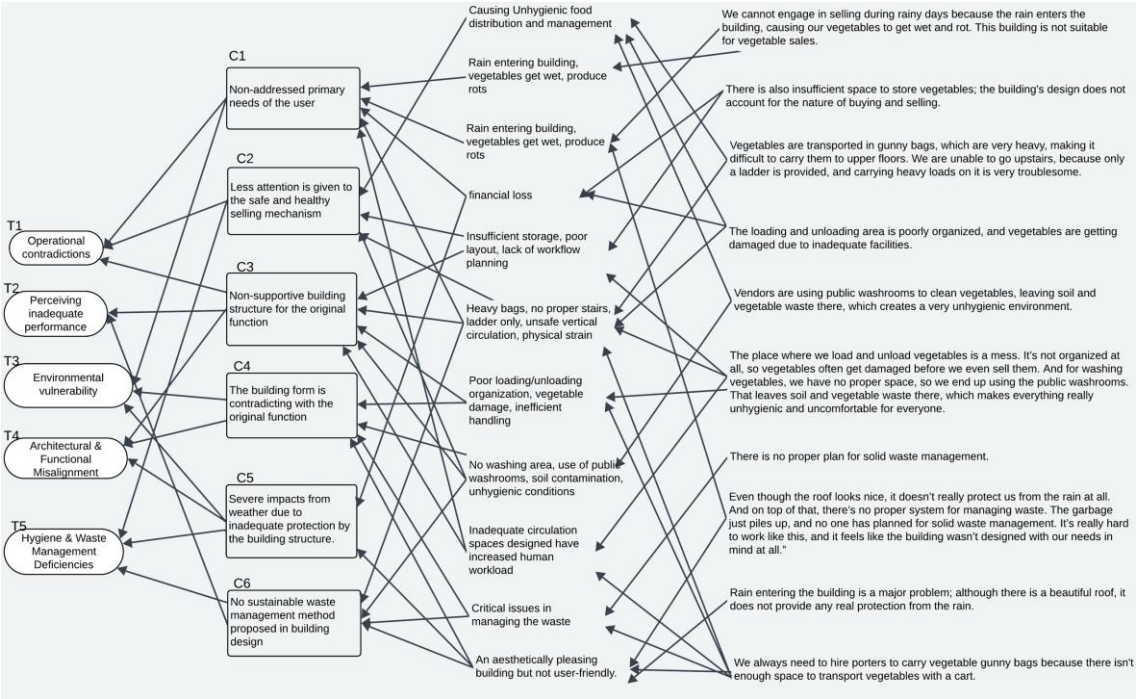

Figure 2: Thematic map developed by the author

Accordingly; C1: unattended primary needs of the user, C2: less attention given to safe and healthy selling mechanisms, C3: non-supportive building structure for the original function explains the architectural mismatch along with its original purpose. The results depict that the architectural design paid very little attention to the core business activities happening inside the building. The category one (C1) reflects the extent to which the fundamental needs of market users have been overlooked during the planning, design, and operational phases of the market facility. Participants reported that critical requirements necessary for the effective functioning of trading activities were insufficiently addressed within the building structure. These unmet needs included adequate circulation spaces, accessibility, loading and unloading facilities, storage provisions, customer interaction spaces, and environmental comfort conditions. The findings indicate that the building was developed with limited consideration of the everyday operational realities experienced by vendors and customers. As a result, stakeholders were compelled to adapt informally to structural inadequacies, often creating alternative arrangements to facilitate their business activities. Such adaptations reveal a significant disconnect between user requirements and the physical configuration of the market.

The architectural elements designed, such as the high roof and mezzanine floors that can only be accessed by ladders, have significantly impacted the building's daily operations. The primary function of buying and selling vegetables was not considered during the design process. In contrast, a high level of design solution was provided by hypothetically assuming that the actual users would fit into the given building structure. From a design perspective, the neglect of primary user needs represents a failure to incorporate stakeholder knowledge into the planning and design process, ultimately compromising the functionality and usability of the market environment.

However, instead of adapting the users to the proposed solution, they continued their usual routines within the building. The weight factors, loading and unloading factors, distribution of goods, and human circulation were not adequately considered during the design phase. The results showed a contradiction between actual usage and expected usage: “C4- the building form is contradicting with its original function.” This category captures stakeholder perceptions that the architectural form of the market building is fundamentally misaligned with its intended operational purpose. Participants indicated that while the building may possess a visually distinctive or architecturally significant form, its spatial configuration does not adequately facilitate the functional requirements of a public market environment. The findings suggest that the design process may have prioritized formal architectural expression over functional performance considerations. Stakeholders reported that certain spatial arrangements, circulation networks, and structural configurations create operational inefficiencies that hinder trading activities, customer movement, and service accessibility. Rather than supporting the dynamic interactions characteristic of market environments, the building form imposes physical constraints that disrupt daily operations.

Additionally, C5 highlights severe impacts caused by weather on the building's daily operations. The tropical climate of Sri Lanka experiences unpredictable and monsoon rains throughout certain periods of the year. During the rainy seasons, stormwater enters the building directly, and no weather protection was incorporated into the design to address these weather conditions at the initial planning stage. Sri Lanka's tropical climate requires building designs that respond effectively to environmental conditions through

appropriate shading systems, ventilation strategies, rainwater protection mechanisms, and thermal comfort considerations. However, stakeholders indicated that the existing structure demonstrates limited climatic responsiveness, resulting in operational disruptions during adverse weather conditions.

The findings suggest that insufficient environmental adaptation has reduced the building's capacity to maintain comfortable and functional conditions for vendors and customers. During periods of heavy rainfall, water ingress and circulation difficulties were reported, while excessive heat exposure affected both product quality and user well-being. These conditions negatively influence commercial performance and reduce the overall usability of the facility.

The C6 explains the issues caused by the unaddressed waste management system. Participants reported that waste generation associated with market operations, particularly organic and food-related waste, is not adequately managed through the existing infrastructure. The findings indicate that the building structure provides insufficient support for waste segregation, collection, storage, processing, and disposal activities. Consequently, waste accumulation has emerged as a persistent operational challenge affecting environmental quality, hygiene standards, and user experience. Stakeholders further emphasized that ineffective waste management contributes to unpleasant odours, pest infestations, sanitation issues, and environmental degradation. These conditions not only undermine the operational efficiency of the market yet negatively influence public perceptions of the facility. Furthermore, due to unaddressed weather protections, loading and unloading methods, and circulation problems, the daily production of solid waste is increasing. Many vegetables rot due to overexposure and lack of hygienic storage facilities, leading to an increase in solid waste.

The thematic analysis identified five themes that clearly explain the functional behaviour of the Manin Market Building. T1: Operational contradictions, T2: perceiving inadequate performances, T3: environmental vulnerability, T4: architectural and functional misalignment, T5: hygiene and waste management deficiencies are the themes that illustrate the building's functional performance over usability. Even though the market has been designed to cater to the retail and wholesale selling of fruits and vegetables, the building does not support its original function significantly.

3.1 OPERATIONAL CONTRADICTIONS

The theme one (T1) captures the inconsistencies between the intended operational objectives of the Main Market and its actual functional performance. Stakeholders consistently reported that the building structure fails to adequately support the everyday activities for which it was originally designed. Although the facility was established to facilitate efficient commercial transactions, circulation, product handling, and customer interactions, several structural and spatial characteristics impede these functions.

The findings reveal a significant mismatch between user requirements and building performance, resulting in operational inefficiencies that affect vendors, consumers, and service providers. These contradictions manifest through inadequate accommodation of user needs, inefficient spatial arrangements, poor circulation systems, and limited support for market-specific operational activities.

3.2 INADEQUATE PERFORMANCE OVER THE DEPICTED FUNCTION

The T2 shows stakeholders see the building as underperforming as a public market, citing issues with accessibility, usability, comfort, safety, convenience, and efficiency. Performance goes beyond construction quality, encompassing how well the facility meets user needs and supports activities. Stakeholders are dissatisfied because the building fails to meet basic functional and environmental standards. This distinguishes between technical completion and functional success; although structurally operational, users see significant shortcomings in supporting activities. Performance should be evaluated through user experiences and satisfaction. The building has caused disruptions and damage, with design conflicts such as storage on upper levels and unsafe ladders, contradicting its purpose. Unforeseen user needs early in design hinder performance assessment. Environmental vulnerabilities also impact functionality.

3.3 ENVIRONMENTAL VULNERABILITY

Theme three (T3) describes the market environment's susceptibility to adverse climatic and environmental conditions. Stakeholders reported that the building exhibits limited resilience against weather-related challenges, particularly excessive heat, rainfall, humidity, and inadequate environmental protection. Sri Lanka's tropical climatic context demands climate-responsive architectural solutions capable of mitigating environmental stressors while maintaining thermal comfort and operational continuity. However, participants indicated that the existing market structure provides insufficient protection against prevailing environmental conditions, resulting in discomfort, disruption of commercial activities, and deterioration of product quality.

The findings suggest that environmental considerations were inadequately integrated into the building design process. Consequently, the market demonstrates a heightened level of environmental vulnerability that compromises both user well-being and functional performance.

3.4 MISALIGNMENT OF THE ARCHITECTURE OF THE BUILDING AND THE FUNCTIONALITY

Theme 4 elucidates the discrepancy between the architectural design of the building and its functional requisites. The absence of adequate circulation spaces, unplanned retail areas, disorganised loading and unloading zones, high ceiling structures, and mezzanine levels with ladders collectively engender conflicts related to functionality. The building's actual operation encompasses the handling of substantial quantities of vegetables and fruits, which are sold in both retail and wholesale markets. On a daily basis, over 3000 visitors convene at this marketplace, necessitating more precise allocation of space. Nevertheless, the current market structure fails to provide additional support, enhancement, or meaningful contribution to the trading activities; rather, it introduces numerous daily operational challenges. It is imperative to estimate the volume of waste generated during actual operations during the design phase and to address this through effective design solutions. However, in the case of Manning Market, it has been demonstrated that the design team did not sufficiently consider the potential quantity of daily waste production. Furthermore, an appropriate design solution for solid waste management was not proposed.

3.5 WASTE MANAGEMENT DEFICIENCIES

The fifth theme highlights issues with hygiene management and waste handling at Manning Market Complex, showing a mismatch between the building's design and high-demand operations. The building lacks support for systematic waste processes, causing operational problems and environmental decline. A key problem is the absence of a well-planned loading system. The current layout hampers goods movement during busy times, creating conflicts with pedestrian flow and waste areas. Without defined service zones, loading spaces, or organised routes, handling is inefficient and disrupts daily activities.

The study found no integrated waste management in the building design, with no provisions for segregation, storage, collection, recycling, or disposal. Organic waste from vegetable and fruit trading accumulates, causing hygiene issues and environmental concerns. The absence of designated waste points and recycling shows limited consideration of the market's operational lifecycle. Architectural features do not support cleaning or maintenance effectively, lacking proper drainage, maintainable surfaces, cleaning zones, or accessible waste areas. As a result, cleaning depends mainly on manual effort instead of architectural solutions.

4. DISCUSSION

The architecture of a building influences residents' lifestyles, with architects capable of transforming living through innovative design. Architecture shapes human experience, and to create user-friendly solutions, architects must understand stakeholders' true needs. Rather than building first and fixing later, understanding functionality early is key. Elements such as configuration, circulation, responsiveness, materials, and function should be considered even in early design. Spatial hierarchy, accessibility, ergonomics, flexibility, and adaptability are vital, shaping architecture into a practical reality. When these factors align with human needs, architecture mediates between human desires and the environment. The findings show that a market building's success depends on both spatial provision and how architectural choices respond to user activities, environmental conditions, and operations. Hay (2018) argued that building performance must be assessed through actual use and user experience after occupancy, as design alone can't determine success. In Manning Market Complex, operational realities reveal that some architectural decisions conflict with the physical traits of the building and the functional needs of market activities.

Markets are dynamic with shifting spatial needs due to product movement, vendor activities, customer flow, loading, unloading, and storage. Bellentani (2021) states that built environments influence human behavior, but users adapt spaces for practical needs. Observations show users often modify spaces to address functional gaps, indicating designs don't fully support operational patterns. Successful design requires understanding user needs through observation, dialogue, and feedback. Empathy involves an in-depth inquiry into workflows, cultural practices, constraints, and aspirations, focusing on actual space use rather than assumptions. The findings suggest hygiene-related challenges are influenced by architectural planning decisions, not just management. Effective market design integrates functional zoning, service areas, circulation paths, and waste systems, supporting environmental design principles in which building performance results from interactions among spatial organisation, user behavior, and operational systems (Hay et al., 2018; Mustafa, 2017). Architecture should enable behavior, not impose it.

Environments should align with user needs, enhance capabilities, and promote sustainable living. When empathy guides innovation, architecture becomes a catalyst for meaningful everyday transformation.

5. CONCLUSIONS

This study analysed the performance of the Manning Market Complex using observed user behavior and interviews and identified five key themes: operational contradictions, perceived inadequate performance, environmental vulnerability, architectural and functional misalignment, and hygiene and waste management issues. Findings show a disconnect between design intent and actual support for retail and wholesale fruit and vegetable activities. Although meant to facilitate efficient operations, the building's spatial and environmental design falls short of operational needs, with issues like climate exposure, poor circulation, and waste management problems. This highlights the gap between architectural assumptions and post-occupancy performance in complex markets.

The study emphasizes the importance of post-occupancy evaluation for understanding building function in real life and suggests that market buildings, especially in tropical urban areas, need climate-responsive, user-centered, and integrated design strategies for lasting efficiency. Success should be measured beyond formal qualities, including environmental resilience and user experience.

Future research could compare different market types across climates to identify transferable design principles, using quantitative assessments including environmental monitoring and spatial analytics. Further studies might also examine governance, maintenance, and user adaptation in long-term performance. Ultimately, Manning Market shows that misalignment between design and function can cause underperformance, highlighting the need for performance-driven architectural approaches that consider environmental, spatial, and operational factors from the start through post-occupancy evaluation.

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