

# Stage Certification and Building Project Collapse in Lagos State

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**Abstract:** Due to the ever-increasing housing deficit, there is an increase in the level of unwholesome practices leading to Building Project Collapse (BPC) in Nigeria, especially Lagos state. This study examined the role Stage Certification has played in the correction of the unwholesome practices to reduce BPC Lagos State, Nigeria. The study adopted a descriptive research design. The targeted population is infinite in the study area Lagos State. The sample size is determined using the formula adopted by Sheldon for infinite population. And a sample size of 384 was used. Both primary and secondary data were used. The secondary data was extracted from literature of past researchers and stakeholders to establish the yearly frequency of BPC in Lagos state while the primary data source was collected using structured questionnaires. The collected data was analyzed using descriptive and inferential statistics using SPSS (Statistical Package for the social sciences). The findings revealed among others that, that the level of awareness of the stage certificate among the various stakeholders is insignificant, based on the frequency of occurrence of BPC for the Pre and Post introduction of the stage certification policy. It was therefore recommended among others that, the Lagos state government should enhance stakeholder engagement to foster a culture of compliance, discussions on regulatory policies with developers, homeowners, and other stakeholders, and increase public awareness campaigns.

**Keywords:** Stage Certification, Building Project Collapse, Building Professionals, Building Regulations, Compliance and Non-Compliance

## I. Background to the Study

Aside food, water and air, Ajayi, (2022) identified shelter as another basic necessity not just for human survival, but an important factor in the enhancement of quality of life. Ajayi further noted that, despite sustainable development goal 11 that targeted adequate, safe, affordable housing needs and the upgrading of surrounding slums, providing the required minimum housing need by the authority remains a mirage. This is because of the ever-increasing housing deficit as observed by Ekpo (2019). Ekpo observed from literature that, the housing gap rose from seven million in 1991 to fourteen million in 2010 and seventeen million as at 2019. While the Minister of Housing and Urban Development, Ahmed Dangiwa estimated that it's likely to rise to about twenty-eight million units as the population is expected to be more than two hundred and twenty-three million by the end of 2024 (Ogundeji, 2024). Thus, Ajayi (2022) believed that the government's negligence in housing infrastructure development and the inability to control urban migration result in overutilization of existing facilities. Hence, citizens resorted to self-help to meet their housing demands. This gave rise to several unwholesome practices in building construction projects resulting in frequent Building Project Collapse in most metropolitan city in Nigeria, with Lagos experiencing the highest number Ajayi (2022).

Several unwholesome practices have been identified in literature, some of which are: the non-compliance with building codes and standards- Lagos state government (2021); lack of political will on the part of the government to enforce the building codes and standard- Edidiong (2023); use of defective or substandard building materials, no requisite bad design, technical knowledge, faulty construction, the use of non-professionals, the high level of corruption, substandard reinforcement, structural steel and economical use of cement used for the production of foundations, columns, beams and slabs among others are the main causes of building projects collapse-Ajayi (2022), Awoyera, Alfa, Odetoyan, & Akinwumi (2021) etc.

To curb these unwholesome practices, the Lagos State government through the Urban and Regional Planning and Development Law of 2010 established the Lagos State Building Control Agency (LASBCA) which stated operations 2012 (Lagos State Building Control Agency, 2021). The vision of this agency is to ensure that, buildings in Lagos State are designed, constructed and maintained to high standards of safety so as to avoid loss of lives and properties through its building regulatory system and to achieve zero percent building collapse. To achieve this, one of the core responsibilities is Stage Inspection and Issuance of Stage Certificate for Fitness for Habitation at each stage of the building project and after the completion of such building. This is to enable the authorised agency LASBCA to monitor every stage of a building in Lagos state to avoid structural defect even before another stage of the project starts. However, the building industry in Lagos state have been plagued with consistent Building Projects Collapse (BPC) with no sign of it abating in the nearest future.

Hence, this study examined what influence Stage Certification has on the Building Project Stage Certification safety in Lagos State.

## Statement of the Problem

As observed above several researchers and stakeholders have examined different factors of BPC in Nigeria. In addition to the above factors among others are: non or inadequate testing of soil- Ezeagu, Udebunu, & Obiorah (2023); Jaramillo, Gómez, & Martinez (2020) etc; capacity to enforce compliance- Tveit (2021); project team and vendor selection- Azeez (2023); conflict among

professional colleague Lene & Tina (2019). Each of these researchers and stakeholders also noted the relatively high level of safety risk construction workers and building project end users are exposed to. Showing the unpopularity in the different stages of monitoring through the Stage Certificate in Lagos state building projects. Despite the intense work on BPC by researchers and stakeholders in Nigeria especially with Lagos as a focus of most study as noted above, the level of awareness of Stage Certificate among residential home builders and how Stage Certificate has impacted on building project has rarely been examined. Though, the Lagos state government on the 6th of October 2021 relaunched the stage certification campaign- (Lagos State Building Control Agency, 2021), but its impact on structural stability of building projects in Lagos state have also rarely been examined. This created a gap in literature on Stage Certificate and BPC. Such gaps according to Olabode, Adesanya Bakare (2017) may led to the inability of government at various level to tap into the benefits of such research for improve policy formulation, modification and implementation.

Hence, this study is a critical examination of how Stage Certification of Lagos state building projects construction have fared in improving the building structural stability.

### **Objectives of the Study**

To examine the level of Stage Certification awareness among residential home owners and developers in Lagos state.

To compare the stakeholders' perceived frequency of BPC before and after the introduction of Stage Certification in Lagos state

To examine how the relationship between BPC and Stage Certification among residential home owners-developers in Lagos state

### **Literature Review**

Oyedele (2018) identified natural (earthquake, hurricane etc.) and artificial (action or inaction of man leading to tripping) as two of the main causes of building collapse. The action or inaction of man leading to tripping could involve but not limited to; inappropriate slenderness ratio, uneven distribution of load in part(s) of the structure, shearing due to weak structure (poor materials or bad workmanship), building on weak sub-soil (lack of development and building control), wrong choice of foundation leading to differential settlement of building (lack of professionals on site and lack of development control), bad structural design (lack of professionals on site and lack of control), addition to floor (lack of professionals on site and lack of control), inadequate curing (use of non-potable water for mixing concrete, use of sub-standard sand or cement, inadequate time allowed for curing), building members fail to bond due to stress, strain or shear. etc.

As part of the control measure, the Lagos state government established LASBCA, as a regulatory body with a core responsibility of Stage Inspection and Issuance of Stage Certificate for Fitness for Habitation at each stage of the building project to avoid structural defects due to artificial causes before the building project advance to the next stage. This is because 87.5% of building collapse is as a result of artificial or what Awoyera, Olalusi, & Iweriebo (2021) termed man-made causes. Oyedele (2018) sees the establishment of LASBCA as a quality control agency to ensure that, the required unit quality of building construction work is not in disparity with established standard and as stipulated in the construction procurement contract approved by certified registered professional(s) of a recognised body in the construction industry. Thus, this monitoring activity(ies) at each unit/stage/phase of a building project is expected to identify possible defect that could constitute danger or collapse of the edifice before it occurs, for correction before work can continue. But the consistent outcry on the issue of BPC shows otherwise to necessitate a critical examination of the influence Stage Certification has had on building project so far.

### **Stage Certification**

Due to limited literature on Stage Certificate, this study relies on stakeholders' concept of the construct. These stakeholders include legal practitioners, law organisation, state or government authorities and any other relevant literature.

Depending on the system, environment, country or circumstances of use, the term stage certificate has differs meaning in different situation or occasion. According to Law Insider (2013) Stage Certificate in the United State is a certificate issued pursuant to Clauses 49.4 or 49.6 in respect of the achievement of any Stage or any part of a Stage and the date of achievement of any Stage or any part of a Stage shall be the date identified in the relevant Stage Certificate. Ogundimu (2020) sees it as a functional responsibility of a government agency. It is to enable LASBCA as an agency of Lagos state government to embark on a mandatory critical stage inspections and issue certificate to each stage of building project construction for documentation of records and information; removal of illegal and non-conforming developments; identification and removal of distressed structures/parts/stage before any collapse could take place. Adediran (2020) in a live broadcast described Stage Certification as the basic certificate for fitness that is required for every level of construction in a site not under acquisition to show government approval. The then Commissioner for Physical Planning and Urban Development, Salako (2019) sees it as a stage by stage "Construction Authorization" certificate from an authorised Building Control Agency in accordance with relevant professional laws in Nigeria. The Lagos State Building Control Agency (LASBCA-2021) believes Stage Certificate ensure that, basic minimum standards and quality control in building construction are observed to achieve a structurally safe, secured and sustainable building among others to prevent incidences of building collapse in Lagos state. Thus, LASBCA conceptualised Stage Certification as the process of monitoring and certifying every stage of a building construction by an authorised agency equip with human capacity such as Builders, Architects, Structural, Civil, Mechanical and Electrical Engineers etc. to ensure all buildings in the state are safe and

habitable for occupants. It starts from the foundation laying through the external works and fittings and stops when the building is complete. However, Adebayo, Fagbemi, & Mgbenwelu (2022) noted in their observation of the current situation in Lagos state that, Building collapse (of both old and new structures) continue to be a reoccurring decimal in the State notwithstanding the regulatory policies on building construction and the establishment of agencies for the monitoring of building development from its design stage through the various stages of construction to completion. Despite the expected believe that stage certificate will prevent such incidences at every stage of error.

This study conceptualised Stage Certification as the process of obtaining basic certificate for fitness at every level of building project construction in a site (not under government acquisition) from the authorised agency to ensure the required unit quality of building construction work is not in disparity with established regulatory standard and as stipulated in the construction procurement contract design approved by a certified registered professional(s) of a recognised body for each stage of the work thus making the buildings safe and habitable for occupants.

As identified earlier, the LASBCA mandate includes ensuring building safety and compliance, the specific date of domesticating stage certificate in the state is not explicitly stated in the provided search results. However, it's clear that the building code act that LASBCA works with since 2012 when the agency was established includes stage certifications, as a crucial part of their function. However, at different point in time LASBCA rebranded in 2016 and relaunched in 2021 the stage certificate to create more awareness among the various stakeholders in the building and construction industry especially the home owners and developers (Popoola, 2021).

### **Building Project Collapse**

The origin of the BPC problem in Nigeria can be traced back to several factors. One of the main reasons is the lack of proper enforcement of building codes and standards by regulatory agencies. Since the early 1900s, the colonial government introduced building codes and regulations for urban centers in Nigeria, including Lagos state (Odusami, 2018). However, these regulations were not strictly enforced, and compliance was not given the necessary attention due to the engagement of unprofessional and untrained personnel on site and the level of corruption on the part of authorised personnel to enforced the regulation (Osuizugbo, 2018). This has led to a higher risk of building collapses.

There is also a lack of political will to enforce building regulations, and corruption and bribery are widespread in the construction industry (Adedeji et al., 2021).

Additionally, with the high demand for affordable housing in Nigeria and other developing countries, developers often cut corners to reduce costs (Boateng, 2021), leading to the use of substandard materials and poor construction techniques. In many cases, buildings are constructed without proper planning or the supervision of qualified professionals, resulting in structural deficiencies that compromise the safety and durability of the building.

The situation in Nigeria is dire, as BPC have become a recurring problem in many parts of the country especially Lagos state, resulting in the loss of lives and properties. According to a report by the Lagos State Government, over 135 buildings collapsed in the state between 2010 and 2020 (Lagos State Government, 2021).

In response to this problem, the Nigerian government in 2006 established the Nigerian Building and Road Research Institute (NBRRI) to provide research and development services for the construction industry. By 2018, the government introduced the National Building Code (NBC) to regulate building construction and provide guidelines for building codes and standards. However, the several policies did not reduce the rate of BPC, highlighting the need for more robust and sustained action (Adedeji et al., 2021).

Similarly, the Lagos State Physical Planning Permit Authority (LASPPPA) was established in 2012 to regulate physical planning and development in the state. The Lagos State Building Control Agency (LASBCA) was also established and became operational in 2012

The agencies are responsible for approving building plans and designs, regulating land use, ensuring compliance with zoning regulations, monitoring and control of all building activities.

Due to consistent conflict between the two agencies, the Lagos state government released a document termed the LASPPPA, LASBCA 2019 Regulations to the public in December 2019 (Lagos State Government, 2019).

LASPPPA, is to focus on the application for planning permit, land use zones and complementary uses, setback to public utilities and right of way, charges and fees, requirement for high rise and public building. It's to also set penalties for various building offences, monitoring and compliance with planning permit, abuse of office by officials, impersonation of officials of the authority, appeal against disapproval of application and representation of Appeals Committee.

LASBCA is restricted to building control operations. the agency address documentation of developers' notices of intention to commence construction, site inspection, authorisation to commence construction, construction site, building stage certification, building certificate of worthiness and certificate of completion and fitness for habitation.

The building control aspect of the regulations also dwells on use of certified professionals and artisans, supervision of demolition, fire safety, hygiene, water sanitation and safety as well as drainage and waste disposal among others.

Despite the establishment of these agencies, building collapses still occur in Lagos state due to non-compliance with building codes and standards. According to Nwachukwu et al. (2020), non-compliance is often due to corruption, lack of enforcement, and inadequate monitoring by regulatory agencies. Hence, stakeholders and researchers such as Adenuga (2021) observed the weakness in the implementation and enforcement of building specifications in Nigeria particularly in Lagos state, where BPC is a recurring problem.

It was also observed that, the Client's undue interference, made at an advanced construction stage without consultants' advice is a contributory factor to building collapse (Odunisi, 2019; Imafidon and Ogbu,

### **Theoretical Framework**

Conventions theory (CT) was first established in France in the 1980s (Julie, 2012). Julie focused on explaining labor uniqueness as a commodity, but observed that, other economic transactions variables also required the necessary attention. CT believes that, all stakeholders actions have differs motivational reasons, however there is a need to find a common ground in order to optimised the desired objective of the system. Thus, CT tends to explain how a compromise of interest can be reached in likewise manner, while the stage certificate could be a unique way of addressing the consistent rate of BPC, other economic variables such as cost, time etc. associated with obtaining it could cause home owners and developers to embark on different unholy practices. These could render the good initiative of the government unpopular among the core drivers of the building project sector.

It should also be noted from Julie's work that, CT explain how heterogeneous stakeholders with asymmetrical information react to economic transactions, thereby trying to maneuver the uncertainty associated their actions. Though, CT has been applied severally in the agro-industry, this study is on multi-stage monitoring and control activities in the building project constructions for quality output. This study believes from Julie explanation of CT conflicts often arise as the stakeholders are operating under different conventions, at each stage of the certification thus, requiring a level of understanding to ensure the desired level of cooperation to ensure the popularity of stage certificate in the building project sector.

## **II. Research Methods**

This study adopted descriptive research design. The population of the study is infinite as it comprises of all stakeholders-home owners, engineers, surveyors, staff of relevant government agencies etc., in the informal Building Projects in Lagos state. Though, the population should have covered all the Local Government (LG) and local development council areas (LCDA), but the study experience difficulty of assessing the entire 57 through physical contact due to the cost implication. Thus, for convenience an online contact of respondents through social medium was used. Though, the online distribution of the research instrument-questionnaire-gives a quick and wider coverage of the respondents, the study observed three limitations which are not exhaustive. One, the possibility of respondents that are not covered in the population filling the questionnaire. Two, the possibility of respondents outside the study area-Lagos State-taken part in the survey. Three, the inability of the study to stratify the sample is difficult. This may affect the level of biasness of the results and interpretation.

The sample size is determined using the formula adopted by Sheldon (n.d.).

$$S = Z^2 \times P \times (1-P) / M^2$$

where,

S = sample size for infinite population

Z = Z score

P = population proportion (this

M = Margin of error

P is assumed to be 50% when a study is unsure of the population characteristics as noted by Sheldon, with confidence level of 95% and margin of error as 5%. The Z value from the table at 95% is 1.960. Thus,

$$S = (1.960)^2 \times 0.5 \times (1-0.5) / 0.05^2$$

$$= 3.8416 \times 0.25 / 0.0025$$

$$S = 384.16 \approx 384$$

Both primary and secondary data were used. The secondary data was extracted from literature of past researchers and stakeholders to establish the yearly frequency of BPC in Lagos state and gain an understanding of the first and second study objective from the quantitative approach. While the primary data source was collected using structured questionnaires to test the perceived views of the various stakeholders as it related to the second and third objective of the study.

The questionnaire was designed in a five-point Likert Scaled format.

Analyses of the collected data was done using descriptive statistics and inferential statistics (regression and coefficients of determination) with the statistical software SPSS (Statistical Product and Service Solution).

### Descriptive analysis of Data

The frequency table 1 shows that, there are 97 BPC cases between the year 2000 and 2012 which are the pre LASBCA establishment periods and invariably the domestication of a building code that includes the stage certification. While there are 112 BPC in Lagos state between the year 2013 and 2024 which represent the post periods implementing the stage certificate policy. This is also represented in figure 1 below. This implied that the level of awareness of the stage certificate among the various stakeholders are insignificant. This is because the expected impact of the policy was insignificant based on the frequency of occurrence of BPC for the Pre and Post introduction of the policy. Despite the various events put up by the Lagos state government to rebrand and relaunch the policy to the general public.

Table 1 Frequency of BPC Between the 2000- 2024

| S/N | Year | Frequency/Year                 |
|-----|------|--------------------------------|
| 1   | 2000 | 6                              |
| 2   | 2001 | 2                              |
| 3   | 2002 | 3                              |
| 4   | 2003 | 5                              |
| 5   | 2004 | 8                              |
| 6   | 2005 | 3                              |
| 7   | 2006 | 7                              |
| 8   | 2007 | 3                              |
| 9   | 2008 | 11                             |
| 10  | 2009 | 9                              |
| 11  | 2010 | 7                              |
| 12  | 2011 | 19                             |
| 13  | 2012 | 14                             |
| 14  | 2013 | 13                             |
| 15  | 2014 | 10                             |
| 16  | 2015 | 11                             |
| 17  | 2016 | 11                             |
| 18  | 2017 | 8                              |
| 19  | 2018 | 5                              |
| 20  | 2019 | 7                              |
| 21  | 2020 | 2                              |
| 22  | 2021 | 3                              |
| 23  | 2022 | 20                             |
| 24  | 2023 | 17                             |
| 25  | 2024 | 5 as @ 30 <sup>th</sup> of May |

Source: (Lagos State Fire Service, authors' calculations as cited by Olasunkanm, 2022; Salako, 2024)

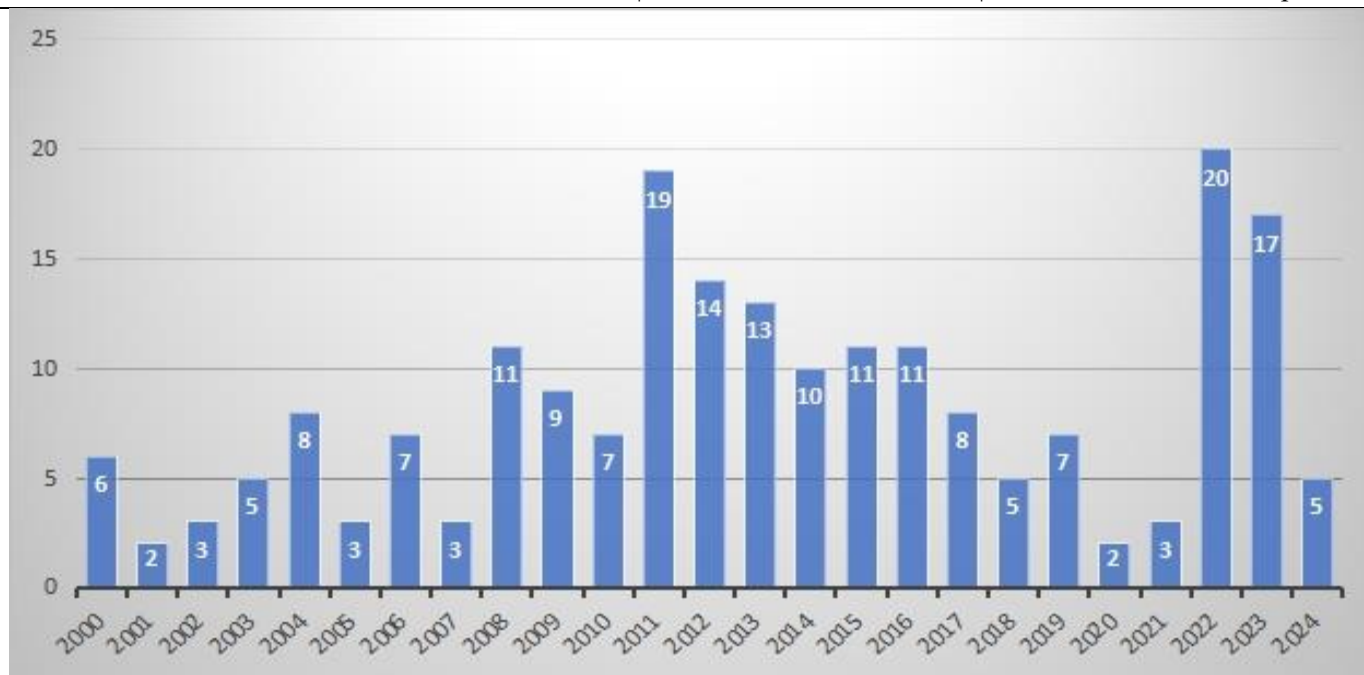


Figure 1. Building collapse in Lagos, 2000-2024

Source: Lagos State Fire Service, (as cited by Olasunkanm, 2022); Salako, (2019)

### Hypothesis Testing

There is no significant change in the perceived frequency of BPC before and after the introduction of Stage Certification in Lagos state

The results are presented in the tables below

| Paired Samples Statistics   |           |                    |                |                 |                                           |        |      |     |                 |
|-----------------------------|-----------|--------------------|----------------|-----------------|-------------------------------------------|--------|------|-----|-----------------|
|                             |           | Mean               | N              | Std. Deviation  | Std. Error Mean                           |        |      |     |                 |
| Pair 1                      | SC B      | 3.9019             | 367            | 1.14872         | .05996                                    |        |      |     |                 |
|                             | SC A      | 3.8992             | 367            | 1.14729         | .05989                                    |        |      |     |                 |
| Paired Samples Correlations |           |                    |                |                 |                                           |        |      |     |                 |
|                             |           | N                  | Correlation    | Sig.            |                                           |        |      |     |                 |
| Pair 1                      | SCB & SCA | 367                | -.048          | .357            |                                           |        |      |     |                 |
| Paired Samples Test         |           |                    |                |                 |                                           |        |      |     |                 |
|                             |           | Paired Differences |                |                 |                                           |        | t    | df  | Sig. (2-tailed) |
|                             |           | Mean               | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference |        |      |     |                 |
|                             |           |                    |                |                 | Lower                                     | Upper  |      |     |                 |
| Pair 1                      | SCB - SCA | .00272             | 1.66221        | .08677          | -.16790                                   | .17335 | .031 | 366 | .975            |
| Paired Samples Effect Sizes |           |                    |                |                 |                                           |        |      |     |                 |

|           |              |                       | Standard<br>izer <sup>a</sup> | Point<br>Estimate | 95% Confidence<br>Interval |       |
|-----------|--------------|-----------------------|-------------------------------|-------------------|----------------------------|-------|
|           |              |                       |                               |                   | Lower                      | Upper |
| Pair<br>1 | SCB -<br>SCA | Cohen's d             | 1.66221                       | .002              | -.101                      | .104  |
|           |              | Hedges'<br>correction | 1.66392                       | .002              | -.101                      | .104  |

a. The denominator used in estimating the effect sizes.

Cohen's d uses the sample standard deviation of the mean difference.

Hedges' correction uses the sample standard deviation of the mean difference, plus a correction factor.

The hypothesis stated that there is no significant change in the perceived frequency of Building Plan Compliance (BPC) before and after the introduction of Stage Certification in Lagos State. To test this hypothesis, a paired sample t-test was conducted using IBM SPSS Statistics. The results from the analysis provide insights into whether the introduction of Stage Certification influenced the perceived frequency of BPC.

The descriptive statistics show that the mean BPC perceived frequency before Stage Certification (SCB) was 3.9019, while the mean after Stage Certification (SCA) was 3.8992. The standard deviations for both SCB (1.14872) and SCA (1.14729) were nearly identical, indicating minimal variability in the data. The very small difference between the mean values (0.00272) suggests that the introduction of Stage Certification did not result in a notable change in BPC perceived frequency.

Further analysis of the paired samples correlation revealed a weak negative correlation (-0.048) between SCB and SCA. The p-value (0.357) was greater than the standard significance level of 0.05, indicating that this correlation was not statistically significant. This result implies that there was no meaningful association between BPC perceived frequency before and after the implementation of Stage Certification.

The paired sample t-test results further confirmed these findings. The computed t-value (0.031) and degrees of freedom (366) yielded a p-value of 0.975, which is substantially greater than 0.05. This means there is no statistically significant difference in the perceived frequency of BPC before and after Stage Certification. Consequently, the null hypothesis, which states that there is no significant change in BPC frequency following the introduction of Stage Certification, cannot be rejected.

Additionally, the effect size analysis, measured using Cohen's d, was 0.002, indicating an extremely small effect. The 95% confidence interval (-0.101 to 0.104) included zero, reinforcing that the difference observed was negligible. The Hedges' correction, which accounts for small sample bias, also confirmed the same outcome. The absence of a meaningful effect size suggests that the introduction of Stage Certification did not have a significant impact on BPC perceived frequency.

Overall, the statistical evidence strongly supports the null hypothesis. The results indicate that Stage Certification did not lead to any significant changes in the perceived frequency of BPC in Lagos State. This finding suggests that factors other than Stage Certification may play a more critical role in influencing compliance rates. Further investigation into enforcement mechanisms, regulatory adherence, and stakeholder engagement could provide deeper insights into the effectiveness of compliance policies in the region.

Hypothesis 2: There is no relationship between BPC and Stage Certification among residential home owners-developers in Lagos state

To test this hypothesis, a correlations analysis was performed on IBM SPSS Statistics and the results are presented in the table below.

| Correlations |                     |       |       |
|--------------|---------------------|-------|-------|
|              |                     | BPC   | SCA   |
| BPC          | Pearson Correlation | 1     | -.056 |
|              | Sig. (2-tailed)     |       | .287  |
|              | N                   | 367   | 367   |
| SCA          | Pearson Correlation | -.056 | 1     |
|              | Sig. (2-tailed)     | .287  |       |
|              | N                   | 367   | 367   |

The second hypothesis states that there is no relationship between Stage Certification among residential homeowners and developers' buildings and Building Plan Compliance (BPC) in Lagos State. To examine this relationship, a correlation analysis was conducted using IBM SPSS Statistics. The Pearson correlation coefficient was used to determine the strength and direction of the relationship between Stage Certification (SCA) and BPC.

The results show that the Pearson correlation coefficient between BPC and SCA is -0.056. This indicates a very weak negative relationship between Stage Certification and Building Plan Compliance. The negative value suggests that as Stage Certification increases, BPC may slightly decrease; however, the correlation is too weak to suggest any meaningful relationship.

The p-value (Sig. 2-tailed) is 0.287, which is greater than the standard significance level of 0.05. This means the relationship between Stage Certification and BPC is not statistically significant. In other words, there is no strong evidence to suggest that Stage Certification among residential homeowners and developers' buildings has a meaningful impact on BPC in Lagos State.

Since the correlation is weak and the p-value is not significant, the null hypothesis cannot be rejected. This means that based on the data generated, there is no statistically significant relationship between Stage Certification and BPC. The findings suggest that, the level of implementation and enforcement mechanisms employed so far has not play a significant role in influencing compliance with building regulations. Further studies could explore additional variables that may affect compliance rates beyond Stage Certification.

### **III. Discussion of Findings**

The result of the frequency table 1 is in convergency with the two hypotheses examined as related to the impact of Stage Certification on Building Plan Compliance (BPC) in Lagos State. The first hypothesis tested whether there was a significant change in BPC frequency before and after the introduction of Stage Certification, while the second examined the relationship between Stage Certification and BPC among residential homeowners and developers. The findings revealed that Stage Certification had no statistically significant effect on BPC perceived frequency and that there was no meaningful relationship between Stage Certification and BPC. This is also reflected by the increase in number of BPC recorded within the Pre and Post periods of implementing building codes with stage certificate as a critical policy. These results raise critical questions about the effectiveness of regulatory frameworks in enforcing compliance and align with or contradict existing literature. The result does not show that, there is enough awareness of the importance of stage certification among the various stakeholders. It also shows that, there had been no common ground in order to optimised the desired objective of the system on reducing BPC through stage certificate policy as proposed by the conventional theory on which this study is based. This is because all stakeholders' actions could have different motivational needs as economic variables cost, time etc. associated with obtaining it could to be addressed by the administrators.

The results of the paired sample t-test demonstrated that there was no significant change in BPC frequency before and after the introduction of Stage Certification. The mean values for BPC before and after Stage Certification were nearly identical (3.9019 and 3.8992, respectively), and the p-value of 0.975 indicated that any observed difference was not statistically significant. Additionally, the effect size, measured using Cohen's d (0.002), was negligible, reinforcing the conclusion that Stage Certification did not meaningfully influence BPC frequency.

These findings align with studies that have highlighted the limitations of regulatory enforcement mechanisms in ensuring compliance with urban planning laws. For instance, BenYishay, Rotich & Zinnes (2021) found that building regulations in several developing countries, including Nigeria, often lack enforcement due to weak institutional capacity and corruption. Similarly, Potsiou and Basiouka (2020) argue that building compliance is influenced more by the strength of governance structures than by the introduction of new regulatory policies. The lack of significant change in BPC frequency suggests that merely introducing Stage Certification without enhancing enforcement mechanisms, monitoring, and public awareness may be insufficient in driving compliance.

However, some studies present contrasting views. Gyourko and Molloy (2019) found that in developed economies, regulatory policies such as certification systems significantly enhance compliance by reducing informal construction practices. Similarly, Pfeiffer et al. (2021) argue that compliance rates increase when regulatory processes are streamlined and incentives are provided. The discrepancy between these findings and the current study's results suggests that the effectiveness of regulatory mechanisms depends on contextual factors, including governance, enforcement, and stakeholder engagement.

The correlation analysis revealed a weak negative relationship ( $r = -0.056$ ) between Stage Certification and BPC, with a p-value of 0.287, indicating that the relationship is not statistically significant. This suggests that Stage Certification among residential homeowners and developers does not significantly impact BPC rates in Lagos State.

This finding aligns with the institutional voids hypothesis proposed by Khanna and Palepu (2018), which suggests that in weak regulatory environments, formal rules and policies may have limited effectiveness due to lack of enforcement and stakeholder buy-in. Several studies support this argument. Akinyemi, Olayiwola, & Adeyemi. (2020) found that in Nigeria, urban planning regulations often fail to achieve compliance due to weak institutional structures, corruption, and informal practices. Similarly, Wahab and Falade (2022) argue that certification processes in Nigeria are often bypassed due to poor monitoring and a lack of incentives for compliance. These findings suggest that regulatory interventions such as Stage Certification may not significantly alter compliance patterns unless they are accompanied by stronger enforcement measures.

Conversely, some scholars have argued that regulatory mechanisms, including certification policies, can positively influence compliance under the right conditions. Chiodelli and Moroni (2021) found that in cities where certification systems are supported by stringent monitoring and enforcement, compliance rates improve significantly. Wang, Li, & Zhang (2020) further noted that digitalization of building approval processes increases transparency and reduces regulatory bottlenecks, leading to higher compliance rates. The absence of a significant relationship in the current study may indicate that Stage Certification in Lagos State has not been effectively implemented or enforced to drive compliance.

The findings can also be analysed through the lens of Conventions Theory (CT), which posits that social practices and compliance behaviours emerge from shared norms, rather than purely from formal rules and regulations (Boltanski & Thévenot, 2006). CT suggests that compliance with regulatory policies is influenced by the interplay between formal rules (laws, certification processes) and informal conventions (practices, expectations, and socio-economic realities).

In the context of Stage Certification and BPC in Lagos State, the absence of a significant change in compliance rates and the weak relationship between certification and BPC suggest that formal regulatory policies alone are not sufficient to drive compliance. The persistence of informal building practices, weak enforcement, and possible regulatory loopholes indicate that compliance decisions may be guided more by informal conventions than by the existence of formal certification policies.

For instance, developers and homeowners may prioritize cost-saving strategies and speed in project execution over regulatory adherence, especially in a context where enforcement is weak. This aligns with Harris (2018), who argues that in many developing cities, regulatory frameworks do not automatically translate into compliance because social norms and economic incentives play a stronger role in shaping behaviour. Sowah and Mensah (2023) further support this view, noting that in cities with weak governance structures, informal norms often override formal regulations, leading to persistent non-compliance.

#### **IV. Conclusion**

The study's findings suggest that the introduction of Stage Certification has not led to significant changes in BPC frequency, nor does it have a meaningful relationship with compliance among residential homeowners and developers in Lagos State. These results align with existing literature that highlights the limitations of regulatory enforcement in weak institutional environments. However, contrasting studies suggest that certification systems can be effective when supported by strong enforcement and stakeholder incentives. Conventions Theory further explains these findings by emphasizing the role of informal norms in shaping compliance behavior. Moving forward, a more integrated regulatory approach that strengthens enforcement, enhances transparency, and aligns formal policies with social conventions may be necessary to improve BPC in Lagos State.

#### **V. Recommendations**

To enhance the effectiveness of Stage Certification in improving Building Plan Compliance (BPC) in Lagos State, three key recommendations should be prioritized.

First, strengthening enforcement mechanisms is essential to ensure compliance with building regulations. Regulatory agencies should increase site inspections, impose strict penalties for non-compliance, and address corruption within enforcement institutions. Clear and consistent regulatory enforcement will discourage developers and homeowners from circumventing the Stage Certification process. Additionally, collaboration between government agencies and professional bodies, such as the Nigerian Institute of Building (NIOB) and the Lagos State Building Control Agency (LASBCA), can improve monitoring efforts.

Second, digitalizing the certification process can enhance transparency and efficiency. A centralized digital platform for processing and monitoring Stage Certification would minimize bureaucratic delays, streamline approvals, and reduce opportunities for regulatory evasion. Digital tracking systems can facilitate real-time reporting and compliance monitoring, allowing authorities to detect irregularities promptly. Countries with advanced digital regulatory frameworks, such as Singapore and Estonia, have successfully leveraged technology to improve compliance and accountability in construction regulation.

Third, enhancing stakeholder engagement is crucial for fostering a culture of compliance. Developers, homeowners, and other stakeholders must be actively involved in discussions on regulatory policies through stakeholder meetings, training programs, and public awareness campaigns. Sensitization programs can educate property owners on the benefits of compliance, while industry workshops can help developers understand regulatory expectations. Engaging local communities in the regulatory process can also increase voluntary adherence to Stage Certification requirements.

Prioritizing these recommendations will improve regulatory efficiency and ensure that Stage Certification contributes meaningfully to BPC enforcement in Lagos State.

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