Impact Of Income Status On Compliance With Building Law In Cross River State, Nigeria A Study Of The Metropolitan Calabar

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Abstract: This study examined the impact of income status of respondents on compliance with building law in metropolitan Calabar. Data were generated through direct measurements of physical variables of buildings and copies of questionnaire administered to owners of the buildings measured factored against the income status at the time of building. The physical measurements determined the level of compliance with ten building variables that have direct relationship with the safety and health of people living in, and around buildings. The questionnaires were administered to owners of seven hundred and ninety four buildings, representing five per cent of total number of buildings on separate stand across the 13 residential districts that make up the study area. Information in the questionnaire captured the income level of respondents as well as the physico-structural status of buildings in the study area. Data was analysed using Statistical Package (SPSS) version 21.0, employing both linear regression and spearman correlation to test for the level of significance for the relationship between compliance and income status of building owners. The result of the linear regression shows the coefficient of linear determination $R^2 = 0.018$ or 2 per cent. This implies that the model was significant at <0.001 level with an f-ratio of 14.988, while the spearman correlation analysis gives a correlation of 0. 063, thereby giving the researchers the power to uphold the alternative hypothesis, while negating the null hypothesis. It was thus recommended that to improve compliance, income of people generally must be improved. An improved national policy on minimum wage would impact significantly on compliance with building standards as more money in the hands and at disposal of people will increase the number of people who can buy land and develop according to regulated standards.

Keywords: Compliance; Income Status; Building law; Metropolitan Calabar; Physico-Structural status

I. INTRODUCTION

Building law or regulations are set government standards for building work, whether it is on a major new development or an extension or alterations to existing ones. They cover all aspects of construction, including foundations, damp-proofing, the overall stability of the building, insulation, ventilation, heating, fire protection and means of escape in case of fire. They also ensure that adequate facilities for people with disabilities are provided in certain types of building (Bosleyam 2014). Law makers in the twentieth century developed minimum standards for the construction and maintenance of buildings designed to protect public health, safety and general welfare Focus on structural safety and serviceability, fire safety, health and hygiene, moisture penetration, hygrothermal (humidity and temperature), safety, accessibility and usability (Watermeyer, 2011)

Non-compliant buildings are buildings ranging from those buildings erected in absolute neglect to already secured approved building plans to those erected without any approved building plans, and these buildings are ubiquitous throughout the study area (Offiong, 2017). Compliance with building law therefore depends on many crucial factors which are based on the socio-economic characteristics of the building owners.
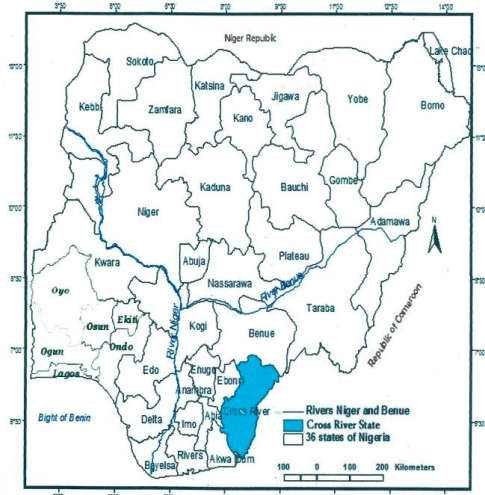
One of the major socio-economic factors that determines compliance with building law is the Income Status of building owners. The money in a developer's hand is what determines how he builds his house and also how he complies with the building standards. Income is a relevant factor in the determination of compliance with building regulations. Strong growth and employment opportunities improve incentives for building owners to comply with the relevant building standards. Strong economic growth therefore advances human development, which, in turn, promotes economic growth, and is reflected in how people build their houses (Besley et'al, 2007).

Investigating the basic data of respondents building violators in Taiwan, Pong-Kuang Cheming, Hsueh-Yen, Chan-Yau, 2008 looked at monthly income vis a vis family members. The investigation assumed that the respondents were violators as against the assumption of law that everyone is innocent until the contrary is proved. Secondly, the data extracted for income were data of the respondents at the time of questionnaire administration after the violation has occurred (from 1984-2007 period reviewed by the researchers) rather than data collected for respondents at the time building when the violation actually took place.

The 2008 study appears to be the closed attempt to present the study in that it examined the impacts of income on compliance. The present study, therefore examine the income status of building owners at the time the building work actually took place to fill the apparent gap occasioned by previous studies.
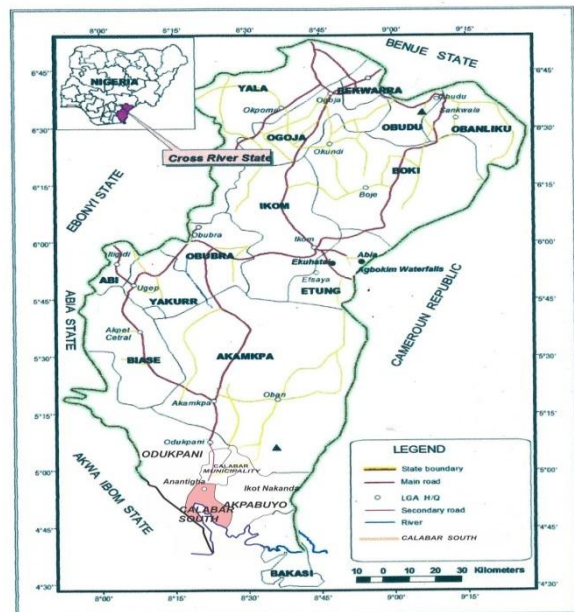
Sule's 1981 survey of Calabar discovered that house owners in the study area were low income earners and most building conversions and extensions occurred near the central business districts to take advantage of the business potentials and their main interest was to increase their median household incomes. Curiously, despite persistent demolition of non-compliant structures, in the study area, violation persists. If this continues unabated, the effort of the State Government to promote the city as a tourist destination shall be in vain. This study therefore sought to investigate how developers income status impacts on their compliance status in the study area.
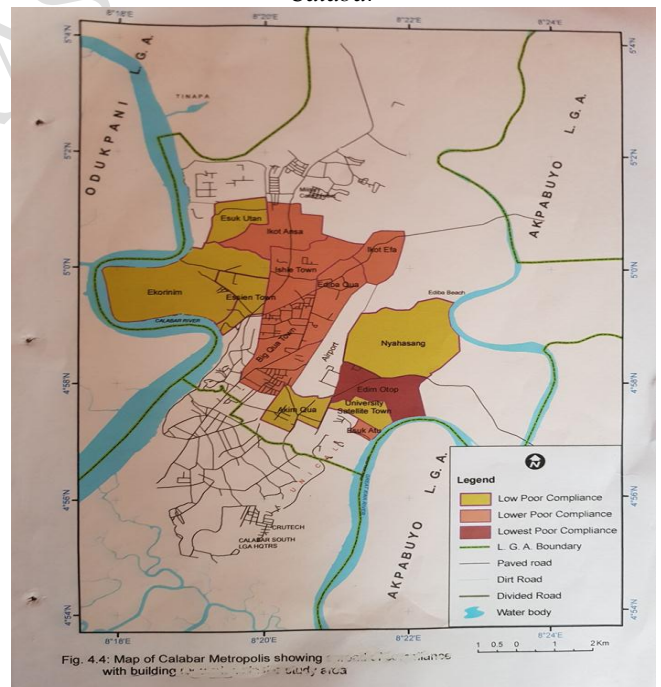
II. MATERIAL AND METHOD

Source: Office of Surveyor- General Ministry of Lands & Housing.

Figure 1: Map of Nigeria Showing Cross River State

Source: Office of Surveyor- General Ministry of Lands & Housing, Calabar

Figure 2: Map of Cross River State showing Metropolitan Calabar

Fig. 4.4: Map of Calabar Metropolis showing _____ with building _____ study area

Source: Office of Surveyor- General

Figure 3: Map of Metropolitan Calabar

A. STUDY AREA

Calabar as depicted in figure 3 is the tourism capital city of Cross River State. The city, located in the southern part of Cross River State as depicted in figure 2, lies between longitude 08^0 26 East of the Greenwich meridian and latitude 04^0 58 North of the equator and longitude $08^0$22 East with a

total surface area of 159.65 square kilometres. It is bounded by two rivers which are the great Qua River and Calabar River. Also the city is bordered by Odukpani Local Government Area of Cross River at the North, Akpabuyo at the East, The Atlantic Ocean at the South and Akwa Ibom at the West. Calabar was the first city in the then Eastern Nigeria and has remained more than 300 years in Nigeria (Figure 1 is map of Nigeria showing Cross River State) as an urban centre (Offiong, 2018).

According to the 1996 population projection, the population of Calabar was 379,605. The population had grown to 461,796 according to Geographical Database based on the 2006 Nigeria population census, making its growth rate more than 3 per cent. The city had a population density of 134/sqkm in 1991 and in 2006, the population density rose to 293 sqkm, obscured and a rather grave situation in Calabar (NPC 2006).

As at 2016, the number of buildings on separate stand/yard in the metropolitan Calabar metropolis had grown to 15,894 according to Nigeria's population and Housing census drawn from the thirteen (13) metropolis residential areas being studied. As rightly observed by (Ebong (1983), housing in Calabar has become the thorniest problem facing its inhabitants. In an attempt to contend with the housing problems, houses are springing up in disregard to the requirement as to building plan, with attendant consequences on land use planning. One unique characteristics of the study area is that it is contiguous to the completely built areas in the municipal capital but whether or not these built up area complies with government approval is another question. A greater percentage of completed houses are done without prior consideration of access to roads. However, it can be easily observed that more than 50% of districts already designated as residential locations are yet to be fully built up. These include settlements and suburbs such as Ikot Ekpa, Ikot Effiom, Eyamba,Obot Okoho, Bacoco, Awkada,Adebyo Ikot Omin, Ekaobo, Ikot Nkebre, Ikot Enobong, Ikot Omin, Ine Udo, Ndito Okobo, Ine Akpan Ufana, Ine Udo, all surrounding the completely built up area but hindered by a near absence of access roads. Making matters worse is that, although designated as a tourism capital, the city is the capital city of a civil service state. This has grave consequences on compliance with building standards as too few monies are in the hands of people living and working in the city area.

B. TYPES OF DATA

The study utilized both Primary data and Secondary data. The primary data used in the study was based on income status of respondents (owners of buildings) only. This information is needed to establish the relationship between income status of building owners and compliance with building law. Whereas the secondary data used in this study were data on building law as provided by the Cross River State Building Regulation of 1984 as amended in 1987.

C. SOURCES OF DATA

Sources of data included Primary and Secondary sources of data. Primary sources of data included questionnaires considered for the study while Secondary sources of data included Cross River State building regulations of 1984 as amended in 1987 where they elicited data on building regulation provisions. Nigerian National Population and Housing Census of 2006 where they obtained data on existing residential districts that make up the study area.

D. DATA COLLECTION PROCEDURE

Data were collected using seven hundred and ninety four questionnaires administered on 794 respondents of the five per cent of buildings on separate stand measured with the help of trained field assistants. After measurement of each variable they and their field assistants recorded the data on the counterpart part of the questionnaire provided for that purpose.

E. POPULATION OF STUDY

The population of study was made up of Metropolis Residential buildings/houses on separate stand and their owners in the thirteen residential areas of Calabar Metropolis. There are about 15,894 completed buildings on separate stands in the 13 residential districts of the study area.

F. THE SAMPLE

The study sample was made up of 794 residential buildings selected from the 13 residential districts of the study area. The 13 residential districts captured the metropolis residential areas contiguous to the completely built up area in Calabar metropolis. The 794 buildings selected represent five per cent of total number of buildings on separate stand.

Measurement of buildings was done considering 5percent of buildings on separate stand selected using systematic random sampling technique in each of the 13 metropolis residential districts that made up the study area. Copies of the questionnaire were distributed to owners of the buildings measured. From Table 3.1, out of 794 buildings measured, 742 copies of the questionnaire representing 93percent were successfully retrieved. This number was considered representative enough for the study.

S/N	Residential Districts	No. of Buildings	No. of buildings measured/ questionnaire administered.	Questionnaires Retrieved.	Percentage retrieved
1.	Akim Qua Town	2020	101	99	98
2.	Ediba Qua Town	1837	92	82	90
3.	Big Qua Town	2361	118	117	99
4.	Essien Town	1942	97	97	100
5.	Ishie Town	2627	131	112	85
6.	Ikot Ansa	1722	86	73	84
7.	University Satellite Town	750	38	38	100
8.	Ikot Efa	414	21	18	85
9.	Esuk Utan	204	10	10	100
10.	Ekorinim	441	22	22	100
11.	Esuk Atu	240	12	12	100
12.	Nyangasang	720	36	36	100
13	Edim Otop	616	30	25	83
	Total	15, 894	794	742	93

Source: 2006 Population and Housing Population Data Bank, Nigerian's National Population Commission
Sample size: Researchers' Field Work 2017.
Table 1: Residential districts and number of buildings measured in the Study Area

G. SAMPLING TECHNIQUE

A multi-stage sampling technique was adopted in this study. At stage 1, purposive sampling of residential districts was done. This was to satisfy the researchers' desire to study only buildings within the metropolitan residential districts which are contiguous to the completely built up area in the Calabar Municipality. The districts so captured include Akim Qua Town, Ediba Qua Town, Essien Town, Ishie Town, Ikot Ansa, University Satelite Town, Ikot Efa, Esuk Utan, Ekorinin, Nyangasang and Edim Otop; secondly, to capture only buildings on separate stand/yard. This housing type, apart from forming the highest percentage (57.2percent) of dwellings for regular households in Calabar metropolis (2006, Nigeria's National population and housing census), it also guaranteed the probability of measuring all the ten building variables considered for the study. The other types of housing unit found in the study area include; informal improvised dwelling (0.6percent), semi-detached (7.3percent), flat in block of flats (10.4percent), Traditional Hut structure (9.5percent), others (0.4percent). At Stage 2, systematic sampling was done. A sample frame was defined for each street at the interval of 20 buildings according to the number of buildings on separate stand/yard with a target of not less than 5percent in mind. Stage 3 involved repeated systematic sampling in districts where the minimum 5percent was not met at first time due to repeated absence or outright refusal to allow measurement or neglect to supply needed information by owners of buildings within the frame.

S/N	Sections	Long Title
1.	S.2(A) (4)	Building Plan: Building must be with approved building plan
2.	S.5	Building line: At least 12 meters from road centre.
3.	S.13 (6)	Ceiling height: Minimum dimensions shall be 2.88meters
4.	S.6(3)	Set Back: Minimum permissible distance between a bungalow and other building not less than 4.5 meters.
5.	S.7	Building size restrictions: Not more than 50percent of land size should be built up.
6.	S. 13(b)	Size of living room: Shall be 12.96 square meters with width not less than 3.00 meters
7.	S. 16(3)	Height of ground floor: Shall not be less than 0.15 meters above the level of adjacent ground.
8.	S.19(1) (2)	Ventilation: Buildings shall have adequate cross ventilation with windows size not less than $\frac{1}{8}$ of the flow area of the room.
9.	S. 6 (1)	Space around buildings: A minimum distance of 1.5 meters shall be allowed from the property boundaries not facing any road.
10.	S.13 (d)	Corridor dimension: The minimum width shall be 1 meter.

Source: Cross River State Building Regulations 1984 as amended in 1987

Table 2: Provisions of the Cross River State Building Law (Regulations), 1984 Used For the Study

Annual Income Group		Ranking
Low	₦146,250 and below	1
Low Middle	₦146,251- ₦5,780,250	2
Upper Middle	₦578,251- ₦1,785,750	3
High	₦1785,751 and above	4

Source: Researchers' Fieldwork 2017

Table 4: Compliance Classification Standards

Compliance		
Mean grouping	Ranking	Classification
1 – 59.4	1	Poorest
59.5 – 79.4	2	Poorer
79.5 – 95.4	3	Poor
95.5 – 100	4	Good (Full compliance)

Source: Researchers' Field Work 2017

Table 3: Building Owners Annual Income Ranking

ANALYTICAL PROCEDURE FOR TESTING OF HYPOTHESIS

Various statically approaches were used to quantitatively verify the hypothesis. The following analytical procedures were employed to test the reality of the stated hypothesis, which states that:

There is no significant impact of income of building owners on compliance with Building Law in the study area

In order to achieve the objective of the study, a linear regression analysis was used to check the relationship between the income status of building owners and compliance with Building Law. A spearman correlation analysis was carried out to check the level of significance of the relationship between income status of building owners and the level of compliance with building law.

III. RESULT AND DISCUSSION

The section 3 of this study presents the data used in the study and results derived from the analysis carried out. The data used represents the objective of the study which is centred on the impact of income of building owners on compliance with building law.

A. INCOME STATUS CONSIDERED FOR THE STUDY FACTORED AGAINST COMPLIANCE WITH BUILDING LAW

The income variable considered for the study was the income status of the building owners prior to the construction of the Building Property. The income status of the building owners represents the independent variables while compliance with building law represents the dependent variable. The building regulation variables are shown on Table 2, the income status rankings, which represent the independent variable, is shown in Tables 3 while Compliance classification standard used for the study is shown in Table 4.

TEST OF HYPOTHESIS

HYPOTHESIS

H_O: There is no significant relationship between the income status of building owners and compliance with building law in the Metropolitan Calabar

H_1: There is a significant relationship between the income status of building owners and compliance with building law in Metropolitan Calabar

Regression models and the regression co-efficient were adopted for the analysis of the data in Tables 5. The summary of regression model is presented in table 5. From table **5** the result shows that there appears to be a strong relationship between level of compliance with building regulations on the physico legal variables of buildings and income of the respondents From Table 5, the coefficient of linear determination is $R^2 =0.018$ or 2 per cent. This implies that the model was significant at <0.005 level with an f-ratio of 14.988 (Table 5.1).

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.135[a]	.018	.017	20.45128
a. Predictor: (Constant), Income class				

Table 5: Model Summary

SUMMARY OF REGRESSION MODEL FOR THE LEVEL OF COMPLIANCE WITH BUILDING LAW IN THE STUDY AREA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6268.671	1	6268.671	14.988	.000[b]
	Residual	336276.804	804	418.255		
	Total	342545.475	805			
a. Dependent Variable: Compliance						
b. Predictor: (Constant), Income level						

Table 5.1: ANOVA Summary

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	73.076	1.061		68.876	.000
	Income level	2.286	.591	.135	3.871	.000
a. Dependent Variable: Compliance						

Table 5.2: Coefficients[a] of Regression Analysis

In order to check for the significance and direction of the relationship, a spearman correlation analysis was adopted. The spearman correlation analysis was applied because the variables used in the study passed the assumption test of the spearmen correlation analysis, which are: 1, both variables must either be in ordinal scale, interval or ratio scale and 2, both variables must have a monotonic relationship.

Correlations			Compliance	Income class
Spearman's rho	Compliance	Correlation Coefficient	1.000	.065
		Sig. (2-tailed)	.	.063
		N	806	806
	Income Class	Correlation Coefficient	.065	1.000
		Sig. (2-tailed)	.063	.
		N	806	806

Source: Result of Analysis
Table 6: Correlation Analysis

From Table 6 the result of the spearman correlation analysis shows a positive relationship between the income status of building owners and compliance with building law, based on the 0.063 value for the 2 tailed-test, that is, compliance increases as income of the building owners increases. Given an increase in the income of the building owners by a unit will increases compliance by 0.0630, allowing the researchers the power to uphold the alternative hypothesis to the effect that there exist a significant relationship between the income of the building owners and level of compliance with building law.

IV. CONCLUSION AND RECOMMENDATION

For the relationship between the income level of the respondents and the level of compliance with building law, the results showed significant linear correlations. Thus, the null hypothesis was rejected and the alternative was upheld. From statistical point of view, the result informed that income predict compliance. In specific terms, income group was a good predictor in the relationship between income status of respondents and level of compliance. And as regards the income grouping the descriptive statistics showed that respondents in the upper middle group complied higher than those in the low middle.

As a result, solutions that generally will improve the income life of citizens and developers and guarantee their capability to employ professionally competent supervisors of buildings that are imperative. These were considered necessary in order to improve the present level of compliance with building regulations in the Metropolis, occasioned by the present level of income, when citizens income are generally revised upward, it would also be important to educate developers generally on the importance of compliance with standards. As building owners, it is important to note that observance of the minimum standards stipulated by law, in the short and long run, is in the overall interest of the owners and occupants of buildings. Consequently when buildings collapse, in addition to lives lost, the owner's investment is also lost. Whatever money the owners may have thought to save by knowingly or unknowingly allowing substandard materials or violation of minimum standards he is ultimately the looser and not the supervisor. Admittedly, more money in the hands and at the disposals of people will increase the number of people who can buy land and develop, although guarantee that developers will build in compliance with Law without adequate site inspections by the supervising Authority to ensure strict compliance. Therefore, with improved minimum wage, more site inspectors recruited and assigned to sites, will ensure compliance much better than leaving compliance to chance.

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