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Implementation and Compliance Challenges to the Nigerian National Building Code: Evidence from Borno State

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ABSTRACT

The Nigerian National Building Code (NBC) offers comprehensive, centralized regulations to guide construction, ensure structural integrity, and promote sustainability. This study investigates the level of implementation of the NBC within Borno State, evaluating five major barriers identified in the literature for field criticality. Using a mixed methods approach with a purposive, maximum variation sampling technique, 320 building projects were selected to assess compliance with 13 key areas of the NBC, involving 450 respondents comprising developers, contractors, clients, construction professionals, and royal fathers. Data were sourced through structured questionnaires and face-to-face dialogues. Field investigation revealed that the NBC is only partially domesticated in Borno State. Data on the five barriers showed overall reliability ($\alpha = 0.888$). Based on their Relative Importance Index (RII), the barriers were ranked in descending order of criticality as: Stakeholder Non-Compliance and Cultural Resistance; Economic Factors; Legal and Regulatory Bottleneck; Weak Institutional Capacity; and Corruption and Enforcement Failures. Further Chi-Square analysis revealed a significant difference in compliance levels between public and private building projects. Public projects complied with 83.96% of the NBC provisions, while private projects showed only 16.04% compliance. It is concluded that the Borno State Government has failed to enforce code compliance effectively in private projects, leaving residents vulnerable to unsafe, low-quality, and structurally unstable construction. Recommendations include the full domestication of the NBC and the establishment of an independent, statutory commission to oversee code enforcement, among others.

Keywords: Nigerian National Building Code, Implementation, Enforcement, Compliance, Borno State

INTRODUCTION

The National Building Code

A national building code is a comprehensive, centralized set of regulations and technical standards adopted by a federal government to guide the design, construction, alteration, and maintenance of buildings throughout a country (CORBON/NIOB, 2011). It establishes minimum, mandatory standards to protect public health, safety, and welfare, preventing structural failures and ensuring sustainability (Fika et al, 2025; Dutum, 2025). These regulations, comprising technical specifications and administrative controls, guide builders to ensure safety, as inherent imperfections in construction can lead to risks (Saulawa, 2022; Umar et al, 2026). As a guiding document, it aims to increase awareness of building standard compliance, emphasizing its role in professional practice and public protection. Furthermore, it highlights that adherence to these standards is critical, supported by a framework of inspections and accountability (CORBON/NIOB, 2011; Osamudiamen et al, 2025a).

The National Building Code in Nigeria

The National Building Code (NBC) in Nigeria was initiated by the Federal Ministry of Works and Housing in 1987, finalized by stakeholders in 2006, formally approved by the Federal Executive Council later that year, and

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XV, Issue V, May 2026

launched for operation in 2007. It was primarily established to address the growing crisis of building failures and unsafe construction practices (Osamudiamen et al, 2025a). According to CORBON/NIOB (2011), the key driving factors for the establishment of the National Building code in Nigeria included (1) The absence of planning of towns and cities; (2) the rising, high-profile incidence of collapsed buildings, particularly in Lagos State, which caused significant loss of life and property, necessitating a standardized, enforceable code; (3) the reliance on non-professional (quacks) to execute projects, alongside the use of substandard and untested materials, which exacerbated structural safety concerns; (4) a dearth of referenced design standards for construction professionals; and (5) a lack of maintenance culture. While a national code is established by the federal government, it requires adoption by state and local governments to be enforced locally.

Aims and Objectives of the Study

The aim of this study is to assess the implementation of, and compliance with, the Nigerian National Building Code (NBC) in Borno State, identifying challenges and recommending strategies to enhance the safety of the built environment. Its objectives are:

(i) To evaluate the level of implementation of, and compliance with, the NBC by building professionals and developers in Borno State.

(ii) To identify the legal, institutional, and technical barriers hindering effective NBC implementation in Borno State.

(iii) To recommend strategies to overcome identified barriers for improved building safety and enforcement.

LITERATURE REVIEW

Structure of the Nigerian NBC

The Nigerian National Building Code is made up of four parts, containing fifteen sections in total, which are numbered serially within their respective parts as follows.

• **Part 1: Administration (Sections 1-3):** Covers citation, definition, and the establishment of the Building Code Advisory Committee (BCAC).

• **Part 2: Technical (Sections 4-12):** Divided into four stages (Pre-design, Design, Construction, Post-construction), covering building classifications, materials, and professionals.

• **Part 3: Enforcement (Section 13):** Focusses on the control of building works.

• **Part 4: Schedules and References (Sections 14-15):** Includes appendices, sections, and referenced standards.

Table 1: Placement of NBC Sections According to their Respective Parts

PART 1	**ADMINISTRATION**
Section 1	- Citations and Commencement
Section 2	- Interpretations, Definitions, and Abbreviations
Section 3	- The Establishment of a Building Code Advisory Committee
PART II	**TECHNICAL**
Section 4	- Building Design

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XV, Issue V, May 2026

Section 5 - Building Construction Classifications

Pre-Design Stage:

Section 6 - Environment and General Building Requirements

Design Stage:

Section 7 - Architectural Drawing Requirements

Section 8 - Civil/Structural technical design Requirements

Construction Stage:

Section 9 - Services Engineering Design Requirements.

Section 10 - Building Material and Components Requirements

Section 11 - Building Construction Requirements

Post Construction Stage:

Section 12 - Post Construction Requirements

PART III ENFORCEMENT.

Section 13 - Control of Building Works

PART IV SCHEDULES AND REFERENCES

Section 14 - Referenced Standard

Section 15 - Compliance Forms

SOURCE: Federal Republic of Nigeria (2007)

Table 1 illustrates the placement of the sections according to their respective parts.

State-Level Model of NBC in Borno State

The National Building Code was established to unify building standards across Nigeria, setting minimum requirements for safety, structural integrity, and professional responsibility (Conifer, 2025). In Bono State, the implementation of this code is localized through the establishment of the following laws:

1. **Borno State Urban and Regional Planning Law 2001:** This is the primary legislation governing development permits and construction in the state (Borno State Government, 2002).
2. **Borno State Land Use Regulations 2022:** These regulations govern the use of land, requiring proper documentation such as a Certificate of occupancy (C of O) before development (Borno State Government, 2022).
3. **Borno state Right of Way Regulation 2023:** This specifically regulates the installation and maintenance of structures within designated right of way (Borno State Government, 2023).
4. **Borno Geographic Information Service (BOGIS) Law 2019:** It established BOGIS as the central authority for managing land records and facilitating permit process (Borno State Government, 2019).

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XV, Issue V, May 2026

Regulatory Bodies for State-Level Model NBC in Borno State

In Borno State, while the primary enforcement body for the **Borno Geographic Information Service Law 2019** and **Borno State Land Use Regulations of 2022** is the Borno Geographic Information Service (BOGIS), the **Borno State Urban and Regional Planning Law 2001** and the **Borno state Right of Way Regulation 2023** are enforced by the Borno State Urban Development Board (BOSUDB). Both organizations work in conjunction with each other and other relevant state government Ministries, Departments and Agencies (MDAs) for the enforcement and realization of objectives of these laws (Borno State Government, 2019).

• **The Borno Geographic Information (BOGIS).** This organization is primary responsible for administering, managing, and enforcing land-related matters. It handles land management, title registration and tenure certification, Right of Occupancy application, and land database. The organization holds under the jurisdiction of the Executive Governor (Borno State Government, 2019 & 2022).

• **The Borno State Urban Development Board (BOSUDB).** It is the primary regulatory agency responsible for urban planning, building development, and enforcing urban regulations, often functioning under the supervision of the Ministry of Land and Survey and working closely with BOGIS for spatial planning and land use compliance within urban areas, particularly focusing on issuing development permits and enforcing the Right of Way. The board oversees the installation, placing, or maintenance of telecommunications network facilities within the state and charges fees based on the Borno State Right of Way regulation 2023 (Borno State Government, 2022 & 2023).

In essence, while BOGIS oversees land tenure, title certification, and GIS data, BOSUDB focuses on building approvals and urban environmental control.

Problems of NBC Implementation at State Level

According to Osamudiamen et al (2025a), the implementation of the Nigerian National Building Code (NBC) at the state level is largely hindered by a lack of legal domestication, weak institutional capacity, and widespread non-compliance. Since building control is a residual matter under Nigeria's federal system, Umar et al (2026) added that, the code lacks automatic nationwide enforceability and requires individual states to pass enabling legislation to be effective. Major key problems identified in literature can be grouped as follow:

1. **Legal and Regulatory Bottlenecks**

• Failure to Domesticate the Code: Many state governments have not passed enabling laws to adopt the NBC, leaving it largely as a toothless bulldog of advisory guidelines rather than a legally binding requirement (Osamudiamen et al, 2025a; Umar et al, 2026).

• Conflicting Jurisdictions: In several states, local governments and state planning departments issue permits independently, creating confusion, conflict, and regulatory gaps (Umar et al, 2026).

2. **Weak Institutional Capacity**

• Underfunding and Understaffing: State building control departments frequently lack the financial resources, technical personnel, and equipment necessary for regular, effective site inspections (Osamudiamen et al, 2025; Fika et al, 2025).

• Lack of Autonomy and Training: Regulatory bodies often lack independence and have staff who are untrained in the code's specific provisions or its latest updates (Osamudiamen et al, 2025b).

• Obsolete Material Testing: State-level laboratories are often poorly equipped or non-existent, making it difficult to test for standard-compliant materials (Fika et al, 2025).

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XV, Issue V, May 2026

3. **Corruption and Enforcement Failures**

• Corruption and Bribery: Enforcement is weakened by corruption and political interference, with non-compliant projects frequently obtaining approval through illegal means (Conifer, 2025).

• Sporadic Inspections: Building control officials often fail to monitor construction sites effectively, leading to unauthorized construction or deviations from approved plans (Fika et al, 2025).

• Weak Prosecution: Fines for non-compliance are frequently too low to deter offenders, and prosecutions for violations or building collapses are rare (Conifer, 2025; Fika et al, 2025).

4. **Stakeholder Non-Compliance and Cultural Resistance**

• Dominance of the Informal Sector: According to Osamudiamen et al (2025a), over 70% of construction activities are handled by the informal sector, which operates outside of official regulatory oversight.

• Low Awareness and Ignorance: Many developers, builders, and artisans, especially in rural areas, are unaware of the NBC's standards or technical requirements (Fika et al, 2025).

•Cultural Resistance: In some regions, traditional building practices and local materials (e.g., mud/thatch) are favored over modern code-compliant methods (Osamudiamen et al,2025a).

5. **Economic Factors**

•High Cost of Compliance: Economic pressures, including inflation and high building material costs, lead developers to cut corners and use substandard materials to reduce expenses (Osamudiamen et al, 2025a; Fika et al, 2025; Umar et al, 2026)

2.5 NBC Enforcement and Compliance Mechanism Areas Relevant to the Study

2.5.1 Establishment Code Enforcement Units

On the establishment of the Code Enforcement Committee, subsection 13.1.1.1 of the NBC states that:

"There shall be established in all Federal, State and Local Government Urban Development Agencies, a Code Enforcement Division /Section/Unit in their Development Control Department."

On credential and identification of Code Enforcement staff and their office building, subsection 13.1.1.3.13 further stated that:

"The Code Enforcement Division/Section/Unit and authorized representatives shall carry proper credentials and identification of their respective office for the purpose of inspecting any and all buildings and premises in the performance of duties under this Code, and shall be appropriately attained in an approved form."

Pre-Design Stage of the Building

Subsection 13.2.1.1 of the NBC requires that the owner of any intended building project should possess "(i) Perimeter survey and topographical survey of the site, and (ii) The Development Permit for the proposed development obtained from the Planning Authority."

Design Stage of the Building

Subsection 13.2.2.1 gave the requirements for the design stage of the building as "Working drawings and specifications prepared by registered design professionals."

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XV, Issue V, May 2026

Construction Stage of the Building

In subsection 13.2.3.1 the NBC gave the major requirement at the construction stage as "the contract documents." However, Subsection 13.2.3.2 insisted that, "The Code Enforcement Division /Section/Unit shall ensure that the above requirements are submitted with application for building approval."

Post-Construction Stage of the Building

The requirements for the post-construction stage of the building as stated in subsection 13.2.4.1 are "(i) Certificate of Fitness for Habitation, (ii) As-Built Drawing, (iii) Building Maintenance Manual, and (iv) Building Condition survey Report.

Notice of Completion of Various Stages of the Building

Subsection 13.6.1 stated that, "A person carrying out building works shall give the Code Enforcement Division/Section/Unit notice in writing of:

(i) The commencement of work, at least seven days, in advance.

(ii) The completion of any stage of work, not more than seven (7) days after such completion.

(iii)The completion of the building, not more than (7) days thereafter……".

Site Signboard

In addition to regulations on 'notices' to be served to the Code Enforcement Agency on the completion of various stages of the building work, subsection 13.6.1 further stressed that "Before the commencement of any construction works, a site signboard showing the names and addresses of the client, professionals and contractor involved in the project shall be erected in a place to be seen clearly by the general public."

Inspection of On-going Building Work

Subsection 13.7.1 stated that "All construction or work for which an approval is required shall be subject to inspection by the Code Enforcement Division/Section/Unit…". However, subsection 13.7.2 pointed that "it shall be the duty of the person carrying out the work authorized by a permit to notify the Code Enforcement Division/Section/Unit that such work is ready for inspection."

Inspection Record Card

Another important requirement of the NBC in the construction of building projects is the 'Inspection Record card'. Subsection 13.7.4 stated that,

"Work requiring a building permit shall not be commenced until the permit holder or his agent have posted an Inspection Record Card to allow the Code Enforcement Division/Section/Unit to conveniently make the required entries thereon regarding inspection of the work. This card shall be maintained in such position by the permit holder until certificate of use and habitation has been issued by the Code Enforcement Division/Section/Unit."

Certificate of Use and Habitation

Subsection 13.3.11.1 pointed out that "A building or structure hereafter erected shall not be used or occupied in whole or part until the certificate of use and habitation shall have been issued by the Code Enforcement Division/Section/Unit."

Execution and Supervision of Building Works

The key subsections on workmanship and supervision are as follows:

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XV, Issue V, May 2026

(i) **13.12.2:** All building works shall be generally supervised by a registered architect and engineers in line with their inputs.

(ii) **13.12.3:** Any contractor who is engaged to carry construction work in accordance with this Code shall certify the professional registration laws of the country.

(iii) **13.12.4:** The management of the execution of the building work including the supervision of artisans and tradesmen shall be carried out by a registered builder.

Compliance Form

The Compliance Form is an attestation form signed by construction professionals upon completion of every stage of a project, testifying that the stage concerned has been completed in accordance with the mandates of the Code. The compliance forms listed in the Code are: (i) Setting Out Compliance Form, (ii) Foundation/Basement Compliance Form, (iii) Superstructure Compliance Form, (iv) Roofing and Closing Compliance Form, (v) Mechanical Installation Compliance Form, (vi) Electrical Installation Compliance Form, (vii) Finishes Compliance Form, and (viii) Stop Work/Removal/Discontinuation Notice.

Research Gap

Long before the advent of the Nigerian National Building Code (NBC), many of its provisions were already in practice within both the public and private building sectors to safeguard the safety and welfare of end-users (CORBON/NIOB, 2011; Ogunbiyi, 2014; Sholanke and Adisa, 2025)). In reality, the NBC simply organizes these rules and standards to systematically regulate project execution, aiming for adoption as a binding legal document by all stakeholders.

Unfortunately, because building is a “residual matter” under Nigeria’s federal system, adoption of the NBC is not compulsory for state governments. However, the majority of literature featuring the NBC, such as Fika et al (2025), Osamudiamen et al (2025a), Mba et al. (2025) and Umar et al (2026), has been concerned only with the domestication of the code at the state level, failing to investigate the actual level of utilization and compliance with the code’s provisions on physical projects within localities, regardless of whether or not the code is formally adopted in that area. This study bridges this gap by identifying key areas in the NBC and investigating their actual level of implementation and compliance on 320 randomly selected building projects in Borno State. In addition, the study categorizes the projects into public and private to investigate if any significant difference exists in compliance levels between the two types of projects.

METHODOLOGY

Distribution of Questionnaires and Collection of Data

This study adopted two concurrent, mixed-method phases to investigate the NBC in Borno State. Phase one examined the criticality of five factors driving poor implementation, while phase two assessed compliance with thirteen core NBC areas across the state’s 27 local government areas.

Using a purposive, maximum-variation sampling strategy, key informants with high-level experience in building construction were selected to ensure a balanced perspective. Data collection concluded upon reaching thematic saturation, with findings triangulated against documentary evidence to ensure reliability and minimize volunteer bias.

The five categories of respondents in the study are (1) Developers, (2) Contractors, (3) Clients, (4) Construction Professionals, and (5) Royal Fathers. Table 2a and 2b illustrate the pattern of distribution and collection of the questionnaires in the two phases of field work.

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XV, Issue V, May 2026

Table 2a: Distribution and Collection of Questionnaires in Phase I

No. of Questionnaires	Developers (Group A)	Contractors (Group B)	Clients (Group C)	Construction Professionals (Group D)	Royal Fathers (Group E)	Total	Percentage (%)
Administered	50	120	60	100	120	**450**	**100**
Received	37	91	44	76	89	**337**	**75**

Table 2b: Distribution and Collection of Questionnaires in Phase II

Types of Building Works	Public Building Works	Private Building Works	Total	Percentage (%)
No. of Questionnaires Administered	200	120	**320**	**100**
No. of Questionnaires Returned	192	113	**305**	**95**

To improve data quality, researchers held face-to-face meetings with all respondents to explain the questionnaire requirements. Furthermore, to ensure data accuracy in Phase II, only building works completed within the last two years were included. Notwithstanding, the percentage of questionnaires retrieved from the field (75% in Phase I and 95% in Phase II) is sufficient for further statistical analysis, considering Moser and Kalton's (2023) assertion that survey results may be biased or of negligible value if the response rate falls below 30-40%.

Data Presentation

A 4-point Likert scale was employed to measure the criticality of factors in Phase I, and a binary 'Yes' or 'No' scale was used in Phase II. The data collected from the field for both phase I and II are presented in Tables 3 and 4, respectively.

Table 3: Distribution of Retrieved Responses in Phase I

FACTOR	ASSESSMENT	RESPONSE					
		Developers Group A	Contractors Group B	Clients Group C	Professionals Group D	Royal Fathers Group E	Total
Legal and Regulatory Bottleneck	Very Satisfied	19	49	25	42	39	**174**
	Satisfied	9	19	9	11	22	**70**
	Dissatisfied	6	18	7	19	17	**67**
	Very Dissatisfied	3	5	3	4	11	**26**

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XV, Issue V, May 2026

	Total Response	**37**	**91**	**44**	**76**	**89**	**337**
Weak Institutional Capacity	Very Satisfied	18	51	20	48	39	**176**
	Satisfied	11	19	9	12	17	**68**
	Dissatisfied	6	17	12	10	19	**64**
	Very Dissatisfied	2	4	3	6	14	**29**
	Total Response	**37**	**91**	**44**	**76**	**89**	**337**
Corruption and Enforcement Failures	Very Satisfied	17	48	26	21	32	**144**
	Satisfied	13	23	12	14	17	**79**
	Dissatisfied	4	15	5	25	28	**77**
	Very Dissatisfied	3	5	1	16	12	**37**
	Total Response	**37**	**91**	**44**	**76**	**89**	**337**
Stakeholder Non-Compliance and Cultural Resistance	Very Satisfied	27	51	31	41	69	**219**
	Satisfied	5	20	5	20	12	**62**
	Dissatisfied	3	13	4	10	7	**37**
	Very Dissatisfied	2	7	4	5	1	**19**
	Total Response	**37**	**91**	**44**	**76**	**89**	**337**
Economic Factors	Very Satisfied	27	54	31	38	48	**198**
	Satisfied	6	18	7	21	23	**75**
	Dissatisfied	3	10	4	10	13	**40**
	Very Dissatisfied	1	9	2	7	5	**24**
	Total Response	**37**	**91**	**44**	**76**	**89**	**337**

Table 4: Distribution of Retrieved Responses in Phase II

S/No.	**FACTOR**	**RESPONSE**					
		Public Building Works			**Private Building Works**		
		Yes	**No**	**Total**	**Yes**	**No**	**Total**
1.	Establishment of Code Enforcement Division/Sec/Unit.	0 (0%)	192 (100%)	192	0 (0%)	113 (100%)	113

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XV, Issue V, May 2026

2.	Presentation of Site Layout Plan and Development Permit.	192 (100%)	0 (0%)	192	17 (15%)	96 (85%)	113
3.	Production of Working Drawings & Specifications.	192 (100%)	0 (0%)	192	50 (44%)	63 (56%)	113
4.	Presentation of Building Approval.	192 (100%)	0 (0%)	192	18 (16%)	95 (84%)	113
5.	Presentation of Certificate of Use & Habitation.	192 (100%)	0 (0%)	192	7 (6%)	106 (94%)	113
6.	Notice of Commencement & Completion of Various stages of the Work.	192 (100%)	0 (0%)	192	17 (15%)	96 (85%)	113
7.	Placement of Construction Site Signboard.	105 (55%)	87 (45%)	192	49 (43%)	64 (57%)	113
8.	Inspection by Officials in the Course of the Work.	192 (100%)	0 (0%)	192	27 (24%)	86 (76%)	113
9.	Issuance of Inspection Record Card.	0 (0%)	192 (100%)	192	0 (0%)	113 (100%)	113
10.	Engagement of Registered Architect and/or Engineer for Supervision.	92 (48%)	100 (52%)	192	61 (54%)	52 (46%)	113
11.	Engagement of Registered Builder for Construction Site Management.	92 (48%)	100 (52%)	192	21 (19%)	92 (81%)	113
12.	Registration of Contractor by Corporate Affairs Commission.	103 (54%)	89 (46%)	192	28 (25%)	85 (75%)	113
13.	Issuance of Compliance Form.	0 (0%)	192 (100%)	192	0 (0%)	113 (100%)	113
TOTAL		1544	952		295	1174	

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XV, Issue V, May 2026

Data Analysis

Phase I Field Study

(a) Ranking of Factors

As shown in Table 3, respondents rated their perception of those five factors identified as responsible for poor implementation the NBC in Borno State. Responses were categorized as Very Satisfied (4), Satisfied (3), Dissatisfied (2), or Very Dissatisfied (1).

To determine the ranking of the factors, we will use the Relative Importance Index (RII) method.

(i) Formula

The RII is calculated using the following formula:

$$\text{RII} = \frac{\sum w}{A \times N} = \frac{4n4+3n3+2n2+1n1}{4\ X\ N}$$

W here:

W = Weight given to each factor by the responses (e. g. for "Very Satisfied", Weight = 4)
n_3 = Number of responses for "Satisfied" (Weight = 3)
n_2 = Number of responses for "Dissatisfied" (Weight = 2)
n_1 = Number of responses for "Very Dissatisfied" (Weight = 1)
A = Highest Weight (4)
N = Total number of responses (337 for all factors)

In this context, "Very satisfied" indicates the highest impact of the factors, and "Very Dissatisfied" indicates the lowest.

Calculations

Factor 1: Stakeholder Non-Compliance and Cultural Resistance

$n_4 = 219$, $n_3 = 62$, $n_2 = 37$, $n_1 = 19$, $N = 337$
$\sum w = (4x219) + (3x62) + (2x37) + (1x19) = 876 + 186 + 74 + 19 = 1155$
$\text{RII} = \frac{1155}{4 \times 337} = \frac{1155}{1348}$ = **0.8568**

Factor 2: Economic Factors

$n_4 = 198$, $n_3 = 75$, $n_2 = 40$, $n_1 = 24$, $N = 337$
$\sum w = (4x198) + (3x75) + (2x40) + (1x24) = 792 + 225 + 80 + 24 = 1121$
$\text{RII} = \frac{1121}{4 \times 337} = \frac{1121}{1348}$ = **0.8316**

Factor 3: Week Institutional Capacity

$n_4 = 176$, $n_3 = 68$, $n_2 = 64$, $n_1 = 29$, $N = 337$
$\sum w = (4x176) + (3x68) + (2x64) + (1x29) = 704 + 204 + 128 + 29 = 1065$
$\text{RII} = \frac{1065}{4 \times 337} = \frac{1065}{1348}$ = **0.7901**

Factor 4: Legal and Regulatory Bottleneck

$n_4 = 176$, $n_3 = 70$, $n_2 = 67$, $n_1 = 26$, $N = 337$
$\sum w = (4x176) + (3x70) + (2x67) + (1x26) = 696 + 210 + 134 + 26 = 1066$
$\text{RII} = \frac{1066}{4 \times 337} = \frac{1066}{1348}$ = **0.7908**

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XV, Issue V, May 2026

Factor 5: Corruption and Enforcement Failures

$n_4 = 144$, $n_3 = 79$, $n_2 = 77$, $n_1 = 37$, $N = 337$
$\sum w = (4x144) + (3x79) + (2x77) + (1x37) = 576 + 237 + 154 + 37 = 1004$
$RII = \frac{1004}{4 \times 337} = \frac{1004}{1348}$ = **0.7448**

Final Ranking

Based on the Relative Importance Index, the factors are ranked from highest to lowest impact as shown in Table 5.

Table 5: Ranking of Factors in Phase I.

Rank	Factor	RII
1.	Stakeholder Non-Compliance and Cultural Resistance	0.8568
2.	Economic Factors	0.8316
3.	Legal and Regulatory Bottleneck	0.7908
4.	Weak Institutional Capacity	0.7901
5.	Corruption and Enforcement Failures	0.7448

(b) Cronbach's Alpha Reliability

Cronbach's Alpha (α) measures the internal consistency (reliability) of the 5 factors (items) responsible for poor implementation of the NBC.

Formula:

$\alpha = (k/k-1)\ (1-\sum S_i^2/S_T^2)$

Where k (Number of items) = 5 and (S_i^2) (Variance of each item), calculated as Var (Item 1) = 199.7; Var (Item 2) = 211.7; Var (Item 3) = 200.3; Var (Item 4) = 141.7; and Var (Item 5) = 159.2

$\sum S_i^2$ (Sum of item variances): 199.7+ 211.7 + 200.3 + 141.7 + 159.2 = **912.6**

S_T^2 (Variance of the total score): Calculated based on the total response, the variance of the 5-item sum is **3152.**

Final Calculation: α = (5/5-1) (1-912.6/3152.0); α = (1.25) (1-0.2895); α = 1.25 x 0.7105; **α = 0.888**

Final Answer: The Cronbach's Alpha is **0.888**

3.3.2 Levels of Compliance with NBC of the two types of Projects in Phase II

To determine the level of compliance between Public and Private Building Works using categorical (Yes/No) data, the Chi-Square Test of Independence is the most appropriate statistical tool. Additionally, the Percentage Contribution to Overall Compliance Method is expected to provide further insights into the compliance levels of the two projects types.

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XV, Issue V, May 2026

Compliance Level by Chi-Square

(i) Contingency Table (Observed Frequencies)

First, we sum all 'Yes' and 'No' responses for public and private building works to create a total contingency table (the sums are shown on the last row of Table 4).

Table 5: Contingency Table

	Yes (Compliant)	No (Non-compliant)	Total
Public	1544	952 (2496 – 1544)	2496
Private	295	1174 (1469 - 295)	1469
Total	**1839**	**2126**	**3965**

(ii) Hypotheses

- **Null Hypothesis (H_0):** There is no significant difference in compliance levels between public and private building works.
- **Alternative Hypothesis (H_a):** There is a significance difference in compliance levels between public and private building works.

(iii) Calculation of Expected Frequencies (*E*)

- $E = \frac{Row\ Total \times Column\ Total}{Grand\ Total}$
- $E_{1,1}$ (Public, Yes): $= \frac{2496 \times 1839}{3965} = 1157.65$
- $E_{1,2}$ (Public, No): $= \frac{2496 \times 2126}{3965} = 1338.35$
- $E_{2,1}$ (Private, Yes): $= \frac{1469 \times 1839}{3965} = 681.35$
- $E_{2,2}$ (Private, No): $= \frac{1469 \times 2126}{3965} = 787.65$

(iv) Chi-Square Calculation (x^2)

$$x^2 = \Sigma \frac{(O-E)^2}{E}$$

Public-Yes: $\frac{(1544-1157.65)^2}{1157.65} = \frac{(386.35)^2}{1157.65} = \frac{149266.32}{1157.65} = 128.94$

Public-No: $\frac{(952-1338.35)^2}{1338.35} = \frac{(-386.35)^2}{1338.35} = \frac{149266.32}{1338.35} = 111.53$

Private-Yes: $\frac{(295-681.35)^2}{681.35} = \frac{(-386.35)^2}{681.35} = \frac{149266.32}{681.35} = 219.07$

Private-No: $\frac{(1174-787.65)^2}{787.65} = \frac{(386.35)^2}{787.65} = \frac{149266.32}{787.65} = 189.51$

Total x^2 = 128.94 + 111.53 + 219.07 + 189.51 = **649.05**

Conclusion

Degree of Freedom (df): (Rows – 1) x (Columns – 1) = (2 – 1) x (2 – 1) = 1.

Critical Value: At a 0.05 significance level ($p < 0.05$) and $df = 1$, the critical value is **3.841.**

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(b) Compliance Level by Percentage Contribution to Overall Compliance

Total Compliance (Yes) = Public (1544) + Private (295) = **1839**

Therefore, Public Building works Contribution: $\frac{1544}{1839}$ x 100 = **83.96%** and

Private Building works Contribution: $\frac{295}{1839}$ x 100 = **16.04%**

INTERPRETATION OF RESULTS

The tabulated results In Table 5 indicate that, among the five factors identified as responsible for the poor implementation of the NBC in Borno State, respondents considered "Stakeholder Non-Compliance and Cultural Resistance" to be the most critical, requiring immediate attention. "Economic Factors" ranked second in criticality, followed by "Legal and Regulatory Bottlenecks" in third. "Weak Institutional Capacity" was ranked fourth, while "Corruption and Enforcement Failures" took the fifth and final position. Additionally, an alpha coefficient of 0.888 represents an excellent level of internal consistency (which generally ranges from 0.70 to 0.95) among the five factors. This means the questionnaires and the five factors reliably measure the overarching construct of the study.

Regarding compliance with the NBC, Since the calculated x^2 value (649.05) is much greater than the critical value (3.841), we reject the null hypothesis and conclude that there is a statistically significant difference in compliance levels between public and private building works. Public works have a higher observed "Yes" compliance (1544) compared to private works (295) across the assessed factors. This means, public building projects demonstrate significantly higher adherence to the listed regulatory factors (83.96%) compared to private building works (16.04%), particularly in areas of documentation and inspection (Factors 2 – 6, 8). Notably, both sectors show zero compliance for the creation of a Code Enforcement Unit (Factor 9) and Issuance of Compliance Form (Factor 13).

DISCUSSION

The ranking of the factors responsible for the poor implementation of the Nigerian National Building Code (NBC) in Borno State is driven primarily by the severe and ongoing security challenges facing the region. **Stakeholder Non-Compliance and Cultural Resistance** (0.8568) is ranked highest because, in a state significantly disrupted by the Boko Haram insurgency, urgent, informal, and hasty reconstruction often bypasses regulatory oversight in favor of traditional or makeshift methods. This is followed closely by **Economic Factors** (0.8316), where high poverty levels, inflation, and the immense cost of rebuilding infrastructure destroyed in the conflict (estimated in the trillions) force developers to cut costs and ignore quality standards. **The Legal and Regulatory Bottleneck** (0.7901) is critical due to the lack of local domestication of the national code and disruption of normal administrative functions by the insurgency. **Weak Institutional Capacity** (0.7901) stems from a severely stretched civil service and damaged infrastructure, preventing effective monitoring, enforcement, and building control in many areas. Finally, **Corruption and Enforcement Failures** (0.7448) are exacerbated by the chaotic environment, where systematic vulnerabilities allow non-compliant structures to be erected without penalties.

Public projects in Borno State achieve an 83.96% compliance rate with the National Building Code (NBC) due to mandatory, multi-layered oversight from the Borno State Urban Planning Development Board (BSUPDB) and Borno State Geographic Information Service (BOGIS), alongside strict requirements for professional, registered architects, engineers and builders. These developments are further strengthened by adequate, dedicated funding that ensures the use of standard, quality materials and a lower reliance on unqualified workers.

Conversely, private buildings show a 16.04% compliance rate, hindered by high, burdensome cost for permits and professional fees that drive developers toward cheaper, non-standard materials. This sector faces weak enforcement due to the vast scale of informal construction, often compounded by lack of awareness, insufficient documentation, and a reliance on unqualified builders.

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CONCLUSION AND RECOMMENDATION

The Nigerian National Building Code (NBC) is a set of mandatory rules and standards regulating the design, construction, alteration, and maintenance of structures to ensure public health, safety, and general welfare. It is expected to be domesticated into state laws. While Borno State partially acknowledges the NBC by enforcing local development control regulations, it has not fully codified it into state law. Analysis of field data using Relative Importance Index (RII) ranked the five key factors responsible for poor implementation of the NBC in Borno State as: Stakeholder Non-Compliance and Cultural Resistance; Economic Factors; Legal and Regulatory Bottleneck; Weak Institutional Capacity; and Corruption and Enforcement Failures. Additionally, a Chi-Square test conducted on 320 building projects to assess compliance with some key areas of the NBC revealed a significantly higher level of compliance among public projects (83.96%) compared to private projects (16.04%). Therefore, it is concluded that the Borno State Government has largely failed in its duty to enforce code compliance in private projects, leaving residents vulnerable to unsafe, low-quality, and structurally unstable buildings. To address these issues, the following actions are recommended:

Full Domestication of the NBC: The Borno State Government, through the State House of Assembly, should formally enact a tailored "Borno State Building Regulations Act" to provide all regulatory Ministries, Departments, and Agencies (MDAs) the legal authority to enforce the NBC compliance. Furthermore, the state government should initiate massive education campaigns via local media, traditional leaders, and religious institutions to highlight the safety benefits of the NBC.

Enhance Enforcement Capacity: The Borno State House of Assembly should pass legislation to establish an independent, statutory commission to oversee the enforcement of the NBC in collaboration with state MDAs. This commission should be shielded from political interference to ensure strict adherence and the prosecution of violators. The commission must be staffed by high-caliber judges, lawyers, and engineers, and include a designated courtroom for trials.

Strengthening Institutional Capacity

• **Training & Technology:** State and local government building inspectors should undergo training on modern, safe construction techniques, and digital tools should be deployed to tracking approval and inspection processes.

• **Increase Staffing:** State and local governments should recruit more qualified inspectors and professionals (engineers, architects, and builders) to improve surveillance, particularly for private building projects.

• **Whistleblower Mechanism:** An anonymous reporting system should be established to report corrupt practices or unsafe construction to the Borno State Ministry of Housing.

Addressing Economic Factors:

• **Incentivize Compliance:** The government should offer incentives such tax rebates, expedited approval processes, and reduced permit fees for compliant private developers.

• **Simplified Guide for Small Builders:** Simplified, illustrated building guidelines should be developed for small-scale residential builders who may lack the capacity to interpret the full code.

• **"One-Stop-Shop" Approval:** A single, transparent, "One-Stop-Shop" desk should be established for building approvals to reduce the logistical, cultural, and procedural burden on private developers.

REFERENCES

1. Arc Umar Murnal Saulawa (2022). National Building Code: "Challenges and Solutions for Modern Infrastructure". A paper Delivered on the 9th August, 2022 at 30th COREN Engineering Assembly, Abuja - Nigeria. https://coren.org.ng https://share.google/uFxpS9Gpj2gqau5ee

2. Osamudiamen, M. O. Ilegar & A. O. Jude (2025b). Legal and Professional Challenges in the Implementation of the National Building Code in Nigeria: Compliance Enforcement Mechanisms and Legal Remedies. *International Journal of Modern Science and Research Technology.* Vol. 3, Issue 12. Pp. 326 – 334. Dec. 2025. https://share.google/tOCrzzfEx6KnjbuPh ISSN No. 2584 – 2706
3. B. Umar, A. A. AbdulAzeez, A. S. Aliyu & A. G. Halilu (2026). Challenges in Legislative Enactment and Implementation of the Nigerian National Building Code: Analysis of Stakeholders Perspective. *International Journal of Builders in Academia*. 1(2). DOI: https://doi.org/10.36108/ijba/5202.10.0220
4. Bamide B. Osamudiamen, Okolie K. C., & Okolie E. N. (2025a). Barriers of effective Implementation of the National Building Code in Nigeria's South – South Region: A Stakeholders Perspective. *International Journal of Modern Science and Research Technology.* Vol. 3, Issue 8. August, 2025. Pp 052 – 064. www.ijmsrt.com DOI: https://obi.org/10.5281/zenodo.16791694 ISSN No. 2584 – 2706
5. Borno State Government (2002). Borno State Government of Nigeria GAZETTE, 2001. *A law to provide for the Establish of An Urban & Reginal planning and Development in the State. Borno State Urban Planning and Development Board law 2000.* Vol. 27, No. 1. January, 2002. Government Printer P. O. Box 179, Maiduguri, Borno State – Nigeria. https://bogis.bornostate.gov.ng https://share.google/f7QrdcxbQCqGLEd9B
6. Borno State Government (2019). Borno State Government of Nigeria GAZETTE, 2019. *A law to Establish Borno Geographic Information Service and Other Matters Connected Therewith, Law 2019 (HA2).* Vol. 44, No. 49. 5th Dec. 2019. Printed and Published by the Government Printer GPM/12/2019/500. Government Printer P. O. Box 179, Maiduguri, Borno State – Nigeria. https://bogis.bornostate.gov.ng https://share.google/ZcHomRkVK6xO130SU
7. Borno State Government (2022). Borno State Government of Nigeria GAZETTE, 2022. *Borno State Land Use Regulations 2022.* Vol. 47, No. 45. Printed and Published by the Government Printer GPM/11/2022/500. Government Printer P. O. Box 179, Maiduguri, Borno State – Nigeria. https://bogis.bornostate.gov.ng https://share.google/b81OQt4NplwWaOW9j
8. Borno State Government (2023). Borno State Government of Nigeria GAZETTE, 2023. *Borno State Right of Way Regulations*. Vol. 48, No. 6, Borno State Notice No. 6. Printed and Published by the Government Printer GPM/12/2023/500. Government Printer P. O. Box 179, Maiduguri, Borno State – Nigeria. https://bogis.bornostate.gov.ng https://share.google/5Va83YCpOZLWx2hi7
9. Conifer Konstruktion (Nig.) Ltd. (2025). *The Nigerian National Building Code: A Comprehensive Analysis.* Posted on the internet on September 25, 2025 in feature articles. https://coniferkonstruktion.com.ng https://share.google/1KhGhGoOZFp1cHRC5
10. CORBON/NIOB (2011). *The Builder's Guide to the National Building Code (NBC).* Council of Registered Builders of Nigeria (CORBON) & Nigerian Institute of Building (NIOB) Document. Printed by Vicaland Ventures Ltd. Abuja. 2011. www.corbon.gov.ng https://niob.org.ng
11. Dutum – Company Limited (2025). *Building in Nigeria: A Guide to the National Building Code.* Oct. 23, 2025. 10, Danube Close, Off Danube Cresent, Maitama, Abuja. www.dutumgroud.com https://share.google/VguBgsisjyelzLUGP
12. Emeka J. Mba, Ikechukwu W. Ozigbo, and Peter I. Oforji (2025): Barriers to the Implementation of Sustainable Building Regulations in Rural Nigerian Communities. *Asia Journal of Environment and Ecology.* 24(4): 10-27. Doi: https://doi.org/10.9734/ajee/2025/v24i4677
13. Federal Republic of Nigeria: National Building Code (2007). Published by aexisNexis Butterrworths (1st Edition). Member of the LexisNexis Group Worldwide, Durban 215 North Ridge Road, Momingdide, 401, Jahannesburg Grayston 66, 2 Nonwich Close, Sandion, 2196 Cape Town Ground Floor, Waterford House, 2 Ring Road, Century City, 7441. www.lexisnexis.co.za https://share.google/6QF63u1V5hwZHzpFj https://northcourtrealestate.com
14. Moser C. A. and Kalton G. (2023). *Survey methods in social investigation.* (8th Ed)
15. Heinemann Educational United Kingdom. ISBN-14: 945-2248684756
16. Ogunbiyi M. A. (2014): The National Building Code and the Construction Industry Professionals in Nigeria. *International Journal of Social Sciences and Entrepreneurship.* Vol. 1, Issue 12 (2014)' 675-689 . https://www.ijsse.org ISSN: 2307-6305
17. Sholanke A. and Adisa O. (2025): Adequacy of the National Building Code (2006) in Promoting Universal Design Practices in Nigeria. *Journal of Accessibility and Design for All*. Vol. 5, No. 2: 234-245. Doi: https://doi.org/10.17411.jacces.v15i2630

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XV, Issue V, May 2026

18. Umar a. Fika, Y. Abubakar & H. Laminu (2025). The National Building Code: Key to Sustainable Built Environment. The challenges of implementation and enforcement (A case study of Yobe State). *Fane – Fane International Multidisciplinary Journal.* Vol. 8, No. 3. Dec. 2024. Published Sep. 2025. Pp. 91 – 96. https://fanefanejournal.com https://fimjournal.com/index.php/fimj/article/view/204?articlesBySimilarityPage=2₦articlesBySimilarity