



**Evaluating Traffic and Crowd Management Strategies during the Lagos International Trade Fair at TBS:
Implications for Event-Oriented Urban Design**

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ABSTRACT

This study assesses traffic and crowd management strategies during the Lagos International Trade Fair at Tafawa Balewa Square in Lagos, with emphasis on their implications for event-oriented urban design. Large-scale public events in rapidly growing cities are often evaluated for their economic and social impacts; however, the spatial and infrastructural challenges associated with managing high volumes of vehicular and pedestrian movement are less frequently examined from an architectural and urban design perspective. The study argues that the spatial organization of circulation networks, temporary exhibition layouts, and the integration of event infrastructure with surrounding urban systems significantly influence mobility efficiency, safety, and user experience. A qualitative research approach was adopted, employing site observations, spatial mapping, and photographic documentation to examine vehicular and pedestrian movement within and around the event venue. The analysis focuses on elements such as vehicular access hierarchy, pedestrian circulation routes, parking arrangements, entry and exit points, and the configuration of temporary structures. The study concludes that effective management of large public events requires design-led planning that integrates architectural and urban design principles into traffic and crowd management strategies.

Keywords: Traffic Management, Crowd Management, Event-Oriented Urban Design, Urban Mobility, Pedestrian Circulation, Trade Fair Events, Lagos International Trade Fair, Tafawa Balewa Square

INTRODUCTION

Large-scale public events such as international trade fairs significantly influence urban mobility, spatial use, and public safety. The Lagos International Trade Fair, hosted annually at Tafawa Balewa Square (TBS), attracts thousands of visitors, exhibitors, and service providers from within and outside Nigeria. While the event contributes to economic growth and cultural exchange, it also places immense pressure on existing urban infrastructure, particularly traffic circulation and crowd management systems. Large-scale public events such as international trade fairs have significant implications for urban mobility, spatial organization, and public safety. These events often attract large numbers of visitors, exhibitors, and service providers, temporarily transforming host cities into high-density activity zones (Getz, 2012). The Lagos International Trade Fair, held annually at Tafawa Balewa Square (TBS), is one of Nigeria's most prominent commercial events, drawing thousands of participants from within and outside the country. While the event contributes to economic development and international trade opportunities, it also places substantial pressure on urban infrastructure, particularly transportation networks and pedestrian systems.

Efficient traffic and crowd management are therefore essential components of successful event planning. Poorly coordinated mobility systems can lead to congestion, delays, safety risks, and negative visitor experiences (Khisty & Lall, 2013). From an architectural and urban design perspective, understanding how people and vehicles interact within event environments is critical for improving spatial planning and ensuring safe and efficient movement patterns. Tafawa Balewa Square, located on Lagos Island, functions as an important civic and ceremonial space within the city. During the Lagos International Trade Fair, the square temporarily transforms into a dense event environment consisting of exhibition tents, temporary structures, pedestrian corridors, parking areas, and service zones. As a result, congestion on surrounding roads, overcrowding within the venue, and inefficient pedestrian circulation frequently occur. In rapidly

growing cities such as Lagos, where traffic congestion already presents significant urban challenges (Olorunfemi & Raheem, 2018.)

The aim of this research is to evaluate traffic and crowd management strategies employed during the Lagos International Trade Fair at Tafawa Balewa Square and examine their implications for event-oriented urban design.

The specific objectives are to:

1. Examine the existing traffic circulation patterns around TBS during the Lagos International Trade Fair.
2. Analyze pedestrian movement and crowd behavior within the trade fair venue.
3. Assess the effectiveness of current traffic and crowd control measures implemented during the event.

Research Questions

1. What traffic circulation patterns emerge around TBS during the Lagos International Trade Fair?
2. How do pedestrians and crowds move within the trade fair environment?
3. How effective are the existing traffic and crowd management strategies?

The study focuses on Tafawa Balewa Square, Lagos, during the period of the Lagos International Trade Fair. It covers vehicular traffic around the venue, pedestrian circulation within the event space, and the temporary spatial arrangements used during the fair. The research does not extend to economic performance or exhibitor marketing strategies.

This research will be beneficial to:

- Architects and Urban Designers: by providing design insights for event-based spaces.
- Urban Planners and Government Agencies: by informing policies on crowd and traffic control during large public events.
- Event Organizers: by highlighting spatial planning strategies that improve safety and visitor experience.

LITERATURE REVIEW

International trade fairs are organized events that facilitate trade promotion, networking, and cultural exchange between businesses, investors, and consumers. Such events often function as temporary urban environments that significantly alter normal patterns of movement, land use, and infrastructure demand within host cities (Hall, 1992; Getz, 2012). Because trade fairs attract large numbers of visitors within a limited time frame, they require specialized planning strategies to ensure efficient circulation and safety. Traffic management involves the planning and regulation of vehicular movement to ensure efficient transportation operations and minimize congestion (Khisty & Lall, 2013). During large public events, traffic demand frequently exceeds the capacity of surrounding road networks, leading to delays, increased travel time, and environmental pollution. Effective traffic management strategies for events typically include traffic diversion plans, designated parking facilities, public transportation integration, and the establishment of clear vehicular access hierarchies (Litman, 2021).

Crowd management focuses on regulating pedestrian movement to prevent overcrowding and ensure safety within public spaces. According to crowd dynamics theory, pedestrian movement is influenced by spatial conditions such as walkway width, visibility, accessibility, and the location of activity nodes (Helbing & Johansson, 2010). When pedestrian density increases beyond acceptable levels, movement speed decreases and bottlenecks may occur, potentially leading to safety risks (Still, 2014).

Urban design also plays a crucial role in supporting efficient movement within event spaces. Event-oriented urban design emphasizes the creation of flexible spaces that can accommodate large gatherings while maintaining accessibility, safety, and comfort (Carmona et al., 2010). Key principles include the provision of clear circulation networks, modular spatial layouts, adequate pedestrian corridors, and integration of temporary infrastructure with permanent urban systems.

Studies of large public events such as international exhibitions and festivals demonstrate that successful traffic and crowd management requires coordinated planning between event organizers, urban

planners, and government authorities (Meyer & Miller, 2013). However, most existing studies focus on developed countries, leaving a gap in research related to the spatial planning of large public events within rapidly growing African cities.

Tafawa Balewa Square, as a civic space, possesses characteristics suitable for event hosting but requires deliberate design interventions to optimize crowd and traffic performance during large events. Studies of international events such as Expo exhibitions and major festivals reveal that successful traffic and crowd management relies on integrated planning between event organizers and city authorities. These case studies highlight the importance of early planning, simulation modeling, and spatial flexibility. While extensive literature exists on crowd and traffic management in developed countries, there is limited research focusing on large-scale public events in Nigerian urban contexts. Existing Studies rarely examine the architectural and spatial planning dimensions of trade fairs in Lagos. This research seeks to bridge this gap by providing a design-oriented evaluation of traffic and crowd management strategies at TBS.



Figure 1,2&3: Showing how circulation mitigates interaction
Source: Researcher's fieldwork (2025)

RESEARCH METHODO

The study adopts a qualitative case study research design. This approach is appropriate because it allows for an in-depth examination of real-life conditions within a specific urban context. The Lagos International Trade Fair at Tafawa Balewa Square is selected as the case study due to its large scale, annual occurrence, and the significant influence it has on vehicular and pedestrian movement within the surrounding urban environment. By focusing on this event, the research is able to closely investigate how traffic and crowd management strategies operate within a dense and dynamic public event setting.

The study area for this research is Tafawa Balewa Square, located on Lagos Island. The square functions as a major civic and event space within the city and is surrounded by a combination of commercial activities, major arterial roads, and public institutions. During the Lagos International Trade Fair, the space is temporarily transformed into a large event environment that accommodates exhibition tents, temporary stalls, pedestrian walkways, parking areas, and service zones. These temporary and permanent spatial elements generate complex patterns of movement within and around the venue, making the location suitable for examining traffic circulation and crowd dynamics during large-scale public events.

Data for the study are obtained from both primary and secondary sources in order to ensure a comprehensive understanding of the research problem. Primary data are collected through direct site observation conducted during the trade fair, allowing the researcher to examine traffic conditions, pedestrian behavior, and spatial interactions within the venue. Visual surveys and photographic documentation are also used to record the spatial arrangement of stalls, the density of crowds, signage placement, and the interaction between vehicles and pedestrians. In addition, manual mapping of pedestrian and vehicular movement is carried out in order to identify circulation routes, congestion areas, and conflict points between different forms of movement. Informal interactions with visitors and event personnel also provide contextual insights into the functioning of traffic and crowd control measures during the event.

Secondary data are obtained from journals, textbooks, and academic publications that focus on crowd management, traffic control, and urban mobility. Additional information is gathered from government reports, planning guidelines, and previous research studies related to trade fairs and event planning. Relevant online publications discussing the Lagos International Trade Fair also contribute to the background knowledge used in the study. The methods of data collection include systematic site observation, photographic documentation, and mapping techniques. Systematic observation is used to identify traffic congestion points, pedestrian bottlenecks, entry and exit behavior, and general circulation patterns during the event. Observations are conducted at both peak and off-peak periods in order to capture variations in movement and crowd density. Photographic documentation is used to record spatial arrangements, crowd density levels, signage placement, and interactions between vehicles and pedestrians. These visual records serve as important references for analyzing the physical and behavioral conditions within the event space. Mapping and diagramming are also employed to illustrate vehicular access routes, pedestrian circulation paths, conflict points between vehicles and pedestrians, and the location of temporary structures and facilities within the venue.

The collected data are analyzed using descriptive and spatial analysis techniques. Observations and photographs are interpreted to identify recurring patterns of congestion, movement, and interaction within the event environment. Diagrams and maps are used to visually examine circulation efficiency and spatial relationships both within and around the venue. The findings from the field observations are then compared with established principles of crowd management and event-oriented urban design discussed in the literature review. Despite the insights provided by the study, certain limitations exist. The research focuses on a single event location at Tafawa Balewa Square and examines only one edition of the Lagos International Trade Fair. In addition, the study relies primarily on qualitative observations without the use of advanced simulation software or quantitative modeling tools. Time constraints and limited access to certain areas during the event may also affect the depth of data collection.

Ethical considerations are observed throughout the research process. No personal or identifiable data of visitors are collected during the study, and all photographs are used strictly for academic purposes.

RESULTS AND DISCUSSION

This chapter presents the analysis of data collected through site observations, photographic documentation, and spatial mapping during the Lagos International Trade Fair at Tafawa Balewa Square in Lagos. The findings are discussed with reference to established principles of traffic management, crowd control, and event-oriented urban design, providing insights into both vehicular and pedestrian dynamics within and around the venue. Observations conducted during the Lagos International Trade Fair revealed significant vehicular congestion around Tafawa Balewa Square, particularly during peak hours. Private vehicles, commercial buses, ride-hailing services, and delivery trucks competed for limited road space, resulting in delays and increased travel times. These findings align with studies indicating that large public events often exceed the carrying capacity of surrounding road networks when adequate traffic management systems are not implemented (Litman, 2021).

Parking arrangements were also found to be inadequate, leading to indiscriminate roadside parking and informal drop-off points that disrupted traffic flow. The absence of a clearly defined vehicular hierarchy further contributed to traffic inefficiencies. Similar issues have been documented in urban mobility studies of Lagos, where inadequate infrastructure and weak traffic management systems exacerbate congestion challenges (Olorunfemi & Raheem, 2018). Within the event venue, pedestrian movement was frequently disrupted by narrow circulation corridors, poorly organized stall arrangements, and vendor encroachment on walkways. High crowd density was observed around entrance areas, exhibition pavilions, and entertainment zones. According to crowd dynamics theory, high pedestrian density reduces movement speed and increases the likelihood of congestion and safety risks (Helbing & Johansson, 2010). The analysis also revealed that existing crowd management measures relied primarily on manual supervision by security personnel rather than spatial design strategies. Entry and exit points were not clearly differentiated, wayfinding signage was limited, and emergency evacuation routes were not adequately defined. Effective crowd management systems typically combine spatial planning with behavioral control measures to ensure safe and efficient movement (Still, 2014).

CONCLUSION

The findings of this study demonstrate that while the Lagos International Trade Fair plays an important role in promoting economic activity and cultural exchange, its effectiveness is constrained by significant traffic and crowd management challenges. The high influx of visitors places considerable pressure on existing urban infrastructure, leading to congestion, inefficient pedestrian circulation, and safety concerns.

These challenges highlight the need for design-led planning strategies that integrate traffic management systems, pedestrian circulation networks, and spatial organization into a cohesive event planning framework. Urban design principles such as clear circulation hierarchies, adequate pedestrian pathways, modular stall layouts, and integrated wayfinding systems can significantly improve mobility efficiency and user experience (Carmona *et al.*, 2010). By applying these principles, event spaces such as Tafawa Balewa Square can function more effectively as adaptable urban environments capable of accommodating large public gatherings. Ultimately, the study demonstrates that thoughtful urban design and mobility planning are essential for ensuring the safe and sustainable operation of large-scale public events in rapidly growing cities.

The study concludes that effective management of large-scale public events requires more than the presence of security personnel or ad hoc control measures; it demands deliberate urban and architectural planning interventions. Integrating vehicular traffic management, pedestrian circulation, and temporary spatial layouts into a cohesive event design framework can substantially improve accessibility, movement efficiency, and overall user experience. Tafawa Balewa Square demonstrates the potential to serve as an efficient and safe event space, provided that such design-led strategies are implemented.

Strategic interventions should include the provision of designated parking zones complemented by shuttle services, the establishment of a clear vehicular access hierarchy, wider and well-defined pedestrian pathways, separation of pedestrian and vehicular flows, modular and flexible stall arrangements, alignment of temporary structures with natural pedestrian desire lines, landscape enhancements for comfort, and effective wayfinding and emergency systems.

This research contributes to architectural and urban planning knowledge by offering a design-oriented analysis of traffic and crowd management within a Nigerian context, providing practical insights

that can inform the planning of future events and the design of adaptable urban spaces. By highlighting the critical interplay between spatial organization, mobility, and safety, the study emphasizes that urban design principles are fundamental to the success of large public events. It also points to areas for further investigation, including the application of quantitative or simulation-based methods, comparative studies across multiple event venues, and the integration of smart technologies in traffic and crowd management. Ultimately, the study reaffirms that when supported by thoughtful and responsive urban design, spaces such as Tafawa Balewa Square.

REFERENCES

- Carmona, M., Heath, T., Oc, T., & Tiesdell, S. (2010). *Public places, urban spaces: The dimensions of urban design* (2nd ed.). Routledge.
- Getz, D. (2012). *Event studies: Theory, research and policy for planned events*. Routledge.
- Helbing, D., & Johansson, A. (2010). Pedestrian, crowd and evacuation dynamics. In R. A. Meyers (Ed.), *Encyclopedia of complexity and systems science*. Springer.
- Khisty, C. J., & Lall, B. K. (2013). *Transportation engineering: An introduction* (3rd ed.). Prentice Hall.
- Lagos State Government. (2020). *Lagos urban traffic management authority operational guidelines*. Lagos State Government Press.
- Litman, T. (2021). *Transportation and traffic management strategies*. Victoria Transport Policy Institute.
- Whyte, W. H. (1980). *The social life of small urban spaces*. Project for Public Spaces.
- Hall, C. M. (1992). *Hallmark tourist events: Impacts, management and planning*. Belhaven Press.
- Urry, J. (2007). *Mobilities*. Polity Press.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
- Carmona, M., Heath, T., Oc, T., & Tiesdell, S. (2010). *Public places, urban spaces: The dimensions of urban design* (2nd ed.). Routledge.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
- Daamen, W., & Hoogendoorn, S. (2012). Emergency door capacity: Influence of door width, population composition and stress level. *Fire Technology*, 48(1), 55–71.
- Fruin, J. J. (1971). *Pedestrian planning and design*. Metropolitan Association of Urban Designers and Environmental Planners.
- Getz, D. (2012). *Event studies: Theory, research and policy for planned events*. Routledge.
- Hall, C. M. (1992). *Hallmark tourist events: Impacts, management and planning*. Belhaven Press.
- Helbing, D., & Johansson, A. (2010). Pedestrian, crowd and evacuation dynamics. In R. A. Meyers (Ed.), *Encyclopedia of complexity and systems science*. Springer.
- Khisty, C. J., & Lall, B. K. (2013). *Transportation engineering: An introduction* (3rd ed.). Prentice Hall.
- Lagos State Government. (2020). *Lagos urban traffic management authority operational guidelines*. Lagos State Government Press.
- Litman, T. (2021). *Transportation and traffic management strategies*. Victoria Transport Policy Institute.
- Meyer, M. D., & Miller, E. J. (2013). *Urban transportation planning: A decision-oriented approach* (2nd ed.). McGraw-Hill.
- Neufert, E. (2012). *Architects' data* (4th ed.). Wiley-Blackwell.
- Okeke, D. C., & Eze, P. N. (2020). Urban mobility challenges and transportation planning in Nigerian cities. *Journal of Urban and Regional Planning*, 5(2), 45–55.
- Okeke, F. O., & Okafor, C. F. (2019). Public space utilization and urban design in developing cities. *International Journal of Urban Studies*, 14(3), 112–124.
- Olorunfemi, F., & Raheem, U. A. (2018). Traffic congestion and urban transportation challenges in Lagos metropolis. *Nigerian Journal of Environmental Planning*, 10(1), 33–47.
- Southworth, M. (2005). Designing the walkable city. *Journal of Urban Planning and Development*, 131(4), 246–257.
- Still, G. K. (2014). Crowd dynamics. *Philosophical Transactions of the Royal Society A*, 372(2024).
- Tiesdell, S., & Adams, D. (2011). *Urban design in the real estate development process*. Wiley- Blackwell.
- Turner, A., & Penn, A. (2002). Encoding natural movement as an agent-based system. *Environment and Planning B*, 29(4), 473–490.
- Urry, J. (2007). *Mobilities*. Polity Press.

- Whyte, W. H. (1980). *The social life of small urban spaces*. Project for Public Spaces.
- World Bank. (2017). *Urban mobility and transport development in African cities*. World Bank Publications.
- Yiftachel, O., & Hedgcock, D. (1993). Urban social sustainability: The planning of urban form. *Cities*, 10(2), 139–157.
- Zhang, J., & Seyfried, A. (2014). Quantification of pedestrian dynamics in crowded environments. *Transportation Research Procedia*, 2, 757–765