

# UNDERSCORING THE CHALLENGES AFFECTING SUSTAINABLE MANAGEMENT OF PUBLIC ULTRA-MODERN MARKET INFRASTRUCTURE IN NIGERIA

<sup>1</sup>NKPITE, B.S., <sup>2</sup>IHUAH, P.W. and <sup>3</sup>Ogbonda, .U.J.

<sup>1,2&3</sup>Department of Estate Management Rivers State University, Port Harcourt

## ABSTRACT

Sustainable management involves integrated strategies to sustain public infrastructures, ensuring functionality throughout their lifecycle. Nigeria faces sustainable management challenges due to inadequate infrastructure, necessitating maintenance to keep assets operational amid wear and obsolescence. Therefore, this study delves into the challenges impeding the sustainable management practice of public ultra-modern market infrastructure in Nigeria. This study employs a mixed-method approach, with 239 questionnaires yielding a 76.7% response rate. It utilizes a pragmatic philosophy and an explanatory case study approach focusing on the Niger-Delta Region, Nigeria, by conducting survey, interviews and observations in markets across 3 ultra-modern markets in Port Harcourt (New Town Market), Yenegoa (Swali Market), and Warri (Uvwie Market). The collected data were analyzed through frequency tabulation, percentages, mean, relative importance index (RII) and chi-square as statistical tools used. The study identifies numerous challenges hindering sustainable management, such as stakeholder conflicts, funding shortages, and inadequate policies. It highlights deficiencies in building maintenance, utilities management, waste disposal, and security across public markets. Therefore, the impact severity is highly significant ( $p < 0.001$ ) due to deficiencies in building operations, maintenance, space allocation, waste management, security, finances, parking, transportation, and utilities. Stakeholder conflicts, funding shortages, and policy inadequacies also significantly affect operations ( $p < 0.05$ ), highlighting the need to address various operational deficiencies for sustainable management practices in ultra-modern public market infrastructure. To address these issues, collaborative efforts among stakeholders are essential, involving policy development, financial support, technological innovation, regulatory enforcement, and collaborative governance, ensuring the long-term resilience and effectiveness of essential market infrastructure.

**KEYWORDS:** Challenges, Infrastructure, Public, Ultra-Modern Market, Sustainable Management.

## 1. INTRODUCTION

Public ultra-modern market infrastructure serves as the backbone of any society, providing essential services and facilitating economic, social, and cultural activities. In Nigeria, a country marked by diverse geographical, demographic, and developmental dynamics, the management of public ultra-modern market infrastructure poses significant challenges that reverberate across urban and rural landscapes alike. As the nation strives for sustainable management and inclusive growth, the effective stewardship of its infrastructure assets emerges as a critical imperative (Ujah, 2011). Nigeria, like many developing nations, has witnessed a rapid pace of urbanization in recent decades, leading to the proliferation of public ultra-modern markets across its urban landscape (Aderibigbe, 2015). While these markets symbolize progress and modernization, they also confront a myriad of operational, environmental, and socio-economic challenges that impede their long-term sustainability.

However, the multifaceted challenges impeding the sustainable management of public infrastructure in Nigeria: ultra-modern market, roads, bridges, and public transportation systems to water supply networks, power grids, and healthcare facilities; the spectrum of these infrastructures encompasses a wide array of sectors, each facing unique operational, financial, and institutional hurdles (Ajakaiye, 2018). At the core of this study may lie issues of infrastructure maintenance and upkeep, waste management, sanitation, security, regulatory compliance, and economic viability. Each of these factors intersects and amplifies the challenges faced by market administrators, government agencies, and stakeholders involved in the management and operation of these bustling marketplaces. Moreover, the sustainable management of public ultra-modern markets cannot be divorced from broader socio-economic considerations, including the livelihoods of market traders, the provision of essential services to urban

populations, and the role of markets in fostering local economic development. The intricate web of interdependencies underscores the need for holistic approaches that address both the immediate operational challenges and the underlying systemic issues.

In unpacking the challenges, this study also seeks to highlight potential pathways and strategies for enhancing the sustainable management of public ultra-modern markets in Nigeria. This study endeavors to elucidate the challenges as systemic barriers that hinder the sustainable management of public infrastructure in Nigeria. Drawing upon insights from facility management practices, urban planning principles, and stakeholder engagement strategies, it aims to offer practical recommendations for policymakers, market administrators, and relevant stakeholders to navigate the complexities and steer towards more sustainable market management practices. By illuminating the challenges inherent in managing public ultra-modern markets in Nigeria, this study contributes to the ongoing discourse on opportunities of urban development, infrastructure management, and sustainable livelihoods in the context of rapidly growing cities in the developing countries. The essential question lashing this study is: What are the underscoring challenges affecting sustainable management practices of public ultra-modern markets in Nigeria? Ultimately, this study underscores the imperative for concerted action and collaborative efforts to ensure that these vibrant marketplaces continue to thrive as engines of economic activity, social cohesion, and urban resilience in Nigeria's dynamic urban landscape.

## 2. LITERATURE REVIEW

### 2.1 Sustainable Infrastructure

Infrastructure management, as highlighted by Kamaruzzaman and Zawawi (2010), has a longstanding global presence and expansion. The most noteworthy impact of sustainable management on organizations is its role in guiding infrastructure management towards greater efficiency while directly supporting the organization's core business. Shah (2007) illustrates that adoption of sustainable management in the infrastructure sector has led to an annual high turnover of organizational income, emerging as a significant business trend in the country. Sustainable infrastructure encompasses various vital components such as roads, buildings, electricity, pipe-borne water, dams, and more, developed with meticulous consideration of their impacts on both human welfare and environmental preservation (Ogbimi, 2018). Historically, the use of kerosene in bitumen mixtures for asphalt in road construction was prevalent in Nigeria. However, Ujah (2011) noted the Federal Government's prohibition of kerosene usage by construction companies for road surface dressing, signaling a move towards more environmentally friendly alternatives such as emulsion, adopted in other regions for road dressing. Infrastructure developers are tasked with evaluating not only the immediate operational and maintenance requirements but also the long-term environmental ramifications during the construction phase to ensure sustainability.

Sustainable infrastructure entails the holistic design, construction, and operation of essential community infrastructure in a manner that preserves social, economic, and environmental equilibrium while upholding human equity within the ecosystem (Ajanlekoko, 2001). This approach necessitates a functional balance between diverse land uses including residential, transportation, industrial, agricultural, commercial, recreational, sewage, drainage, green spaces, water bodies, and waste treatment facilities. Crucially, sustainable infrastructure is characterized by comprehensive maintenance planning from its inception (Nubi, 2015). Instituting maintenance protocols early in the lifecycle of infrastructure assets ensures their longevity and resilience. Projects driven by speculative motives or deemed as white elephants, lacking in genuine societal needs assessment, undermine sustainability efforts (Adegboye, 2017). Thus, infrastructural development should align closely with present community needs to optimize resource utilization and conserve funds for broader social investments such as employment generation, education, security, and social welfare initiatives.

### 2.2 Challenges Affecting Infrastructure Management in Nigeria

Holodny (2015) emphasizes the indispensable role of large-scale, efficient infrastructure in fostering competitiveness within economies. Maintenance and periodic updates are essential for ensuring the smooth operation of infrastructure, yet many developed countries, including the US, Germany, and France, have witnessed a decline in infrastructure quality since the global financial crisis. Hong Kong secured the top position for the world's best infrastructure assets according to the World Economic Forum (WEF, 2017) rankings, followed by Singapore, the Netherlands, the United Arab Emirates, Japan, and Switzerland. In stark contrast, Nigeria finds itself at the bottom of the rankings, positioned 133rd out of 140 countries assessed. Olorok (2018) reports that the Federal Government acknowledged an annual loss of approximately \$2 billion due to waning confidence in the country's healthcare system. This lack of trust stems from inadequate infrastructure within Nigeria's healthcare sector, prompting Nigerian citizens to seek medical treatment abroad, a phenomenon known as health tourism. Some of the challenges facing sustainable management of public infrastructure identified in literature include:

**Incorrect Initiation and Delivery:** Infrastructure projects must stem from a thorough needs assessment, feasibility study, and effective planning to ensure their relevance and impact. However, in Nigeria, many projects are initiated for ulterior motives such as financial gain or political favoritism rather than genuine necessity, leading to stagnation in both economic and political spheres (Ogbimi, 2017).

**Lack of Effective Monitoring and Evaluation:** Continuous monitoring and evaluation are crucial for assessing the success and impact of infrastructure projects. Without proper oversight, the critical functions of infrastructure assets within communities may be compromised (Oyedele, 2018).

**Financial Constraints:** Adequate funding is essential for infrastructure maintenance, yet Nigeria allocates insufficient funds to this aspect. The lack of investment in maintenance leads to deteriorating infrastructure quality, as evidenced by the substantial maintenance costs incurred by EU countries (OECD, 2014; Nnodim, 2018).

**Poor Quality:** The quality of infrastructure assets in Nigeria often falls short due to flaws in conception, planning, and design. Deficiencies in these initial stages result in subpar infrastructure delivery (Oyedele, 2012).

**Lack of Technical Expertise:** Nigeria's reliance on imported equipment for infrastructure projects highlights a deficiency in technical know-how. The absence of locally manufactured equipment impedes maintenance efforts, as spare parts may be unavailable or outdated (Oyedele, 2012).

**Ownership Issues:** Public infrastructure suffers from a lack of ownership among Nigerian citizens, leading to vandalism and neglect. Establishing a sense of communal ownership is essential for the preservation of public assets (Olupohunda, 2016).

**Absence of Legal Frameworks:** Maintenance responsibilities often lack clear legal guidelines, leading to ambiguity regarding accountability. Establishing clear contractual obligations for suppliers and contractors is necessary to ensure effective maintenance (Ajakaiye, 2018).

**Technological Shortcomings:** The scarcity of advanced maintenance technology in Nigeria hinders effective infrastructure management. Access to modern equipment and tools is vital for maintaining infrastructure assets (Oyedele, 2012).

**Corruption:** Corruption remains a pervasive issue in infrastructure maintenance, undermining efforts to improve asset management and delivery (Adetayo, 2018).

**Lack of Maintenance Economy:** Nigeria lacks a sustainable maintenance economy, hindering efforts to conserve resources and ensure the longevity of infrastructure assets (Ajakaiye, 2018).

**Political Challenges:** Turbulence in Nigeria's political environment complicates business interactions, particularly for infrastructure projects. Delayed payments and instability deter private sector involvement (Adetayo, 2018).

**Underutilization of Public-Private Partnerships (PPPs):** Despite their potential, PPPs remain underutilized in Nigeria, limiting the scope for private sector involvement in infrastructure development (World Bank, 2018).

### 2.3 Underscoring Challenges Affecting Sustainable Infrastructure Management

Aliyu et al. (2016) underscored that over 60% of public infrastructure under sustainable management face challenges due to inadequate budget allocations and lack of preparation for maintenance. This neglect leads to increased complaints from tenants in commercial buildings. Yap, Low, Wong, De Haan and Rietjens (2017) emphasized that insufficient commitment to sustainable management during the pre-construction phase can result in inefficiencies in material and equipment usage. Environmental changes, coupled with a deficient maintenance culture, have accelerated the deterioration of public buildings, services, and equipment in Nigeria (Asiabaka, 2008). Adenuga, Odusami, and Faremi (2007) concluded that fund shortages and neglect hamper maintenance management in the public sector.

Adewunmi, Ajayi, and Ogunba (2009) explored factors influencing estate surveyors' engagement in sustainable management practice in Nigeria, finding that qualifications and firm affiliations influenced their contributions. Islam, Nazifa, and Mohamad (2019) identified design errors, maintenance neglect, limited awareness, underestimation of management importance, and poor efficiency as major factors affecting infrastructure management. Akinsola, Hussaini, Oyenuga, and Fatokun (2012) stressed the need for education, environmental policies, and sustainable management skills to foster a conducive environment for cost management services. Lavy and Bilbo (2010) observed poor maintenance procedures in Texas public institutions, while Hopland and Nyhus (2015) linked end-user satisfaction to sustainable management quality.

Odediran, Opatunji, and Eghenure (2012) found the economy to be the primary factor affecting maintenance practices in Nigeria. Asiabaka (2008) identified policy gaps, managerial expertise, neglectful attitudes, and funding shortages as obstacles to sustainable management. Chandrashekar and Gopalakrishnan (2008) highlighted funding shortages leading to delays in repairs, while Mohammed and Hussain (2010) cited building overcapacity impacting integrity and costs. Olaniyi and Smith (2018) identified regulatory gaps, lack of policies,

and awareness as key challenges in Nigeria, proposing a framework for sustainable management introduction. Additionally, Iyagba (2005) outlined six phases for sustainable management implementation in public buildings. A study on corporate facilities managers in Nigeria revealed barriers such as lack of training, laws, and awareness hindering sustainable infrastructure management.

The insights of other studies reviewed (Islam, Nazifa, and Mohamad, 2019; Akinsola, Hussaini, Oyenuga, and Fatokun, 2012; Odediran, Opatunji, and Eghenure, 2012; (Asiabaka, 2008; Chandrashekar and Gopalakrishnan, 2008; Mohammed and Hussain, 2010; Olaniyi and Smith's, 2018) have not collectively emphasized the multifaceted nature of challenges affecting sustainable infrastructure management in Nigeria, including financial, organizational, and regulatory aspects. Such challenges are particularly pertinent in the context of managing public ultra-modern market infrastructure, where efficient management practices are essential for societal well-being and economic development. In addressing these challenges; therefore, Nigeria can pave the way for more effective and sustainable infrastructure management, fostering economic growth and societal progress.

### 3. RESEARCH METHODOLOGY

This research on the challenges associated with sustainable management adopts a mixed-method approach, integrating quantitative and qualitative methods. Focused on public ultra-modern market infrastructure in Nigeria's Niger-Delta Region, the study employs triangulation to bolster findings' credibility. Rooted in pragmatism, the research design combines cross-sectional surveys and personal interviews. Data gathering involves 239 respondents, including market masters, traders, and Ministry of Commerce and Industry officials, randomly selected from a population of the same size. The study centers on three public ultra-modern markets: New Town Market, Swali Market, and Uvwie Market. Data collection encompasses self-administered questionnaires, personal interviews, and physical surveys, yielding a representative response rate of 76.7%. Quantitative data analysis utilizes various statistical techniques analyzed through frequency tabulation, percentages, mean, relative importance index (RII) and chi-square as statistical tools used., while qualitative data undergo content and thematic analysis. This comprehensive mixed-method approach ensures a thorough examination of the challenges in sustainable management of public market infrastructure in Nigeria.

### 4. DATA PRESENTATION AND RESULTS

#### 4.1 Challenges Affecting Sustainable Management Practices

Table 1 illustrates the challenges influencing current sustainable management practices in ultra-modern public market infrastructure, rated on a 5-point Likert scale. More than half of the respondents with RII >0.60 identified the primary challenges of sustainable management practice to include stakeholder conflicts, inadequate funding for operations and maintenance, and limited awareness of sustainability benefits. Additionally, economic slowdown, information gaps, vandalism, absence of policy guidelines, inefficient technology utilization, inadequate training, shortage of qualified managers, reckless facility use, absence of maintenance culture, delays in repairs, government support insufficiency, and logistical hurdles in maintenance operations are identified as significant challenges ranked with RII >0.60. Other challenges include insufficient monitoring, lack of relevant laws and regulations, absence of maintenance manuals, administrative bottlenecks, high user demand, poor lighting and ventilation, corruption, inferior construction materials, limited allocation for maintenance costs, misconceptions about facility management roles, and shortage of skilled workers ranked with RII >0.60 respectively. These findings emphasize the critical importance of addressing stakeholder conflicts, funding shortages, awareness gaps, economic challenges, and various operational deficiencies to enhance sustainable management practices in ultra-modern public market infrastructure.

**Table 1: Challenges Affecting Sustainable Management Practice (N =188)**

Challenges Affecting Sustainable Management Practices	Sum	Mean	Std. Dev.	RII	Rank
Conflict of interest among stakeholders	791	4.205	1.005	0.841	1
Inadequate Funding for infrastructural operation & maintenance	776	4.128	1.105	0.825	2
Lack of awareness of the outcomes and benefits of SIM	775	4.122	0.951	0.824	3
Current economic slowdown (economic recession)	766	4.077	1.036	0.815	4
Inadequate information	762	4.051	0.916	0.810	5
Public unrest and facility vandalism	709	3.769	0.959	0.754	6
Lack of FM policy guidelines implementation for infrastructure	704	3.744	1.019	0.749	7
Lack of qualify & professional facility managers	699	3.718	0.916	0.704	8
Lack of government support & incentives	660	3.513	0.997	0.703	10
Inadequate monitoring of facilities	641	3.410	1.044	0.682	11
Lack of relevant laws & regulations	578	3.077	1.109	0.615	12

UNDERSCORING THE CHALLENGES AFFECTING SUSTAINABLE...

Lack of apparent operation and maintenance culture	699	3.718	0.972	0.743	9
Unavailability of a proper facility maintenance manual	577	3.068	1.075	0.613	13
Administrative bottlenecks in Government	573	3.049	1.156	0.610	14
High end-users' demand	564	3.000	1.087	0.600	15
Poor lighting and ventilation to building	520	2.769	1.038	0.554	16
Corruption	520	2.769	1.111	0.554	16
Shoddy construction works with substandard building materials	516	2.744	1.186	0.549	17
Inefficient technological drive, training & tools	704	3.744	1.019	0.749	7
Reckless use of facilities	699	3.718	0.916	0.743	8
Delay in reporting failures and executing repairs	699	3.718	0.972	0.743	9
Lack of logistics (equipment and spare parts for maintenance operations)	660	3.513	0.997	0.702	10
Insufficient allocation of operation & maintenance costs	516	2.744	1.251	0.549	18
Misguided ideas of the roles & responsibilities of FM	516	2.744	1.019	0.549	18
Shortage of skilled workers	506	2.692	1.104	0.538	19

**Legend:** <3.00= Disagree, >3.00= Agree. **Note:**  $\sum f$  = Number of values;  $\sum fx$  = Sum of Values;  $\sum fx/\sum f$  = Sum of Values divided by Number of values (mean). and RII = relative importance index.

Source: Author's Field Survey, 2024.

**4.2 Level of Impact with Sustainable Management Practice in Public Ultra-Modern Market**

Table 2 shows the results of level of impact of the sustainable management practice on public ultra-modern market infrastructures. The results showed that space allocation with mean score of 2.952; RII = 0.585, waste management with mean score of 2.962; RII = 0.592, security with mean score of 2.946; RII = 0.589, building operations and maintenance with mean score of 2.867; RII = 0.573, plant & equipment with mean score of 2.819; RII = 0.564, fire service systems with mean score of 2.718; RII = 0.543, parking space with mean score of 2.920; RII = 0.584, transportation with mean score of 2.856; RII = 0.571, loading & offloading bay services with mean score of 2.856; RII = 0.577 were the level of impact of the current management practice on public ultra-modern market buildings. Also, financial services with mean score of 2.909; RII = 0.582, utilities management (water & electricity) and dispute resolution with mean score of 2.840; RII = 0.568 respectively, and cleaning & general maintenance with mean score of 2.867; RII = 0.573 were less apparent level of impact of the current management practice on public ultra-modern market buildings. The results indicated that the current management practice in public ultra-modern market buildings have negative impacts on building operations and maintenance, utilities management (water & electricity), financial services, waste management, space allocation, security, fire service systems, parking space, transportation, plant & equipment, cleaning & general maintenance, dispute resolution and loading & offloading bay services. It implies that with the negative impacts on infrastructure management services needed and provided; public ultra-modern market infrastructure was not sustainably managed.

**Table 2: Level of Impact of the Current Sustainable Management Practice**

Level of Impact	Weigh: N 188					$\sum fx$	$\sum fx/\sum f$	RII	Remarks
	SA	A	U	D	SD				
Space allocation	36	36	36	38	42	550	2.925	0.585	Negative
Waste management	37	35	36	42	40	557	2.962	0.592	Negative
Security	36	36	37	40	39	554	2.946	0.589	Negative
Building operations and maintenance	34	34	37	39	44	539	2.867	0.573	Negative
Plant & Equipment	30	36	38	38	46	530	2.819	0.564	Negative
Fire service systems	36	35	37	40	40	511	2.718	0.543	Negative
Parking space	36	35	37	38	42	549	2.920	0.584	Negative
Transportation	35	32	36	46	39	537	2.856	0.571	Negative
Loading & offloading Bay services	34	34	37	43	40	543	2.888	0.577	Negative
Financial services	36	35	36	38	43	547	2.909	0.582	Negative
Utilities management (water & electricity)	34	30	40	40	44	534	2.840	0.568	Negative
Cleaning & general maintenance	34	34	37	39	44	539	2.867	0.573	Negative
Dispute resolution	33	34	36	40	45	534	2.840	0.568	Negative

**Legend:** <3.00= Negative Impact, >3.00= Positive Impact. **Note:**  $\sum f$  = Number of values;  $\sum fx$  = Sum of Values;  $\sum fx/\sum f$  = Sum of Values divided by Number of values (mean); and RII = relative importance index.

Source: Source: Author's Field Survey, 2024.

**Extent of Impact of Sustainable Management Practice on Infrastructure Services Needed**

Table 3 shows the results of a paired-sample T-test for level of impact and involvement of FM personnel in the infrastructure management services needed. The mean value of 3.590 for extent of impact of infrastructure management and the mean value of 2.769 for involvement of FM personnel in the services needed were significantly different ( $p < 0.05$ ) for the level of impact of infrastructure management services needed. The results for the building operations and maintenance, waste management, security, financial services and the utilities management (water & electricity) were highly significant ( $p < 0.001$ ) for involvement and importance with mean values of 3.462; 2.462 and 3.231; 2.590 respectively.

**Table 3: Paired-Samples T-test for Level of Impact of the Sustainable Management Practice**

Level of Impact of Services Needed	Level		Impact		Mean Diff	SD	T	Sig.
	Mean	SD	Mean	SD				
Building operations and maintenance	3.462	1.295	2.462	1.502	1.000	1.522	4.104	0.000***
Utilities management (water & electricity)	3.231	1.135	2.590	1.390	0.641	1.038	3.855	0.000***
Waste management	3.590	1.163	2.769	1.423	0.821	1.430	3.582	0.001**
Security	4.179	0.756	3.974	0.986	0.205	0.923	1.388	0.173
Financial services	4.667	0.779	2.949	1.123	1.718	0.894	-0.784	0.172
Space allocation	4.520	1.155	2.923	1.345	1.597	1.317	1.433	0.001*
Fire systems	4.327	0.785	2.795	1.281	1.532	1.085	-0.882	0.188
Parking space	4.218	0.718	2.795	1.508	1.423	1.218	0.247	0.123
Transportation	4.106	1.048	2.769	1.038	1.337	0.850	0.829	0.167
Loading & offloading Bay services	3.462	1.097	2.769	1.327	0.693	0.938	-1.598	0.175
Plant & Equipment	3.436	0.995	2.641	1.224	0.795	1.004	-4.092	0.000***
Cleaning & general maintenance	3.256	1.019	2.641	1.478	2.237	1.021	-2.506	0.017*
Dispute resolution	3.205	0.801	1.615	0.161	1.590	0.914	0.443	0.173

Note: \*\*\*Correlation is significant at the 0.001 level (2-tailed); and \*\*Correlation is significant at the 0.01 level (2-tailed).

Source: Source: Author’s Field Survey, 2024.

**Level of Impact of Facilities and Services Provided in Public Ultra-Modern Market**

From the results of a paired-sample T-test for level of impact and involvement of FM personnel in the infrastructure management services needed detailed in Table 3, Figure 1 highlights the lowly impacted level of facilities and services provided as indicated by 37% of the respondents, 20% indicates very lowly impact, while 18% indicates moderate impact, 15% highly impact and 10% indicates very highly impacted level of impact of facilities and services provided at the public ultra-modern market infrastructure. This infers that the level of impact is low accounted for 57% of the total expected outcomes for facilities and services provided at the public ultra-modern market infrastructure in the study area.

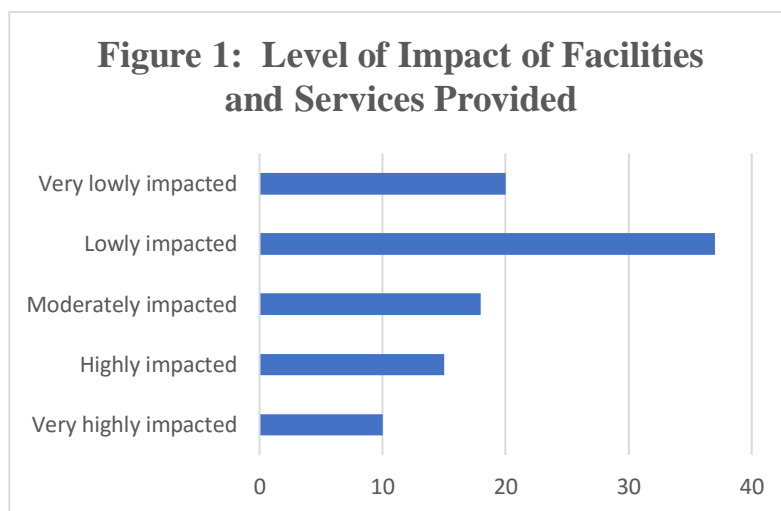


Figure 1: Level of Impact of Facilities and Services Provided  
Source: Source: Author’s Field Survey, 2024.

**Assessing the Severity of Impact on Identified Challenges Affecting the Sustainable Management Practice**

The severity of the impact of 26 challenges on sustainable management practices was evaluated using a 5-point Likert scale ranging from "very low" to "very high." The mean impact ratings, relative ranks, and Kruskal Wallis chi-square test results are presented in Table 4. Key findings indicate that challenges such as "dearth of qualified & professional facility managers," "inadequate funding for infrastructural operation & maintenance," and "conflict of interest" were among the top-rated factors, with mean impact ratings ranging from 4.063 to 4.221. Conversely, challenges like "lack of apparent operation and maintenance culture," "lack of awareness of outcomes," and "administrative bottlenecks in government" received lower ratings. Most challenges, spanning four out of five categories, surpassed the 3-point benchmark. Additionally, while significant differences of opinion were noted in 10 challenges, there was consensus on 26 factors according to the Kruskal Wallis test.

**Table 4: Assessing the Severity of Impact of identified Factors (N =188)**

Assessing the Severity of Impact	MR-impact	Rank	Chi-square	KW	RMK
Conflict of interest among stakeholders	4.063	3	11.117	0.268	p>0.05
Inadequate Funding for infrastructural operation & maintenance	4.197	2	9.893	0.359	p>0.05
Lack of awareness of the outcomes and benefits of SIM	3.879	7	6.457	0.693	p>0.05
Current economic slowdown (economic recession)	3.851	8	7.645	0.570	p>0.05
Inadequate information	3.832	9	9.847	0.363	p>0.05
Public unrest and facility vandalism	3.817	11	6.780	0.660	p>0.05
Lack of FM policy guidelines implementation for infrastructure	3.971	4	9.690	0.376	p>0.05
Lack of qualify & professional facility managers	4.221	1	5.403	0.798	p>0.05
Lack of government support & incentives	3.827	10	7.973	0.537	p>0.05
Inadequate monitoring of facilities	3.923	5	12.945	0.165	p>0.05
Lack of relevant laws & regulations	3.798	12	4.571	0.870	p>0.05
Lack of apparent operation and maintenance culture	3.923	6	13.127	0.157	p>0.05
Unavailability of a proper facility maintenance manual	3.750	14	18.021	0.035*	p<0.05
Administrative bottlenecks in Government	3.567	21	8.313	0.503	p>0.05
High end-users' demand	3.740	15	17.167	0.046*	P<0.05
Poor lighting and ventilation to building	3.534	25	3.679	0.931	p>0.05
Corruption	3.629	17	3.823	0.923	p>0.05
Shoddy construction works with substandard building materials	3.582	20	12.573	0.183	p>0.05
Inefficient technological drive, training & tools	3.731	16	8.235	0.511	p>0.05
Reckless use of facilities	3.759	13	5.636	0.776	p>0.05
Delay in reporting failures and executing repairs	3.625	18	15.039	0.090	p>0.05
Lack of logistics (equipment and spare parts for maintenance operations)	3.462	23	9.214	0.418	p>0.05
Insufficient allocation of operation & maintenance costs	3.601	19	4.302	0.890	p>0.05
Misguided ideas of the roles & responsibilities of FM	3.250	22	17.301	0.044*	P<0.05
Shortage of skilled workers	3.543	24	6.977	0.640	p>0.05

**Note:** MR-impact = mean rating for severity of impact; \* = p < 0.05.

**Source:** Author's Field Survey, 2024.

**5. DISCUSSION OF FINDINGS**

The data analysis presented in Table 1 highlights that a significant proportion of respondents, exceeding 50%, identified various factors as significant challenges affecting the current management practices of sustainable management in ultra-modern public market infrastructure. These challenges, including conflicts of interest among stakeholders, inadequate funding for operation and maintenance, lack of awareness regarding sustainability benefits, and the impact of economic slowdown, were ranked with Relative Importance Index (RII) values surpassing 0.60. This finding is consistent with underlining the critical need for proactive planning and sufficient financial allocations to support effective facility management. Also, the empirical evidence presented in Table 2 underscores the wide-ranging impact of current management practices on various aspects of infrastructure management in ultra-modern public markets. Key areas affected include building operations and maintenance, utilities management, financial services, waste management, security, and transportation. This suggests that

successful management of both new and existing infrastructure demands substantial expertise and resource commitment as observed, particularly in mitigating aging and deterioration exacerbated by harsh weather conditions.

Additionally, the research reveals a lack of awareness among public property administrators and managers regarding infrastructure maintenance management planning, often leading to reactive approaches to issues rather than proactive strategies. This finding regarding the absence of policy guidelines for infrastructure development, which serves as a fundamental challenge in public facilities. Insufficient information decentralization on infrastructure conditions contributes to inflated maintenance costs, highlighting the importance of initial planning, design, and construction phases in infrastructure projects. The absence of a legislative framework and policies emerged as the primary obstacle to sustainability adoption, as indicated by nearly 90% of participants. This underscores the crucial role of legislation in compelling businesses to implement environmentally friendly practices, as emphasized in the study. Moreover, over 80% of respondents cited a lack of management commitment as another significant barrier to sustainability, reflecting the established correlation between management commitment and sustainability implementation.

Furthermore, paired-sample T-test analysis revealed significant differences in the impact of current sustainable management practices on various aspects of infrastructure management services. This observation aligns with previous findings and underscores the negative impacts on building operations, utilities management, financial services, waste management, and other key areas. Principal component analysis identified factors such as the dearth of qualified facility managers, inadequate funding, conflicts of interest, and lack of policy guidelines as the top challenges affecting current management practices. Improving the severity of impact through quality control measures could significantly reduce infrastructure management costs. Cost-effectiveness plays a crucial role in adding value to sustainable infrastructure by minimizing the severity of impact from reoccurrence. Addressing these challenges is essential to mitigate infrastructure deterioration, ensure effective resource utilization, and foster sustainable development in ultra-modern public markets.

## 6. CONCLUSION AND RECOMMENDATIONS

This study aimed to underscore the challenges affecting sustainable management practice of public ultra-modern market infrastructure in Nigeria. Sustainable management is the integrated, multi-disciplinary set of strategies in sustaining public infrastructure and aim at making sure that infrastructure services procured for public use are functional throughout their whole life cycle. The study meticulously identified twenty-five challenges hindering the sustainable management practices of public ultra-modern market infrastructure. These challenges span conflicts among stakeholders, funding deficiencies, limited awareness of sustainability benefits, economic downturn, information gaps, vandalism, and public unrest. Moreover, issues such as lacking policy guidelines, inefficient technology use, inadequate training, and shortage of qualified managers were highlighted. Other challenges encompass reckless facility usage, absence of maintenance culture, delays in repairs, governmental support insufficiency, and logistical hurdles in maintenance operations. The study evaluated the severe impact of these challenges across various operational facets, including building maintenance, utilities management, financial services, waste management, security, and transportation. And the severe of the impact was highly significant at  $p < 0.001$  for market manager's non-involvement sustainable management practices from building operations and maintenance, waste management, security, financial services, transportation and the utilities management (water & electricity). Ultimately, it concluded that current sustainable management practices do not adequately address the substantial challenges facing public ultra-modern market infrastructure, indicating a significant incongruence between practice and necessity. Therefore, stakeholders can work together to overcome the challenges hindering the sustainable management of public ultra-modern market infrastructure in Nigeria, thereby ensuring the long-term viability and resilience of these essential facilities by implementing:

1. Policy Formulation and Implementation
2. Capacity Building and Training
3. Community Engagement and Awareness
4. Financial Support and Incentives
5. Technological Innovation
6. Enforcement and Regulation
7. Collaborative Governance
8. Research and Innovation
9. Continuous Evaluation and Adaptation



**REFERENCES**

1. Adegboye, K. (2017). No motorable roads in Nigeria. Vanguard Newspapers, July 25, 2017, p. 27.
2. Aderibigbe, A. (2015). Federal Secretariat: The Rot 24 Years After. The Nation Newspaper, September 22, 2015.
3. Asiabaka, I.P. (2008). The Need for Effective Facility Management in Schools in Nigeria. New York Science Journal, 1(2), 10-21.
4. Adewunmi, Y.A., Omirin, M. and Koleoso, H.A. (2012). Developing a Sustainable Approach to FM Practice in Nigeria. Facilities, 30(10), 21-38.
5. Adetayo, O. (2018). Grand Corruption Denied Nigeria of Infrastructure Revolution, Says Buhari. Punch Newspaper, May 1, 2018.
6. Ajakaiye, F. (2018). Fashola: Lack of Maintenance Economy Hinders Regular, Effective Management of Public Assets. Available at <https://www.thisdaylive.com/index.php/2018/05/28/fashola-lack-of-maintenance-economy-hinders-regular-effective-management-of-public-assets/>
7. Ajanlekoko, J. S. (2001). Sustainable Housing Development in Nigeria: The Financial and Infrastructural Implication. Available at <http://www.fig.net/pub/proceedings/nairobi/ajanlekokocmws1-1.pdf>.
8. Chandrashekar, A. and Gopalakrishnan, B. (2008). Maintenance Risk Reduction for Effective FM, Journal of Facilities Management, 6(1), 52-68.
9. Holodny, E. (2015). The 11 Countries with the Best Infrastructure Around the World. Business Insider, October 2, 2015.
10. Nnodim, O. (2018). Nigeria needs N4.5tn annually for infrastructure – Report. Punch Newspaper, February 25, 2018.
11. Nubi, (2015). Government Has No Business in Business – Nubi. Vanguard Newspaper, January 6, 2015.
12. OECD (2014). OECD Regional Outlook 2014; Regions and Cities: Where Policies and People Meet. Paris: OECD Publishing.
13. Ogbimi, F. (2018). Turning Power Plants to Learning Infrastructure. The Nation, 29 March, 2018.
14. Ogbimi, F. (2017). No Private Sector, No Reliable Infrastructure. The Guardian Newspapers, 16 February, 2017.
15. Olorok, F. (2018). Nigeria Loses about \$2bn Yearly to Poor Health Care; Federal Government. Punch Newspaper, September 14, 2018.
16. Olupohunda, B. (2016). The Cost of Vandalizing Public Properties. The Punch, April 12, 2016.
17. Oyedele, O. A. (2018). The Basics of Project Management. Osogbo, Nigeria: Atman Publishers.
18. Oyedele, O.A. (2012). The Challenges of Infrastructure Development in Democratic Governance. Paper Presented at FIG Working Week 2012 Knowing to Manage the Territory, Protect the Environment, Evaluate the Cultural Heritage Rome, Italy, 6-10 May 2012.
19. Kamaruzzaman, S.N and Zawawi, E.M.A. (2010). Development of Facilities Management in Malaysia. Journal of Facilities Management, 8(1), 75-81.
20. Shah, S. (2007). Sustainable Practice for the Facilities Managers. Blackwell Publication Oxford, UK.
21. Yap, A.L.L., Low, T.Y., Wong, K.O., De Haan, L.H.J. and Rietjens, I.M.C.M. (2017). ‘The Regulatory Framework Across International Jurisdictions for Risks Associated with Consumption of Botanical Food Supplements.’ Comprehensive Reviews in Food Science and Food Safety 16(5), 821-834.
22. Oyedele, O.A. (2012). The Challenges of Infrastructure Development in Democratic Governance. A Paper Presented at the FIG Working Week with Theme ‘Knowing to Manage the Territory, Protect the Environment, Evaluate the Cultural Heritage’ Held in Rome, Italy, 6th-10th of May.
23. Odediran, S.J., Opatunji, O.A. and Eghenure, O.F. (2012). Maintenance of Residential Buildings: Users Practices in Nigeria, Journal of Emerging Trends in Economics and Management Sciences, 3(3), 261-265.
24. Lavy, S. and Bilbo, K. (2010). Performance-Based Facility Management: An Integrated Approach. International Journal of Facility Management, 1(1), 455-470.
25. Mohammed, M.A. and Hassanain, M.A. (2010). Towards Improvement in Facilities Operation and Maintenance through Feedback to the Design Team. The Built & Human Environment Review.3
26. Olaniyi, O. O. and Smith, A. (2014). Facilities Management Approach for Achieving Sustainability in Commercial Buildings in Nigeria (WCED 1987), 1 -7.
27. Islam, R., Nazifa, T. H. and Mohamad, S.F. (2019). 'Factors Influencing Facilities Management Cost Performance in Building Projects'. Journal of Performance of Constructed Facilities 33(3),0401-9036.
28. Iyagba, R. (2005). Sustainable Development of the Environment & The Facilities Manager. Proceedings of Build Well International Workshop. 27-29 September. Mastering Facilities Maintenance Management. Lagos, Nigeria.
29. Ujah, E. (2011). Federal Government Bans Use of Kerosene for Road Construction. Vanguard Newspaper, December 16, 2011.

30. World Economic Forum (WEF) (2017). The Global Competitiveness Report 2015 – 2016 Klaus Schwab, World Economic Forum.
31. World Bank (2018). Private Participation in Infrastructure (PPI) Project. World Bank Group. Available <https://ppi.worldbank.org>.