

Enforcement Challenges in Urban Development Control: Evidence from Kaduna Metropolis, Nigeria

Mercy Steven Ayuba & Dadan-Garba, A., PhD

Department of Geography, Nigerian Defence Academy (NDA)

Email: mercysteven.ms@gmail.com

Abstract

Urban development control is critical for sustainable urban growth, orderly land-use management, and public safety. However, enforcement remains weak in rapidly urbanizing Nigerian cities despite existing planning laws. This study assessed enforcement challenges affecting development control in Kaduna Metropolis, focusing on the Kaduna State Urban Planning and Development Authority (KASUPDA). Using a descriptive survey design, data were collected from 200 respondents through structured questionnaires. Descriptive statistics and inferential tests (Independent Samples t-test and Mann-Whitney U test) were employed at 5% significance level. Findings indicate moderate enforcement effectiveness in site inspections and compliance monitoring. However, inadequate funding, personnel shortages, political interference, corruption, rapid urbanization, and limited technology adoption significantly hinder enforcement. Respondents identified improved funding, increased manpower, digitalization, GIS, drone monitoring, and stakeholder engagement as key improvement strategies. The study concludes that strengthening institutional capacity and adopting innovative technologies are critical for enhancing development control enforcement and achieving sustainable urban development in Kaduna Metropolis.

Keywords: Development Control, Urban Planning, Building Regulations, Enforcement, Sustainable Urban Development.

Introduction

Urbanization represents one of the defining global phenomena of the twenty-first century. The United Nations projects that nearly 70% of the global population will reside in urban centres by 2050, with developing countries experiencing the most rapid expansion. Nigeria has witnessed one of the fastest urbanization rates in Sub-Saharan Africa, with major cities including Kaduna, Lagos, Abuja, and Kano experiencing remarkable physical expansion over recent decades. Unfortunately, much of this growth has occurred without adequate compliance with statutory planning regulations, resulting in unauthorized developments, informal settlements, environmental degradation, flooding, and frequent building collapses.

Development control constitutes a fundamental component of urban planning, referring to the statutory process through which authorities regulate physical development to ensure conformity with approved planning standards, zoning regulations, and building codes. Its significance extends beyond regulatory enforcement to include orderly physical development, public health protection, environmental conservation, and disaster risk reduction. In Nigeria, statutory responsibility derives primarily from the Nigerian Urban and Regional Planning Act (1992), which empowers planning authorities to regulate land development through approvals, inspections, and enforcement mechanisms. Despite this comprehensive legal framework, implementation remains inconsistent due to institutional weaknesses including inadequate

funding, personnel shortages, corruption, political interference, and limited technological capacity.

Kaduna Metropolis provides an important case study for examining these challenges. As the administrative headquarters of Kaduna State and one of Northern Nigeria's largest metropolitan centres, Kaduna performs critical administrative, commercial, industrial, and transportation functions. Rapid population growth has intensified pressure on land and infrastructure, resulting in widespread violations of planning regulations. The Kaduna State Urban Planning and Development Authority (KASUPDA) serves as the principal institution responsible for development control but continues to face numerous institutional constraints limiting its regulatory capacity. This study investigates enforcement challenges affecting development control in Kaduna Metropolis, providing empirical evidence to inform policy reforms for strengthening institutional effectiveness and promoting sustainable urban development.

Conceptual Clarification

Development Control Enforcement

Development Control Enforcement refers to the statutory process through which planning authorities regulate land use and physical development to ensure conformity with approved planning standards, zoning regulations, and building codes (UN-Habitat, 2022). It encompasses development permit approval, site inspections, compliance monitoring, enforcement actions, and public sensitization. Effective development control promotes orderly urban growth, safeguards public health, protects environmentally sensitive areas, and contributes to sustainable development (Akinmoladun et al., 2023).

Legal and Regulatory Framework

Legal and Regulatory Framework provides planning authorities with statutory powers to regulate physical development. In Nigeria, the Nigerian Urban and Regional Planning Act (1992) establishes the legal basis for physical planning administration. However, legal provisions alone cannot guarantee effective enforcement; weak implementation, prolonged judicial processes, and political influence frequently reduce effectiveness (Adeyemi & Oladipo, 2020).

Institutional Capacity

Institutional Capacity encompasses qualified personnel, financial resources, logistics, and administrative procedures required for effective development control. Authorities with adequate staffing, funding, and clear organizational responsibilities achieve significantly higher compliance levels than poorly resourced institutions (Akinmoladun et al., 2023). Institutional transparency and accountability also influence enforcement outcomes.

Technology and Digital Planning Systems

Technology and Digital Planning Systems including Geographic Information Systems (GIS), remote sensing, drone surveillance, and electronic permit management have substantially improved development monitoring globally. GIS enables rapid identification of unauthorized developments, while drones improve inspection efficiency (Martinez et al., 2023). However, adoption remains limited across African cities due to inadequate funding, poor ICT infrastructure, and institutional resistance (UN-Habitat, 2022).

Stakeholder Participation

Stakeholder Participation emphasizes collaborative governance rather than top-down regulation. Communities are more likely to comply with planning regulations when they understand development control purposes and perceive enforcement as transparent and fair (Owusu & Boateng, 2023). Public participation complements formal enforcement by encouraging voluntary compliance.

Theoretical Framework

This study is anchored on two complementary theories:

Institutional Theory (Meyer & Rowan, 1977; DiMaggio & Powell, 1983) argues that organizational performance depends on formal rules, institutional structures, governance systems, and regulatory capacity. Applied to development control, enforcement effectiveness depends on the institutional capacity of planning authorities. Where funding, manpower, technology, and accountability are inadequate, enforcement performance declines regardless of legislative strength. This theory is particularly relevant as KASUPDA's challenges reflect institutional rather than purely technical weaknesses.

Deterrence Theory (Beccaria, 1764; Becker, 1968) assumes that individuals make rational decisions by comparing benefits of violations with the probability and severity of punishment. Sanctions such as stop-work notices, demolition orders, and fines serve as deterrence mechanisms. However, when corruption or weak monitoring reduces punishment certainty, developers may perceive illegal construction as economically advantageous.

Empirical Review

Empirical evidence consistently demonstrates that effective development control depends upon institutional strength, technological innovation, and transparent governance. Akinmoladun et al. (2023) found that inadequate manpower, political interference, and insufficient funding reduced enforcement effectiveness in Lagos State despite comprehensive planning legislation. Ahmed and Rahman (2022) reported that rapid urbanization overwhelmed regulatory institutions in Bangladesh, leading to increased unauthorized developments, with institutional reforms and GIS-based monitoring significantly improving compliance. Mensah and Asante (2023) observed that stakeholder participation improved voluntary compliance in Ghana by increasing transparency and public trust. Mwangi et al. (2024) demonstrated that drone-assisted inspections in Nairobi substantially improved monitoring efficiency while reducing operational costs.

Research Gap

Existing literature has improved understanding of development control administration across developing countries. However, three gaps remain: (1) Most Nigerian studies concentrate on larger metropolitan areas like Lagos and Abuja, with limited empirical attention to secondary cities like Kaduna; (2) Previous studies have largely examined enforcement challenges from either institutional or stakeholder perspectives in isolation, rarely using complementary inferential statistical techniques; (3) Limited empirical evidence exists regarding stakeholder support for adopting digital technologies within Kaduna Metropolis.

Materials and Methods

Description of Study Area

Kaduna Metropolis is located in north-western Nigeria, serving as the administrative headquarters of Kaduna State. It lies between latitude $10^{\circ}25'N$ and $10^{\circ}45'N$ and longitude $7^{\circ}20'E$ and $7^{\circ}35'E$, occupying a strategic location along the Abuja-Kano highway (Figure 1). The metropolis comprises urban sections of Kaduna North, Kaduna South, and parts of Chikun and Igabi Local Government Areas, making it one of Northern Nigeria's largest urban centres. The city has experienced rapid demographic and spatial expansion driven by population growth, rural-urban migration, industrial development, and commercial activities.

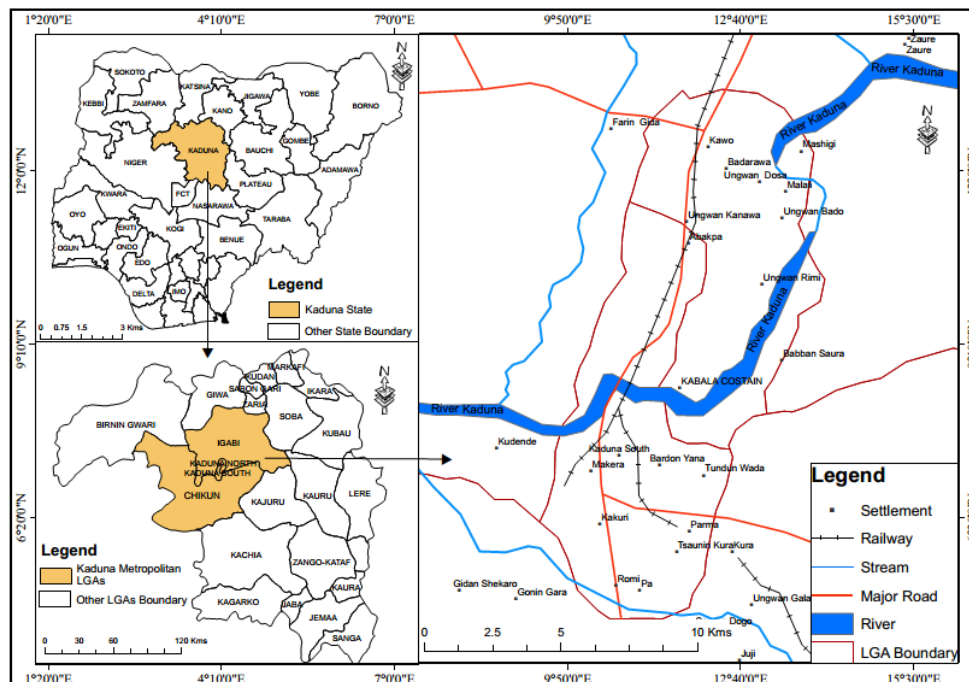


Figure 1. Location of Kaduna Metropolis, Kaduna State, Nigeria.

A descriptive survey research design was adopted to facilitate systematic collection of quantitative data. The study population comprised 1,500 stakeholders directly involved in development control activities within Kaduna Metropolis, including KASUPDA officials, property developers, property owners, professional consultants (architects, builders, planners, engineers), and tenants.

Using the Yamane (1967) formula at 95% confidence level, the minimum sample size was 316. However, due to financial and accessibility constraints, 250 structured questionnaires were administered, with 200 validly completed and returned (80% response rate). A multistage sampling procedure was adopted: stratified sampling divided respondents into five stakeholder groups; purposive sampling selected respondents with adequate knowledge; simple random sampling was used where complete sampling frames were available.

Primary data were collected through structured questionnaires and field observations. Secondary information was obtained from journal articles, textbooks, government reports, and planning regulations. The questionnaire consisted of five sections: socio-demographic information, enforcement effectiveness, institutional challenges, stakeholder perceptions, and improvement strategies. Descriptive statistics (frequencies, percentages, means, standard deviations) and

inferential statistics (Independent Samples t-test and Mann-Whitney U test) were employed at 5% significance level. Normality was assessed using the Shapiro-Wilk test, justifying use of both parametric and non-parametric tests.

Result of the Findings

Socio-Demographic Characteristics of Respondents

Table 1 presents the socio-demographic characteristics of the 200 respondents who participated in the study. The sex distribution shows that 56.0% (112 respondents) were male while 44.0% (88 respondents) were female, indicating a fairly balanced gender representation. This balance is important as it ensures that both male and female perspectives on development control enforcement are captured, given that both genders participate in property development and urban planning activities in Kaduna Metropolis.

The age distribution reveals that the largest proportion of respondents (40.0%, n=80) belonged to the 36–45 years age category, followed by those aged 26–35 years (25.0%, n=50). Combined, these two categories constitute 65.0% of the sample, indicating that the study primarily captured opinions from economically active adults who are likely to have substantial experience with urban development activities. This age profile is significant because individuals in this age bracket are typically involved in property acquisition, development, or regulation, making them well-positioned to provide informed responses on development control enforcement.

Regarding marital status, 65.0% (130 respondents) were married, while 30.0% (60 respondents) were single. The predominance of married respondents aligns with the expectation that married individuals are more likely to be property owners or developers with direct experience of planning regulations.

The educational attainment profile shows that 45.0% (90 respondents) possessed HND/BSc qualifications, 20.0% (40 respondents) held OND/NCE certificates, and 7.5% (15 respondents) had postgraduate qualifications. Cumulatively, 72.5% of respondents had tertiary education, suggesting that respondents possessed adequate literacy and technical knowledge to provide informed opinions on development control practices. This high educational level enhances the credibility and reliability of the responses.

Occupationally, the largest group was self-employed (35.0%, n=70), followed by civil servants (25.0%, n=50). Professional consultants and private sector employees each constituted 15.0% (30 respondents each). The predominance of self-employed individuals is notable as this group often includes developers and property owners who directly interact with development control processes.

The stakeholder distribution reveals that developers constituted the largest group (35.0%, n=70), followed by KASUPDA officials (25.0%, n=50), property owners (20.0%, n=40), and tenants and consultants (10.0% each, n=20 each). This balanced representation ensures that both regulators (KASUPDA officials) and regulated stakeholders (developers, property owners, tenants, consultants) are adequately represented, allowing for a comprehensive assessment of enforcement effectiveness from multiple perspectives.

Overall, the socio-demographic characteristics indicate that respondents possessed the educational background, practical experience, and diverse stakeholder perspectives necessary to provide reliable information on development control enforcement in Kaduna Metropolis.

Table 1: Socio-Demographic Profile of Respondents

Characteristic	Frequency	Percentage (%)
Sex		
Male	112	56.0
Female	88	44.0
Age Group (years)		
Below 25	10	5.0
26–35	50	25.0
36–45	80	40.0
46–55	40	20.0
Above 55	20	10.0
Marital Status		
Single	60	30.0
Married	130	65.0
Other	10	5.0
Educational Qualification		
Primary	5	2.5
Secondary	50	25.0
OND/NCE	40	20.0
HND/BSc	90	45.0
Postgraduate	15	7.5
Occupation		
Civil servant	50	25.0
Private sector	30	15.0
Self-employed	70	35.0
Professional consultant	30	15.0
Other	20	10.0
Stakeholder Category		
KASUPDA staff	50	25.0
Developer	70	35.0
Property owner	40	20
Tenant	20	10
Consultant	20	10

Source: Field Survey, 2026

Assessment of Development Control Enforcement Effectiveness

Table 2 presents respondents' assessment of the effectiveness of development control enforcement by KASUPDA. The mean scores range from 3.75 to 4.10 (on a 5-point Likert scale), indicating that respondents generally agree that enforcement activities are moderately effective. The standard deviations (ranging from 0.84 to 0.92) suggest moderate variability in responses, indicating some diversity of opinion among stakeholders.

Item 1 (Mean = 4.10, SD = 0.85) received the highest rating, with 40% of respondents strongly agreeing and 35% agreeing that KASUPDA effectively monitors development activities. This high rating suggests that KASUPDA maintains a visible presence in site inspections and compliance monitoring across Kaduna Metropolis. The 10% neutral and 15% disagreement rates indicate that while most respondents acknowledge monitoring efforts, a minority perceive gaps in coverage or consistency.

Item 4 (Mean = 3.90, SD = 0.86) and Item 5 (Mean = 3.90, SD = 0.84) received equal ratings, indicating that respondents agree that enforcement has contributed to reducing building collapses and that enforcement officers are sufficiently trained. The 3.90 mean score for building collapse reduction is significant given the frequent building collapses reported in Nigerian cities, suggesting that KASUPDA's enforcement activities may have had some positive impact. The positive assessment of officer training suggests that respondents perceive KASUPDA personnel as possessing adequate technical competence.

Item 3 (Mean = 3.85, SD = 0.88) indicates agreement that stop-work notices are effectively enforced. However, the 15% neutral and 15% disagreement responses suggest that some stakeholders perceive inconsistencies in the application of stop-work orders, possibly due to political interference or corruption as identified in subsequent analysis.

Item 2 (Mean = 3.75, SD = 0.92) recorded the lowest mean score, indicating relatively weaker agreement that enforcement actions are applied uniformly. With only 25% strongly agreeing and 40% agreeing, and 15% disagreeing or strongly disagreeing, this suggests significant concerns regarding consistency and equity in enforcement practices. The relatively higher standard deviation (0.92) indicates greater diversity of opinion on this item, reflecting perceptions that enforcement may be selective or influenced by factors such as developer status, political connections, or financial inducements.

The findings from Table 2 indicate that development control enforcement in Kaduna Metropolis is moderately effective rather than fully effective. The positive assessment of routine monitoring reflects KASUPDA's visible presence in site inspections. However, the relatively lower score for uniform application of enforcement actions suggests that enforcement may not always be implemented consistently across all stakeholders, which could undermine public confidence and voluntary compliance.

Table 2: Respondents' Assessment of Enforcement Effectiveness by KASUPDA

S/No	Statement	SA (%)	A (%)	N (%)	D (%)	SD (%)	Mean	SD
1	KASUPDA effectively monitors development activities	40	35	10	10	5	4.10	0.85
2	Enforcement actions are applied uniformly	25	40	15	15	5	3.75	0.92
3	Stop-work notices are effectively enforced	30	35	15	15	5	3.85	0.88

4	Enforcement has reduced building collapses	35	30	20	10	5	3.90	0.86
5	Enforcement officers are sufficiently trained	30	40	15	10	5	3.90	0.84

Source: Field Survey, 2026

Note: SA = Strongly Agree (5), A = Agree (4), N = Neutral (3), D = Disagree (2), SD = Strongly Disagree (1)

Systemic Challenges Affecting Enforcement of Building Regulations

Table 3 presents respondents' assessment of systemic challenges affecting the enforcement of building regulations in Kaduna Metropolis. The mean scores range from 3.70 to 4.45, indicating overall agreement with all identified challenges. The standard deviations (0.78 to 0.90) indicate moderate variability in responses.

Item 1 (Mean = 4.45, SD = 0.78) recorded the highest mean score, with 60% of respondents strongly agreeing and 30% agreeing that regulations are necessary for public safety. This very high level of agreement indicates widespread recognition among stakeholders that development control regulations serve essential public safety functions. The low disagreement rate (5%) suggests near-consensus on this point, providing a foundation for enforcement legitimacy.

Item 2 (Mean = 4.15, SD = 0.85) indicates strong agreement that fear of sanctions encourages compliance. This finding supports Deterrence Theory's proposition that the certainty of punishment influences compliance behaviour. With 50% strongly agreeing and 30% agreeing, respondents recognize that enforcement actions such as stop-work notices, fines, and demolition orders serve as effective deterrents. However, the 15% neutral and 10% disagreement responses suggest that some stakeholders perceive sanctions as insufficiently certain or severe to discourage violations.

Item 4 (Mean = 3.85, SD = 0.88) indicates agreement that developers perceive regulations as restrictive. With 35% strongly agreeing and 40% agreeing, this suggests that planning regulations may be viewed as constraints on development, potentially contributing to non-compliance. The 10% disagreement rate indicates that some developers appreciate the value of regulations.

Item 5 (Mean = 3.80, SD = 0.86) indicates moderate agreement that enforcement is generally fair. However, the 15% neutral and 15% disagreement responses suggest that a significant minority of stakeholders question the fairness of enforcement, possibly due to perceptions of selective application or corruption.

Item 3 (Mean = 3.70, SD = 0.90) recorded the lowest mean score, with 25% strongly agreeing and 40% agreeing that some violations are overlooked. The relatively lower mean suggests that while respondents acknowledge that oversight occurs, they do not perceive it as pervasive. However, the 20% neutral and 15% disagreement responses indicate some uncertainty or disagreement on this point. The higher standard deviation (0.90) indicates greater diversity of opinion, reflecting varying experiences with enforcement.

The findings from Table 3 indicate that while stakeholders recognize the necessity and deterrent value of regulations, challenges related to selective enforcement, perceived restrictiveness, and

fairness concerns persist. These systemic issues contribute to the enforcement challenges examined in subsequent analysis.

Table 3: Respondents' Assessment of Systemic Challenges Affecting Enforcement

S/No	Challenge	SA (%)	A (%)	N (%)	D (%)	SD (%)	Mean	SD
1	Regulations are necessary for public safety	60	30	5	3	2	4.45	0.78
2	Fear of sanctions encourages compliance	50	30	10	5	5	4.15	0.85
3	Some violations are overlooked	25	40	20	10	5	3.70	0.90
4	Developers perceive regulations as restrictive	35	40	10	10	5	3.85	0.88
5	Enforcement is generally fair	30	40	15	10	5	3.80	0.86

Source: Field Survey, 2026

Note: SA = Strongly Agree (5), A = Agree (4), N = Neutral (3), D = Disagree (2), SD = Strongly Disagree (1)

Institutional and Operational Challenges Affecting Development Control Enforcement

Table 4 presents respondents' assessment of the institutional and operational challenges affecting development control enforcement in Kaduna Metropolis. The findings indicate that respondents generally agreed that several institutional and operational factors constitute major obstacles to effective enforcement. The mean scores range from 4.00 to 4.15, indicating a high level of agreement among respondents on all identified challenges. The standard deviations (0.82 to 0.90) indicate moderate variability in responses.

Item 1 (Mean = 4.15, SD = 0.82) indicates that inadequate funding limits enforcement activities, with 50% strongly agreeing and 30% agreeing. This high level of agreement suggests that insufficient financial resources remain the most significant challenge confronting KASUPDA. Inadequate funding affects multiple aspects of enforcement including routine field inspections, monitoring exercises, procurement of operational vehicles and equipment, staff training and development, and the implementation of enforcement actions. The 10% neutral and 10% disagreement responses suggest that some respondents may have different perspectives or experiences regarding funding adequacy.

Item 5 (Mean = 4.15, SD = 0.83) shows that rapid urban growth overwhelms enforcement capacity, with 50% strongly agreeing and 30% agreeing. This finding indicates that the increasing rate of urban expansion and physical development in Kaduna Metropolis has outpaced the capacity of regulatory agencies to effectively monitor and control new developments. The rapid growth of peri-urban settlements and informal developments makes it increasingly difficult for KASUPDA to maintain comprehensive monitoring coverage. The 10% neutral and 10% disagreement responses suggest that some respondents may perceive other factors as more significant constraints.

Item 2 (Mean = 4.10, SD = 0.85) indicates that shortage of skilled personnel affects enforcement effectiveness, with 45% strongly agreeing and 35% agreeing. The shortage of qualified town planners, building inspectors, engineers, and other technical professionals limits the ability of enforcement agencies to conduct timely inspections, evaluate development proposals, and enforce compliance with planning regulations. The 10% neutral and 10% disagreement responses suggest some diversity of opinion regarding the severity of staffing constraints.

Item 3 (Mean = 4.00, SD = 0.88), Item 4 (Mean = 4.00, SD = 0.90), and Item 6 (Mean = 4.00, SD = 0.87) each recorded mean scores of 4.00. Political influence affects enforcement outcomes, with 40% strongly agreeing and 35% agreeing. This suggests that political interference in enforcement decisions compromises institutional independence and consistency. Corruption undermines regulatory effectiveness, with 45% strongly agreeing and 30% agreeing. This indicates that corrupt practices such as bribery, favouritism, and unofficial payments reduce enforcement integrity and public confidence. Legal bottlenecks delay enforcement actions, with 40% strongly agreeing and 35% agreeing. Prolonged judicial processes, bureaucratic procedures, and overlapping institutional responsibilities delay enforcement actions, reducing deterrence effectiveness and allowing violations to persist.

The findings from Table 4 demonstrate that institutional and operational challenges collectively undermine development control enforcement in Kaduna Metropolis. The high level of agreement across all items indicates that these challenges are widely recognized by stakeholders. The challenges align with Institutional Theory's proposition that organizational performance depends on adequate resources, skilled personnel, and governance structures. The identification of political interference and corruption as significant challenges is particularly concerning, as these factors undermine institutional legitimacy and public trust, reducing voluntary compliance.

Table 4: Institutional and Operational Challenges Affecting Development Control

S/No	Challenge	SA (%)	A (%)	N (%)	D (%)	SD (%)	Mean	SD
1	Inadequate funding limits enforcement activities	50	30	10	5	5	4.15	0.82
2	Shortage of skilled personnel affects enforcement	45	35	10	5	5	4.10	0.85
3	Political influence affects enforcement outcomes	40	35	15	5	5	4.00	0.88
4	Corruption undermines regulatory effectiveness	45	30	10	10	5	4.00	0.90
5	Rapid urban growth overwhelms enforcement capacity	50	30	10	5	5	4.15	0.83
6	Legal bottlenecks delay enforcement actions	40	35	15	5	5	4.00	0.87

Source: Field Survey, 2026

Note: SA = Strongly Agree (5), A = Agree (4), N = Neutral (3), D = Disagree (2), SD = Strongly Disagree (1)

Strategies for Improving Enforcement and Compliance

Table 5 presents respondents' assessment of strategies for improving the enforcement of and compliance with building regulations in Kaduna Metropolis. The findings reveal a high level of agreement with all proposed strategies, as reflected by mean scores ranging from 3.95 to 4.55 on a 5-point Likert scale. This indicates that respondents consider all identified measures important for strengthening development control enforcement and promoting compliance with building regulations. The standard deviations (0.72 to 0.86) indicate moderate to low variability, suggesting consensus among stakeholders.

Item 7 (Mean = 4.55, SD = 0.72) recorded the highest mean score, with 58% of respondents strongly agreeing and 27% agreeing that increased manpower is essential. This indicates that respondents regard the recruitment of additional qualified personnel as the most critical measure

for improving enforcement. This finding is consistent with the institutional capacity challenges identified in Table 4, particularly the shortage of skilled personnel. Expanding the workforce would enhance routine inspections, monitoring of construction activities, prompt response to violations, and overall enforcement efficiency. The high level of agreement suggests broad stakeholder recognition that human resource constraints are a fundamental limitation to effective enforcement.

Item 1 (Mean = 4.35, SD = 0.78) indicates strong agreement that increased funding is essential for effective enforcement, with 55% strongly agreeing and 30% agreeing. Adequate financial resources would enable enforcement agencies to procure operational equipment such as vehicles and inspection tools, provide logistics for field operations, support staff training and professional development, and improve the overall implementation of development control activities. This finding underscores the importance of sustained government investment in regulatory institutions. The 10% neutral and 5% disagreement responses suggest that some respondents may prioritize other interventions.

Item 2 (Mean = 4.25, SD = 0.80) indicates strong support for digitalization of approval and monitoring processes, with 50% strongly agreeing and 35% agreeing. Respondents believe that adopting digital technologies would improve transparency, reduce delays in processing development applications, minimize opportunities for corruption, and facilitate efficient monitoring of construction projects. The integration of electronic approval systems and digital databases would also strengthen record management and regulatory oversight. This finding aligns with the growing recognition of technology's role in modern development control, as identified in the literature (Martinez et al., 2023; Wang et al., 2024).

Item 4 (Mean = 4.10, SD = 0.82) indicates strong support for regular training of enforcement officers, with 50% strongly agreeing and 30% agreeing. Continuous professional development would enhance the technical competence of enforcement personnel, improve their understanding of evolving planning regulations, and strengthen their capacity to apply development control standards consistently and professionally. The 10% neutral and 10% disagreement rates suggest some respondents may perceive training as less urgent than other interventions.

Item 5 (Mean = 4.05, SD = 0.84) indicates agreement that the use of Geographic Information Systems (GIS) and drones for monitoring would improve enforcement effectiveness, with 45% strongly agreeing and 35% agreeing. This finding reflects recognition that geospatial technologies can enhance monitoring efficiency, enable rapid identification of unauthorized developments, and improve inspection coverage in difficult-to-access areas. The 10% neutral and 10% disagreement rates suggest some variation in technological familiarity or acceptance.

Item 3 (Mean = 3.95, SD = 0.85) and Item 6 (Mean = 3.95, SD = 0.86) recorded the lowest mean scores, indicating moderate agreement that continuous stakeholder engagement and decentralized offices would improve enforcement. Stakeholder engagement through public consultations, awareness campaigns, and participatory monitoring would improve transparency and public trust, thereby encouraging voluntary compliance. Decentralized offices would improve enforcement reach by reducing response times and enabling more frequent inspections in outlying areas. While both strategies received lower ratings than other interventions, the mean scores still indicate overall agreement with their importance.

The findings from Table 5 demonstrate that respondents strongly support a multi-pronged approach to improving development control enforcement, combining institutional strengthening

(increased manpower and funding), technological innovation (digitalization, GIS, drones), capacity development (officer training), and governance reforms (stakeholder engagement, decentralization). The high level of agreement across all strategies provides a clear mandate for policy reform.

Table 5: Recommended Strategies for Improving Enforcement and Compliance

S/No	Strategy	SA (%)	A (%)	N (%)	D (%)	SD (%)	Mean	SD
1	Increased funding	55	30	10	3	2	4.35	0.78
2	Digitalization of approval/monitoring	50	35	10	3	2	4.25	0.80
3	Continuous stakeholder engagement	40	35	15	5	5	3.95	0.85
4	Regular training of enforcement officers	50	30	10	5	5	4.10	0.82
5	Use of GIS/drones for monitoring	45	35	10	5	5	4.05	0.84
6	Decentralized offices to improve reach	40	35	15	5	5	3.95	0.86
7	Increased manpower	58	27	10	2	3	4.55	0.72

Source: Field Survey, 2026

Note: SA = Strongly Agree (5), A = Agree (4), N = Neutral (3), D = Disagree (2), SD = Strongly Disagree (1)

Hypothesis Testing Results

Independent Samples t-test

Table 6 presents the results of the independent samples t-test conducted to determine whether there is a statistically significant difference between respondents' assessment of enforcement effectiveness and stakeholders' perceptions of development control enforcement in Kaduna Metropolis. The t-test was employed to compare the mean scores of two groups: enforcement effectiveness (Table 2) and stakeholders' perceptions (Table 3). The analysis used five observations for each group, representing the five items in each construct.

The results show that the mean score for enforcement effectiveness is 3.90 (SD = 0.13), while the mean score for stakeholders' perceptions is 3.99 (SD = 0.28). Although stakeholders' perceptions are slightly higher than enforcement effectiveness, the difference is minimal (0.09). The calculated t-value is -0.61 with 8 degrees of freedom, and the two-tailed p-value is 0.562.

Since the p-value (0.562) is greater than the 0.05 level of significance, the null hypothesis (H_{01}) is accepted. This indicates that there is no statistically significant difference between the assessed effectiveness of development control enforcement and stakeholders' perceptions in Kaduna Metropolis.

This finding has important implications. It suggests that stakeholders' views are generally aligned with the assessed level of enforcement effectiveness, indicating consistency between institutional performance and public perception of development control enforcement. This alignment is encouraging because it suggests that KASUPDA's enforcement activities are perceived by stakeholders in ways that correspond to institutional assessments. The absence of a significant gap between regulator and regulated perspectives may facilitate collaborative approaches to improving enforcement.

However, it should be noted that while the t-test shows no statistically significant difference, the slightly higher perception scores suggest that stakeholders may perceive enforcement somewhat more positively than objective assessments would indicate. This could reflect stakeholder appreciation of KASUPDA's efforts despite acknowledged limitations, or it could indicate that stakeholders have lower expectations of enforcement effectiveness given the challenging institutional environment.

Table 6: Independent t-test on Enforcement Effectiveness and Stakeholders' Perceptions

Statistic	Enforcement Effectiveness	Stakeholders' Perceptions
Number of observations (n)	5	5
Mean	3.90	3.99
Standard Deviation	0.13	0.28
t-value	-0.61	
Degree of freedom	8	
p-value (two-tailed)	0.562	

Source: Authors' Computation, 2026

Note: Significance determined at 5% level ($\alpha = 0.05$)

Mann-Whitney U Test

Table 7 presents the results of the Mann-Whitney U test conducted to validate the findings from the independent samples t-test (Table 6). The Mann-Whitney U test was employed as a non-parametric alternative to confirm whether a statistically significant difference exists between respondents' ratings of enforcement effectiveness and stakeholders' perceptions of development control enforcement. The test was necessary because, although the Shapiro-Wilk test indicated that some variables satisfied normality assumptions, others showed slight departures from normality. Using both parametric (t-test) and non-parametric (Mann-Whitney U) tests improves the robustness and validity of the findings.

The analysis was performed using two independent groups, each comprising five observations (the five items from enforcement effectiveness and stakeholders' perceptions respectively). The results show a Mann-Whitney U statistic of 12.50 with a two-tailed p-value of 1.000.

Since the p-value (1.000) is greater than the 0.05 level of significance, the null hypothesis is not rejected. This confirms the t-test finding that there is no statistically significant difference between enforcement effectiveness and stakeholders' perceptions. The p-value of 1.000 is noteworthy as it indicates that the distributions of the two groups are virtually identical, with no evidence of systematic difference in central tendency or dispersion.

The Mann-Whitney U test finding reinforces the conclusion that stakeholders' perceptions are aligned with institutional performance. The absence of a statistically significant difference suggests that stakeholders have realistic expectations regarding enforcement effectiveness and that KASUPDA's performance is perceived in ways that correspond to the institution's actual capabilities and limitations.

Important Interpretation Note: While both tests (t-test and Mann-Whitney U test) show no statistically significant difference, several methodological caveats should be noted. First, each group contains only five observations, representing the five items in each construct. This small

sample size reduces the statistical power of the tests and limits their ability to detect meaningful differences even if they exist. Second, the small sample size increases the margin of error and reduces the precision of estimates. Third, the absence of statistical significance should not be interpreted as conclusive evidence that enforcement effectiveness and stakeholders' perceptions are identical or that no difference exists in reality. Rather, it indicates that within the available data, there is insufficient statistical evidence to conclude that the two groups differ significantly. Future research with larger samples and more observations per construct would provide more robust evidence regarding the relationship between enforcement effectiveness and stakeholder perceptions.

Despite these limitations, the consistency between the t-test and Mann-Whitney U test results strengthens confidence in the finding that enforcement effectiveness and stakeholder perceptions are broadly aligned in Kaduna Metropolis.

Table 7: Mann-Whitney U Test Comparing Enforcement Effectiveness and Stakeholders' Perceptions

Statistic	Value
Sample size (Group A)	5
Sample size (Group B)	5
Mann-Whitney U	12.50
p-value (two-tailed)	1.000

Source: Authors' Computation, 2026

Note: Significance determined at 5% level ($\alpha = 0.05$)

Discussion

Effectiveness of Development Control Enforcement

The study found that development control enforcement in Kaduna Metropolis is moderately effective (Table 2; Mean = 3.90). This aligns with Akinmoladun et al. (2023), who reported moderate enforcement effectiveness in Lagos, and reflects the visible presence of KASUPDA in site inspections and monitoring activities. The highest-rated item was effective monitoring of development activities (Mean = 4.10; Table 2, Item 1), indicating that respondents acknowledge KASUPDA's active role in supervising physical development. This is consistent with the regulatory responsibilities of KASUPDA as outlined in the Nigerian Urban and Regional Planning Act (1992).

However, the lower score for uniform application of enforcement actions (Mean = 3.75; Table 2, Item 2) suggests inconsistency in implementation, corroborating findings by Adeyemi and Oladipo (2020) regarding uneven enforcement practices in Nigerian cities. The moderate effectiveness indicates that while KASUPDA conducts routine monitoring, enforcement remains insufficient to eliminate unauthorized developments and planning violations. This finding is consistent with the challenges identified in Table 4, particularly the institutional constraints that limit enforcement capacity.

Systemic and Institutional Challenges

The study identified several significant challenges constraining enforcement effectiveness (Tables 3 and 4):

Inadequate Funding (Table 4, Item 1; Mean = 4.15): Insufficient financial resources limit routine inspections, monitoring activities, staff training, and operational logistics. This finding aligns with Ahmed and Rahman (2022), who identified funding constraints as a primary obstacle to effective development control in developing countries. The high agreement level (80% strongly agreeing or agreeing) indicates widespread recognition that inadequate funding is the most critical institutional constraint.

Rapid Urban Growth (Table 4, Item 5; Mean = 4.15): The pace of urban expansion has outpaced enforcement capacity, making unauthorized developments difficult to detect and manage. This corroborates UN-Habitat (2022), which noted that rapid urbanization in African cities often overwhelms regulatory institutions. The 80% agreement rate underscores the urgency of strengthening institutional capacity to match urban growth rates.

Shortage of Skilled Personnel (Table 4, Item 2; Mean = 4.10): Inadequate numbers of town planners, building inspectors, and engineers limit timely inspections and compliance monitoring. This finding reflects broader challenges identified by Akinmoladun et al. (2023) across Nigerian planning authorities. The 80% agreement rate indicates that human resource constraints are a widely recognized limitation.

Political Interference and Corruption (Table 4, Items 3 and 4; Mean = 4.00 each): These factors reduce enforcement consistency and public confidence. When corruption and political influence affect enforcement decisions, voluntary compliance declines, as noted by Owusu and Boateng (2023). The 75% agreement rate for both factors indicates that governance challenges significantly affect enforcement effectiveness.

Legal Bottlenecks (Table 4, Item 6; Mean = 4.00): Prolonged judicial processes and overlapping institutional responsibilities delay enforcement actions, reducing deterrence effectiveness. The 75% agreement rate indicates that legal and administrative procedures require reform to expedite enforcement actions.

The systemic challenge that regulations are perceived as restrictive (Table 3, Item 4; Mean = 3.85) suggests that developers may view planning regulations as obstacles to development. This perception, combined with selective enforcement (Table 3, Item 3; Mean = 3.70) and fairness concerns (Table 3, Item 5; Mean = 3.80), contributes to non-compliance.

Improvement Strategies

Respondents strongly supported seven strategies (Table 5), with increased manpower (Mean = 4.55) and funding (Mean = 4.35) receiving highest ratings. The strong support for digitalization (Mean = 4.25), GIS, and drone monitoring (Mean = 4.05) reflects growing recognition of technology's role in modern development control. This aligns with Martinez et al. (2023) and Wang et al. (2024), who demonstrated that GIS and drone technologies significantly improve monitoring efficiency.

The support for regular training of enforcement officers (Mean = 4.10) indicates recognition that capacity development is essential for effective enforcement. Continuous professional development would enhance technical competence and improve understanding of evolving planning regulations.

Stakeholder engagement (Mean = 3.95) and decentralized offices (Mean = 3.95) also received support, reflecting contemporary planning emphasis on collaborative governance. These strategies would improve transparency, public trust, and enforcement reach.

The high level of agreement across all strategies (mean scores above 3.95) suggests that stakeholders recognize the need for a comprehensive approach combining institutional strengthening, technological innovation, and governance reforms. The consistency between stakeholder preferences and the challenges identified in Tables 3 and 4 indicates that proposed strategies directly address the constraints affecting enforcement.

Stakeholder Perceptions and Hypothesis Testing

The absence of statistically significant differences between enforcement effectiveness and stakeholder perceptions (Table 6: $p = 0.562$; Table 7: $p = 1.000$) indicates that institutional assessments align with public perceptions. This suggests consistency between KASUPDA's performance and stakeholder expectations. The alignment between regulator and regulated perspectives is encouraging, as it indicates mutual understanding of enforcement realities and challenges.

However, the small sample sizes for inferential tests ($n=5$ per group, representing the five items in each construct) limit generalizability. The non-significant results should be interpreted cautiously, recognizing that statistical power was constrained by the number of observations. Future research with larger samples and more items per construct would provide more robust evidence.

The slightly higher perception scores (Mean = 3.99) compared to enforcement effectiveness (Mean = 3.90) suggest that stakeholders may perceive enforcement somewhat more positively than institutional assessments indicate. This could reflect stakeholder appreciation of KASUPDA's efforts despite acknowledged limitations, or it could indicate that stakeholders have realistic expectations given the challenging institutional environment.

Conclusion

This study assessed development control enforcement effectiveness in Kaduna Metropolis. The findings demonstrate that enforcement is moderately effective (Mean = 3.90; Table 2), with KASUPDA conducting routine site inspections and compliance monitoring. However, significant institutional and operational challenges including inadequate funding, personnel shortages, political interference, corruption, and rapid urbanization severely constrain enforcement capacity (Tables 3 and 4). The absence of significant differences between enforcement effectiveness and stakeholder perceptions (Tables 6 and 7) indicates alignment between institutional performance and public expectations.

The study concludes that strengthening institutional capacity through increased funding, expanded manpower, digitalization of approval systems, and adoption of geospatial technologies is critical for improving development control enforcement. The strong stakeholder support for these strategies (Table 5) provides a foundation for policy reform. Without addressing these institutional weaknesses, unauthorized developments and planning violations will likely continue, threatening sustainable urban development in Kaduna Metropolis. The findings contribute empirical evidence to inform urban planning policy and practice in rapidly urbanizing Nigerian cities.

Recommendations

Based on the findings, the following recommendations are made:

- i. Establish a Risk-Based Monitoring System: KASUPDA should prioritize inspections for high-risk developments (commercial buildings, multi-storey structures, environmentally sensitive areas) to optimize limited resources. This would address the capacity constraints identified in Table 4 (Items 1 and 5) while maximizing enforcement impact.
- ii. Implement a Fully Digital Development Control System: An integrated digital platform for online applications, electronic approval tracking, and digital inspection reports would reduce processing delays, improve transparency, and create a reliable compliance database. This addresses the digitalization recommendation (Table 5, Item 2; Mean = 4.25) and would help address corruption concerns (Table 4, Item 4).
- iii. Strengthen Community-Based Compliance Monitoring: Formally integrate Community Development Associations, traditional institutions, and residents' associations into development control through structured reporting mechanisms for early detection of violations. This addresses stakeholder engagement recommendations (Table 5, Item 3; Mean = 3.95).
- iv. Develop Continuous Professional Competency Programmes: Introduce mandatory annual training on updated regulations, digital inspection tools, GIS applications, conflict resolution, and ethical standards, with certification linked to career progression. This addresses the training recommendation (Table 5, Item 4; Mean = 4.10) and the skilled personnel challenge (Table 4, Item 2).
- v. Deploy Geospatial Technologies: Invest in a GIS-based monitoring system combining satellite imagery, drone surveillance, and electronic permit data to identify unauthorized developments before completion. This addresses the GIS/drone recommendation (Table 5, Item 5; Mean = 4.05) and would improve monitoring efficiency (Table 2, Item 1).
- vi. Increase Institutional Funding and Manpower: Government should allocate dedicated budget lines for development control enforcement and recruit additional qualified personnel to expand inspection coverage and response capacity. These were the highest-rated strategies (Table 5, Items 7 and 1; Means = 4.55 and 4.35) and directly address the most critical challenges (Table 4, Items 1 and 2).
- vii. Strengthen Legal and Administrative Frameworks: Streamline enforcement procedures, reduce bureaucratic bottlenecks, and establish specialized planning courts to expedite prosecution of planning violations. This addresses legal bottlenecks (Table 4, Item 6; Mean = 4.00).
- viii. Ensure Political Independence and Anti-Corruption Measures: Establish transparent enforcement procedures, protect enforcement officers from political interference, and implement anti-corruption mechanisms to improve enforcement integrity. This addresses political interference and corruption concerns (Table 4, Items 3 and 4).

References

- Adeyemi, T., & Oladipo, A. (2020). Urban governance and development control in Nigeria. *Journal of Urban Studies*, 15(2), 45–58.
- Ahmed, S., & Rahman, T. (2022). Institutional challenges in urban development enforcement.

- International Journal of Urban Management, 10(1), 77–90.
- Akinmoladun, O., Ojo, B., & Oladipo, A. (2023). Development control and urban sustainability in Nigeria. *Journal of Environmental Planning*, 12(3), 101–115.
- Beccaria, C. (1764). *On crimes and punishments*. Milan.
- Becker, G. (1968). Crime and punishment: An economic approach. *Journal of Political Economy*, 76(2), 169–217.
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147–160.
- Federal Republic of Nigeria. (1992). *Nigerian Urban and Regional Planning Act (formerly Decree No. 88 of 1992)*. Lagos: Government Press.
- Martinez, J., et al. (2023). Drone technology in urban development monitoring. *International Journal of Remote Sensing*, 44(5), 1456–1473.
- Mensah, P., & Asante, K. (2023). Stakeholder participation and development control compliance in Ghana. *African Journal of Urban Planning*, 8(2), 112–128.
- Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 83(2), 340–363.
- Mwangi, S., et al. (2024). GIS and drone applications in Nairobi's development control. *East African Journal of Urban Management*, 11(1), 34–51.
- Owusu, F., & Boateng, R. (2023). Public participation and planning compliance. *Journal of Urban Governance*, 7(3), 201–218.
- UN-Habitat. (2022). *World cities report 2022: Envisaging the future of cities*. Nairobi: UN-Habitat.
- Wang, L., et al. (2024). AI-assisted detection of unauthorized developments using satellite imagery. *Computers, Environment and Urban Systems*, 98, 101878.
- Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). New York: Harper and Row.