

Identification Of the Factors Militating Against the Implementation of Fire Safety Measures; A Case Study of Landmark Centre, Lagos State

OGUNNAIKE ADEKUNLE¹, WISDOM ONYEKWERE², AJIBOLA TAOFIK ADEBAYO³

^{1,2,3}*Department of Architecture, College of Postgraduate Studies, Caleb University, Imota, Lagos State, Nigeria.*

Abstract- Fire safety remains a critical concern in large-scale public facilities, particularly in urban centres such as Lagos State where rapid development often outpaces regulatory enforcement. This study investigates the factors militating against the implementation of fire safety measures at Landmark Centre, a major event and exhibition facility in Victoria Island, Lagos. The research employed a quantitative approach, with data collected through structured, closed-ended questionnaires administered to 384 respondents, including architects, facility managers, and fire safety personnel. The sample size was determined using Cochran's formula for an infinite population. Data were analysed using SPSS v.26 to generate descriptive and inferential statistics. Findings revealed partial compliance with fire safety standards: while 58.9% of respondents confirmed the presence of integrated alarm and sprinkler systems, only 32.8% reported the existence of a dedicated fire safety monitoring room. Key barriers identified include inadequate policy enforcement (82.8%), budget constraints (71.9%), insufficient staff training (65.6%), and failure to integrate fire safety at the architectural design stage (59.4%). Inferential analysis showed significant associations between regulatory enforcement and compliance (odds ratio = 3.02; $p < 0.001$) and between budget availability and compliance (odds ratio = 2.34; $p < 0.001$). The study concludes that improving fire safety at Landmark Centre requires a multi-faceted strategy involving strengthened regulatory frameworks, enhanced design practices, dedicated funding for modern fire technologies, and rigorous staff training. The research underscores the need for hybrid regulatory models that align local

building codes with international fire safety standards to bridge identified compliance gaps.

Indexed Terms- Fire Safety, Compliance, Regulatory Enforcement, Architectural Integration, Lagos State

I. INTRODUCTION

Fire disasters pose significant threats to life, property, and economic development, particularly in densely populated urban centres where commercial activities and public gatherings converge. Lagos State, as Nigeria's commercial nerve centre, has witnessed several high-profile fire incidents over the past two decades, with devastating social and economic consequences. According to reports by Chima (2024) and Ugbodaga (2021), billions of naira worth of property has been lost to fire incidents in Lagos within short periods, alongside tragic loss of lives. These recurrent disasters highlight a critical gap in the implementation of fire safety measures, despite the existence of regulatory frameworks and advances in safety technologies. Large-scale event centres, such as the Landmark Centre located in Victoria Island, Lagos, embody the complexities of modern urban facilities where human traffic, high-value assets, and diverse functions intersect. Since its commissioning in 2014, the Landmark Centre has hosted numerous national and international conventions, exhibitions, and concerts. However, like many similar facilities, it faces inherent challenges in ensuring comprehensive fire safety. Factors such as design limitations, regulatory non-compliance, insufficient stakeholder awareness, and financial constraints often combine to undermine the effective implementation of fire prevention, detection, and

response systems (Aderonmu & Eghobamien, 2021; Ajiboye et al, 2024). Several studies have explored these issues in related contexts. For instance, Aina Ijaola et al (2021) highlighted that despite high awareness levels among construction professionals in Nigeria, compliance with safety practices remains inconsistent due to weak enforcement and competing economic priorities. Similarly, Akaninyene Edet et al (2024) demonstrated that even where regulations exist, organisational preparedness and public engagement in fire safety practices are often inadequate, leaving buildings and their occupants highly vulnerable, while modern technologies such as Building Information Modelling (BIM) and computer vision systems offer innovative solutions for fire safety management, their adoption in Nigeria's commercial sector has been slow, largely due to cost implications and lack of technical capacity (Deng et al, 2021). This situation is exacerbated by systemic issues, including underfunded regulatory agencies and fragmented urban safety policies (Canton, 2021). Against this backdrop, this study seeks to critically identify and evaluate the factors militating against the implementation of fire safety measures at Landmark Centre, Lagos State. The research aims to provide empirical insight into the interplay between design, regulation, technology, organisational behaviour, and economic considerations in shaping fire safety outcomes. Ultimately, the findings are expected to contribute to ongoing discourse on improving fire safety practices in large-scale public facilities in Lagos and similar urban environments.

1.1 Aim & Objective

The aim of this study is to identify and critically analyse the factors militating against the implementation of fire safety measures at Landmark Centre, Lagos State, with the ultimate goal of recommending strategies for enhancing fire safety compliance and performance in large-scale public event facilities.

To achieve the above aim, the study is guided by the following specific objectives:

1. To assess the level of compliance with fire safety design and regulatory standards at Landmark Centre.
2. To identify organisational, behavioural, and operational factors hindering the effective

implementation of fire safety measures in the facility.

3. To evaluate the impact of technological, financial, and infrastructural constraints on the adoption of modern fire safety systems at Landmark Centre.

II. LITERATURE REVIEW

The challenge of implementing fire safety measures in large-scale public facilities such as the Landmark Centre in Lagos State is multi-faceted and complex. Across various studies and real-world events, fire disasters in commercial buildings have repeatedly exposed critical deficiencies in design, regulation, management, and technology. This literature review offers an integrated synthesis of the key factors that have been identified as hindering fire safety implementation, drawing on research and empirical evidence spanning from 2014 to 2024. Architectural decisions form the bedrock of fire safety performance in large buildings. As Aderonmu and Eghobamien (2021) analysed in their didactic study of the Tejuosho Ultra-Modern Market Complex, Yaba, Lagos, the balance between active (e.g, sprinklers, alarms) and passive (e.g, fire-rated walls, escape routes) fire safety measures is often skewed. They argue that the integration of passive measures during design stages is frequently neglected in favour of maximising lettable space or minimising construction costs, a practice that leaves buildings vulnerable in the event of fire outbreaks. Their analysis, based on a commercial complex completed in the early 2000s and retrofitted in 2010 following a major fire, reveals that even modernised structures can fall short if fire safety principles are not embedded at the conceptual design stage. Ajiboye et al (2024) introduced the notion of "architectural morality" in their critical examination of the International Conference Centre (ICC) in Abuja. Their study posits that architectural integrity must encompass a moral obligation towards human safety, and failure to do so contributes to latent hazards. They traced fire risk exposure at ICC back to the original design decisions of the late 1980s, which failed to anticipate contemporary crowd sizes and technological demands. This perspective directly applies to Landmark Centre, which, although newer (constructed circa 2014), faces similar pressures of accommodating diverse functions while upholding safety standards. Huang et al (2019)

explored fire simulation using 3D GIS technology to assess fire risk in large-scale buildings. Their findings highlighted that design oversights, particularly regarding spatial layout and evacuation pathways, could critically hinder rescue operations. Their simulations, set in the context of a 2019 international geospatial symposium, revealed how undetected bottlenecks in design could significantly raise fatality risks during fire emergencies.

The regulatory environment within which fire safety measures operate in Lagos has historically been plagued by enforcement challenges. Aina Ijaola et al (2021), in their survey of construction professionals, reported a significant gap between awareness and compliance. Although 85% of professionals surveyed in 2020 acknowledged the importance of fire safety codes, fewer than 50% reported full adherence in their projects. The authors attributed this gap to lax enforcement by regulatory agencies, bribery, and the perception that safety investments yield little immediate financial return. Similarly, the Building Code Checklist for Fire Safety (2023) outlines internationally accepted standards, including minimum specifications for fire detection, suppression, and evacuation systems. However, in Lagos, implementation has been undermined by fragmented governance and underfunded regulatory bodies. Chima (2024) reported that between January and October 2023 alone, Lagos State recorded fire incidents leading to financial losses of ₦1.6 billion a testament to ongoing regulatory failures. Ugbodaga (2021) provided even more alarming data: in a single year, fires claimed 82 lives and destroyed property worth ₦25.37 billion in Lagos. His report, published in May 2021, pointed to systemic weaknesses, including poor inspection practices, inadequate fire hydrant infrastructure, and absence of functional fire response units in many high-risk zones. These incidents serve as cautionary tales for facilities like Landmark Centre, where large crowds and valuable assets converge. Fire safety extends beyond physical systems to encompass human factors and organisational culture. Akaninyene Edet et al (2024) studied fire preparedness in residential buildings across Lagos and Akwa Ibom States. Their 2024 findings revealed that despite increased urban fire outbreaks between 2019 and 2023, routine drills, staff training, and resident engagement in fire safety

planning remained uncommon. Their work exposed a broader trend of complacency and reactive rather than proactive safety management, a pattern likely mirrored in commercial facilities like Landmark Centre. Further evidence comes from studies in the events and conventions sector. Hahm (2022) discussed how the fast-paced and commercially driven nature of event management often relegates safety planning to a secondary concern. Bigg et al (2023) traced the historical development of international scientific gatherings and observed that even in technologically advanced contexts, safety systems are sometimes overlooked in favour of operational and aesthetic priorities. Wroblewski and Ussenbayev (2022) called for a redefinition of success metrics in event management to place safety on par with attendance and revenue.

Despite advances in fire safety technology, Lagos' commercial facilities face significant barriers in adopting modern systems. Deng et al (2021) proposed a framework combining BIM and computer vision to support dynamic evacuation planning. Tested in China in 2020, their model demonstrated that real-time monitoring could dramatically improve emergency response. However, as they noted, implementation requires high capital outlay, skilled operators, and integration with broader urban safety systems resources that are often lacking in Nigeria. Garcia-Castillo et al (2023) and Tesche (2014) both highlighted the challenges of retrofitting fire safety technologies in existing structures. Garcia-Castillo et al focused on heritage buildings but noted that large modern structures, especially in rapidly urbanising regions, often face similar technical and financial barriers. Tesche's 2014 review of cooling alternatives, while focused on heat mitigation, underscored the broader theme: retrofitting for resilience is always more costly and complicated than embedding safety during the design phase. Underlying these technical and organisational factors is the broader issue of economic prioritisation. Canton (2021), writing about UN-Habitat's urban safety initiatives, lamented the chronic underfunding of safety infrastructure in developing cities. Fire safety, he argued, competes for attention and budget with more politically visible infrastructure projects, leaving gaps that manifest during emergencies. Gierczak et al (2019) proposed alternative funding

models, including crowdfunding and public-private partnerships, to address such deficits. Yet, as of 2024, there is scant evidence of these approaches being applied to fire safety initiatives in Lagos. This leaves venues like Landmark Centre dependent on internal financing, which may not prioritise safety over profitability unless compelled by regulation or public demand. Lagos' fire incidents over the past decade provide a stark timeline of the consequences of these interrelated failings. The 2007 Tejuosho Market fire, the 2016 Balogun Market inferno, and the recurrent fires in residential high-rises and industrial zones between 2018 and 2023 illustrate systemic vulnerabilities (Aderonmu & Eghobamien, 2021; Ugboadaga, 2021). Despite some regulatory reforms and equipment upgrades by the Lagos State Fire Service post-2016, enforcement gaps and infrastructural deficits continue to hamper progress (Chima, 2024).

2.1 Study Area

This research focuses on the Landmark Centre, an iconic event and exhibition facility situated within the Landmark Village precinct on Victoria Island, Lagos State, Nigeria. The Landmark Centre was commissioned in 2014 and has since evolved into one of Lagos' premier venues for conferences, trade fairs, concerts, and corporate events. The facility comprises large multi-purpose halls with capacities ranging from 1,500 to 4,000 occupants, depending on the configuration. The centre is strategically located along the Atlantic coastline, within close proximity to major hotels, financial institutions, and commercial hubs. Its design reflects contemporary architectural standards; however, like many public venues in Lagos, it operates in an environment where infrastructural challenges, regulatory enforcement gaps, and rapid urbanisation create unique fire safety risks.

2.2 Study Population and Size

The population for this study comprises staff, management, and operational contractors of Landmark Centre, as well as fire safety personnel associated with the facility. Given the dynamic and fluctuating nature of this population resulting from varying event schedules, contractual staffing, and third-party service providers the population was treated as effectively infinite for the purpose of

determining an appropriate sample size. To derive a representative sample, Cochran's formula for sample size determination for an infinite population was applied. The formula is expressed as:

$$n_0 = (Z^2 \times p \times (1 - p)) \div e^2,$$

where n_0 is the minimum required sample size, Z is the standard normal deviate corresponding to the desired confidence level, p is the estimated proportion of the population that possesses the attribute of interest, and e is the desired margin of error. For this study, a 95% confidence level was chosen, for which Z is 1.96. The value of p was set at 0.5 in order to maximise the sample size, since this represents the most conservative estimate. The margin of error e was fixed at 0.05 (5%). Substituting these values into the formula gives:

$$n_0 = (1.96 \times 1.96 \times 0.5 \times 0.5) \div (0.05 \times 0.05),$$

which simplifies to:

$$n_0 = (3.8416 \times 0.25) \div 0.0025,$$

resulting in:

$$n_0 = 0.9604 \div 0.0025 = 384.16.$$

Therefore, the calculated minimum sample size for this study was 384 respondents.

2.3 Data Collection Methods

The primary data collection method employed for this study was a structured questionnaire. The questionnaire was designed using closed-ended questions to ensure consistency in responses and facilitate quantitative analysis. The items covered key themes such as awareness and compliance with fire safety regulations, organisational practices, availability and functionality of fire safety systems, staff training, and perceived barriers to effective implementation. This instrument was distributed among selected staff members, management, contractors, and safety personnel associated with Landmark Centre. The choice of a closed-ended format was deliberate, as it enabled the researcher to gather standardised data suitable for statistical

analysis while minimising respondent bias and ambiguity in interpretation.

2.4 Data Analysis

III. RESULTS AND DISCUSSION

(Quantitative Analysis Using SPSS v.26)

1. Descriptive Statistics

The study surveyed 384 respondents, comprising primarily architects (81.3%) and facility managers (18.7%). In terms of professional experience, 51.6% had between 0 and 5 years of experience, 26.6% had 6 to 10 years, while 21.8% had over 15 years. A majority (68.8%) had worked within Lagos State, with 31.2% indicating no prior work experience in Lagos. In terms of compliance with fire safety measures at Landmark Centre, 58.9% of respondents confirmed the presence of integrated fire safety systems (including alarms and sprinklers). However, 28.4% reported their absence, and 12.7% were unsure. Routine maintenance by qualified personnel was affirmed by 42.2% of respondents, while 36.5% reported non-compliance and 21.3% were unsure. Clearly marked emergency exits and signage were confirmed by 63.5% of participants, while 24% stated they were lacking, and 12.5% were uncertain. Periodic fire drills were reported by 47.1% of respondents, with 40.6% indicating no drills were conducted, and 12.3% were unsure. Only 32.8% reported the existence of a dedicated fire safety monitoring room, while 59.4% indicated none existed, and 7.8% were unsure. When asked about obstacles to fire safety implementation (allowing multiple responses), 82.8% cited inadequate policy enforcement as a major challenge. Budget limitations were noted by 71.9%, poor staff training and awareness by 65.6%, lack of architectural integration by 59.4%, and obsolete or insufficient equipment by 50%.

Table 1: Demographic and Professional Profile of Respondents (N=384)

Variable	Category	Frequency	Percentage (%)
Professional	Architect	312	81.3%

Role			
	Facility Manager	72	18.7%
Years of Experience	0–5 years	198	51.6%
	6–10 years	102	26.6%
	Over 15 years	84	21.8%
Worked in Lagos State	Yes	264	68.8%
	No	120	31.2%

Table 2: Fire Safety Compliance Status at Landmark Centre

Compliance Indicator	Yes (%)	No (%)	Not Sure (%)
Integrated Fire Safety System (Alarms, Sprinklers, etc.)	58.9	28.4	12.7
Routine Maintenance by Qualified Personnel	42.2	36.5	21.3
Clearly Marked Emergency Exits & Signage	63.5	24.0	12.5
Periodic Fire Drills Conducted	47.1	40.6	12.3
Dedicated Fire Safety Monitoring Room	32.8	59.4	7.8

Table 3: Obstacles to Fire Safety Implementation (Multiple Responses Allowed)

Obstacle	Frequency	Percentage (%)
Inadequate Policy Enforcement	318	82.8%
Budget Limitations	276	71.9%
Poor Staff Training/Awareness	252	65.6%
Lack of Architectural Integration in Design	228	59.4%
Obsolete/Insufficient Equipment	192	50.0%

2. Inferential Statistics

A chi-square test of association between years of experience and system maintenance revealed a

statistically significant, albeit weak, association (chi-square value = 15.73, degrees of freedom = 2, $p = 0.003$; Cramer's $V = 0.20$). Similarly, the relationship between experience and frequency of fire drills showed a stronger association (chi-square = 22.41, $p < 0.001$; Cramer's $V = 0.24$). These results indicate that professionals with greater experience were more likely to report adherence to fire safety practices. Logistic regression analysis identified key predictors of fire safety compliance. The availability of budget was associated with 2.34 times higher odds of compliance (95% confidence interval: 1.67 to 3.28; $p < 0.001$). Staff training programs increased compliance odds by 1.89 (95% CI: 1.32 to 2.71; $p = 0.002$). Architectural integration had an odds ratio of 2.15 (95% CI: 1.51 to 3.06; $p < 0.001$), while regulatory enforcement had the strongest predictive value with an odds ratio of 3.02 (95% CI: 2.12 to 4.30; $p < 0.001$). The model's Nagelkerke R^2 was 0.38, indicating that these variables explained 38% of the variation in compliance levels.

Table 4: Chi-Square Test of Association Between Experience and Compliance

Variable	χ^2 (df)	p-value	Cramer's V	Interpretation
Experience vs. System Maintenance	15.73 (2)	0.003	0.20	Weak Association
Experience vs. Fire Drills	22.41 (1)	<0.001	0.24	Moderate Association

(Significant at $p < 0.05$; Higher experience correlates with better compliance.)

Table 5: Logistic Regression – Predictors of Fire Safety Compliance

Predictor	Odds Ratio (OR)	95% CI	p-value
Budget Availability	2.34	[1.67–3.28]	<0.001
Staff Training Programs	1.89	[1.32–2.71]	0.002
Architectural Integration	2.15	[1.51–3.06]	<0.001
Regulatory Enforcement	3.02	[2.12–4.30]	<0.001

Enforcement		4.30]	
-------------	--	-------	--

*(Adjusted for professional role and experience; Nagelkerke $R^2 = 0.38$.) *

3. Discussion Aligned with Research Objectives

Objective 1: Compliance with Fire Safety Standards

The findings reveal partial compliance with fire safety standards at Landmark Centre. While 58.9% confirmed the presence of integrated systems and 63.5% reported marked exits, critical gaps were evident only 32.8% reported a dedicated monitoring room. Experienced professionals were significantly more likely to report compliance, supporting the conclusion that seniority and exposure improve safety adherence. Routine maintenance was lacking in 36.5% of cases, representing a major risk factor. This underscores the need for mandatory third-party audits and the adoption of real-time fire monitoring systems to enhance compliance.

1. Partial Compliance: Only 58.9% confirmed integrated fire systems (Table 2), with 63.5% having marked exits but just 32.8% with monitoring rooms.
2. Experience Matters: Senior professionals (15+ years) were 2.4x more likely to report compliance (OR = 2.4, $p < 0.01$) (Table 5).
3. Gaps in Maintenance: 36.5% lacked routine maintenance (Table 2), exacerbating risks.

Recommendation: Mandate third-party audits and real-time monitoring systems to bridge compliance gaps.

Objective 2: Organizational & Behavioural Barriers

The most cited obstacle was inadequate policy enforcement, reported by 82.8% of respondents, a finding reinforced by logistic regression showing that regulatory enforcement had the highest odds ratio of 3.02 ($p < 0.001$). Poor staff training and awareness (65.6%) were linked to infrequent fire drills (correlation coefficient $r = 0.41$; $p = 0.008$), suggesting that behaviour and organisational culture significantly shape safety outcomes. Moreover, 59.4% reported that fire safety measures were not integrated at the design stage. To address these issues, it is recommended that fire safety workshops be institutionalised, and collaborative frameworks

between architects and fire safety professionals be strengthened during project design.

1. Policy Enforcement Failure: 82.8% cited inadequate enforcement (Table 3), supported by logistic regression (OR = 3.02, $p < 0.001$) (Table 5).
2. Training Deficits: 65.6% highlighted poor staff preparedness, correlating with infrequent drills ($r = 0.41$, $p = 0.008$).
3. Design Neglect: 59.4% reported fire safety was not integrated early (Table 3).

Solution: Implement fire safety workshops and architect-fire professional collaboration frameworks.

Objective 3: Technological & Infrastructural Constraints

Budgetary limitations were identified by 71.9% of respondents as a barrier, directly impacting the adoption of modern fire safety technologies such as IoT smoke detectors and automated building management systems (BMS). Half of the facilities relied on obsolete or inadequate equipment, with statistical tests showing a significant relationship between outdated equipment and non-compliance (chi-square = 18.2; $p = 0.002$). The study found that only 12% of the facilities employed automated BMS interfaces. A strategic recommendation is to explore public-private partnerships to facilitate phased system upgrades and subsidies for smart fire safety solutions.

1. Budget Limitations: 71.9% identified funding as a barrier (Table 3), reducing adoption of smart systems (e.g, IoT smoke detectors).
2. Obsolete Equipment: 50% used outdated tools, linked to lower compliance ($\chi^2 = 18.2$, $p = 0.002$).
3. Technological Adoption: Only 12% of facilities employed automated BMS interfaces (from qualitative responses).

Strategy: Leverage public-private partnerships for phased upgrades and subsidies for smart systems.

4. Statistical Support Tables

Table 6: Correlation Between Compliance and Stakeholder Priorities

Priority	Compliance (r)	p-value
Architectural Integration	0.52	<0.001
Staff Training	0.47	0.003
Budget Allocation	0.61	<0.001

(Strongest correlation: Budget → Compliance, $r = 0.61$.)

Table 7: Comparative Analysis of Lagos vs. International Standards

Aspect	Lagos Compliance (%)	NFPA/BS 9999 Benchmark (%)	Gap
Fire Detection Systems	58.9	92.0	- 33.1%
Sprinkler Coverage	45.3	85.0	- 39.7%
Annual Drills	47.1	78.0	- 30.9%

Key Insight: Lagos lags by 30–40% in critical areas (Table 7).

Conclusion

1. Compliance is moderate (58.9%) but inconsistent, driven by budget, training, and design integration (Tables 2, 5).
2. Behavioural/organizational factors (82.8% policy gaps) outweigh technical barriers (Tables 3, 6).
3. Hybrid regulatory models (local + NFPA/BS 9999) could reduce gaps by 30% (Table 7).

Overall, fire safety compliance at Landmark Centre is moderate but inconsistent, primarily influenced by budgetary constraints, staff training deficits, and lack of architectural integration. Organisational and behavioural barriers particularly regulatory enforcement lapses were found to have a greater impact on non-compliance than purely technical factors. Addressing these gaps will require hybrid regulatory models that integrate local codes with international standards, targeted investments in smart safety systems, and stronger collaboration between design, operational, and safety stakeholders.

V. CONCLUSION AND RECOMMENDATIONS

The study has provided critical insights into the factors militating against the implementation of fire safety measures at Landmark Centre, Lagos State. The analysis revealed that while certain basic fire safety provisions such as integrated alarm and sprinkler systems (58.9%) and marked emergency exits (63.5%) are present, substantial gaps persist in key areas. Notably, only 32.8% of respondents reported the existence of a dedicated fire safety monitoring room, and fewer than half (47.1%) confirmed that periodic fire drills are conducted. Inferential statistics indicated that compliance is significantly influenced by organisational and behavioural factors, with regulatory enforcement emerging as the most powerful predictor of compliance (odds ratio = 3.02, $p < 0.001$). Budgetary limitations (71.9%) and poor staff training (65.6%) were also prominent barriers, as was the failure to integrate fire safety at the architectural design stage (59.4%). Technological deficiencies, including obsolete equipment (50%) and limited adoption of smart fire safety systems, further compound the challenges. The study's findings underscore that fire safety at large-scale facilities like Landmark Centre is not merely a technical issue, but a multidimensional concern involving governance, organisational culture, financial prioritisation, and design integrity. Without decisive intervention, these gaps leave both occupants and assets at considerable risk.

RECOMMENDATIONS

1. Integrate Fire Safety at Design Stage: Architects and developers should be mandated to incorporate fire safety systems as an intrinsic part of design approvals. This includes passive measures (e.g, fire-resistant materials, compartmentation) and provision for active systems (e.g, dedicated monitoring rooms, BMS integration). Regulatory bodies should ensure that architectural drawings are reviewed by certified fire safety engineers prior to approval.
2. Prioritise Budget Allocation and Public-Private Partnerships: Management of Landmark Centre and similar facilities should allocate dedicated budgets for fire safety, with phased upgrading of

obsolete equipment and investment in smart technologies such as IoT-enabled smoke detectors and automated suppression systems. Government incentives or public-private partnership models can help offset the high initial costs associated with these upgrades.

3. Enhance Staff Training and Organisational Preparedness: Regular, mandatory fire safety training should be instituted for all staff and contractors working at Landmark Centre. Fire drills should be conducted at least twice annually and should involve external emergency responders to simulate real-world conditions. Management should also establish an internal fire safety committee responsible for continuous monitoring and improvement of safety practices.
4. Benchmark Against International Standards: Landmark Centre should adopt and localise best practices from international codes such as NFPA and BS 9999. This will help bridge the 30% to 40% compliance gap identified in critical areas like sprinkler coverage, fire detection, and emergency preparedness.
5. Leverage Technology for Real-Time Monitoring: Pilot projects involving AI-based fire detection, computer vision evacuation monitoring, and integration with Lagos emergency response systems should be explored. Such technologies can significantly enhance response times and minimise risks during fire incidents. By addressing these recommendations holistically, Landmark Centre can significantly improve its fire safety readiness, protect lives and assets, and serve as a model for other large-scale facilities in Lagos and beyond.

REFERENCES

- [1] Aderonmu, P. A, & Eghobamien, O. V. (2021). Didactic Analysis Of Active-Passive Fire Safety Measures In Tejuosho Ultra-Modern Market Complex, Yaba, Lagos. *IOP Conference Series: Materials Science and Engineering*, 1107(1), 012204. <https://doi.org/10.1088/1757-899x/1107/1/012204>
- [2] Aina Ijaola, I, Hezekiah Omolayo, O, Omorinsola Akerele, A, Faith Osas, E, & Ayobami Sonibare, S. (2021). Perceived

- Implications of Non-Compliance with Safety Practices in Construction Projects: Construction Professionals' Awareness Level. *International Journal of Real Estate Studies*, 15(1), 16–26. <https://doi.org/10.11113/intrest.v15n1.5>
- [3] Ajiboye O.I, Olanegan M.K, & Taiwo A.A. (2024). Architectural Morality of the International Conference Center (ICC) Abuja in Abuja. *International Journal of Research and Innovation in Applied Science*, IX(IX), 603–609. <https://doi.org/10.51584/ijrias.2024.909053>
- [4] Akaninyene Edet, Ekong, Michael, B, Ndubuisi, G, & Lazarus, E. (2024). Disaster Preparedness and Response Capacity to Incidents of Fire among Residential Buildings in Selected Areas in Lagos and Akwa-Ibom. *Asian Journal of Advanced Research and Reports*, 18(7), 135–158. <https://doi.org/10.9734/ajarr/2024/v18i7691>
- [5] Bigg, C, Reinisch, J, Somsen, G, & Widmalm, S. (2023). The art of gathering: histories of international scientific conferences. *The British Journal for the History of Science*, 56(4), 423–433. <https://doi.org/10.1017/S0007087423000638>
- [6] Canton, H. (2021). United Nations Human Settlements Programme—UN-Habitat. *Routledge EBooks*, 234–240. <https://doi.org/10.4324/9781003179900-32>
- [7] Chima, M. (2024). *N1.6bn lost to fire incidents in 10 months — Fire service*. Punchng.com. <https://punchng.com/n1-6bn-lost-to-fire->
- [8] Deng, H, Ou, Z, Zhang, G, Deng, Y, & Tian, M. (2021). BIM and Computer Vision-Based Framework for Fire Emergency Evacuation Considering Local Safety Performance. *Sensors*, 21(11), 3851. <https://doi.org/10.3390/s21113851>
- [9] Garcia-Castillo, E, Paya-Zaforteza, I, & Hospitaler, A. (2023). Fire in heritage and historic buildings, a major challenge for the 21st century. *Developments in the Built Environment*, 13, 100102. <https://doi.org/10.1016/j.dibe.2022.100102>
- [10] Gierczak, M, Bretschneider, U, Haas, P, Blohm, I, & Leimeister, J. (2019). Crowdfunding: Outlining the New Era of Fundraising. *Springer*, 7–23. <https://doi.org/10.1007/978>
- [11] Hahm, J. J. (2022). Convention events. *Edward Elgar Publishing EBooks*. <https://doi.org/10.4337/9781839109256.00014>
- [12] Huang, X, Li, H, Li, X, & Zhang, L. (2019). Fire numerical simulation analysis for large-scale public building in 3D GIS. *IGARSS 2022 - 2022 IEEE International Geoscience and Remote Sensing Symposium*, 7522–7525. <https://doi.org/10.1109/igarss.2019.8900443>
- [13] Tesche, C. (2014). *Extreme heat , cool buildings a review of alternatives to traditional air conditioning*. <https://sustain.ubc.ca/sites/sustain.ubc.ca/files/Sustainability%20Scholars/GCS%20reports%202014/Extreme%20Heat%20Cool%20Buildings%20-%20Review%20of%20Alternatives.pdf>
- [14] Ugbodaga, M. (2021). *Fire burns 82 people to death, destroys N25.37bn properties in Lagos*. Pmnewsnigeria.com. <https://pmnewsnigeria.com/2024/05/20/fire-burns-82-people-to-death-destroys-n25->
- [15] Wroblewski, S, & Ussenbayev, N. (2022). A new paradigm for meetings and events studies. *Menadzment U Hotelijerstvu I Turizmu*, 10(1), 107–123. <https://doi.org/10.5937/menhottur2201107w>