
Perceived causes of Building Collapse in Nigeria: Liabilities and Sanctions

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ABSTRACT

Nigeria has witnessed many cases of building collapse in the last ten years. Precisely, thirty two cases were reviewed in this work. On the spot assessment and report from the professionals who visit the collapse sites revealed that in 2006 alone about seven buildings collapsed in Nigeria killing about 65 people. In the year 2007, two buildings collapsed killing several people but the number was not disclosed. In 2008, four cases of building collapse occurred killing twenty people. In 2009, three cases of building collapse were reported killing several people, in 2010, four cases of building collapse was reported killing 32 people. In 2011, three cases of building collapse occurred killing 105 people. In 2012, five cases of building collapse occurred killing several people the exact number was not disclosed. In 2013, five cases of building collapse were reported killing 25 people and several other numbers not disclosed. In 2014, a case was reported killing 116 people and also a case was reported in 2015. Most of the collapsed of these buildings were caused by structural failure, use of substandard building materials and poor workmanship. Yet not very many people held responsible and sanctioned. This paper therefore concludes that professionals and building contractors whose building collapse should be sanctioned. The NBC 2006 bill should be passed by the National Assembly giving it the power of enforcement.

Keywords: Building collapses, Liabilities, Sanctions, Nigeria.

INTRODUCTION

Incidences of building collapse in Nigeria are alarming especially from 2006-2015. Although it is a common phenomenon all over the world, it is more rampant and devastating in developing countries. In Nigeria, the cases of building collapse have become very frequent thereby bedeviling the country with quantum of losses in terms of lives and properties. Building failure can be

described as the inability of building components to perform what they are normally expected to perform as such cannot meet the purpose to which it was intended resulting to the disintegration of various component parts. Roddis (1993) in Nwafor (2013) asserted that a failure occurs when a building component can no longer be relied upon to fulfill its principal functions. A deflection in a floor that causes certain amount of

cracks/distortion in partitions could reasonably be seen as a defect but not a failure, whereas excessive deflection resulting in alarming damage to partitions, ceilings and floor finishing could be classified as failure, Cowan (1998). The resultant effect is building collapse. Building failure can occur at different stages of construction process and after completion.

Common causes of building collapse in Nigeria have been traced to structural failure, substandard materials, non adherence to design specifications, corruption, faulty construction, lack of proper supervision, ineffective enforcement of building codes, and lack of proper maintenance. Some other causes of building collapse are as a result of ignorance on the part of developers and unauthorized conversion of buildings, alteration, absence of soil test report, flagrant disobedience of town planning regulations by the developers/land lords and of course lack of sanctions against erring professionals and land developers. (Badego 2009).

Oloyode, Omogun and Akinjare (2010) in Chendo and Obi(2015) attributed causes of building collapse to man's negligence in some vital areas in construction such as soil investigation, incorporating design for extra loads, uneven terrain, use of substandard building materials, defective monitoring and overall poor workmanship. In the same line of

thought, Madu (2005) identified causes of building collapse or failure as due to natural occurrences such as earthquakes, tornadoes and flood. Other causes of building collapse according to Medu, may include omission and carelessness on the part of designers leading to deficient structural drawings and translocation of building plans to different sites.

The seemingly absence of liabilities and sanctions against most building professionals and contractors whose building projects collapse during construction or immediately after construction have not helped matters as the professionals whose building projects collapse come and trade blames with each other and leave the victims in anguish. Most cases of building collapse are reported in Nigeria and there is no liability or sanction against the construction firms reported yet. This paper therefore has taken a step further by not only reporting the cases of building collapse but also recommend sanctions to be melted to construction firms whose projects have become a weapon of destruction of lives and properties.

CONTEXTUAL CLARIFICATION OF KEYWORDS

Building collapse: A building is said to have collapsed when it breaks down suddenly and ceases to function, if a building falls or caves in suddenly, such building is said to have collapsed.

Building failure can in the same manner be described as the inability of the building components to perform the functions that were required of it. So when a building could not meet the purpose for which it was intended, the building has collapsed. Iyagba (2005) in Jambol (2012) stated that a building is said to have collapsed when its structural elements and components have failed and are not only unserviceable requiring some level of maintenance, but also unable to adequately support intended loads or lacks stability due to excessive deformation.

Liability: This is one of the most significant words in the field of law. Gerald, Hill and Kathleen (2005) defined liability as legal responsibility for one's acts or omissions. Failure of a person to meet their responsibility leaves him/her to a lawsuit for any resulting damages. Liability is blame worthiness that is used to apportion responsibility for repairing damage caused; it is a state of being bound or obliged in law or justice to do something which may be enforced by action. This responsibility may arise from contracts either express or implied. Liability therefore as used in this work is the responsibility, or duty of professionals involved in a construction that has collapsed to be compelled by law to pay compensation to the victims of a collapsed structures.

Sanction: Is a broad term with different meanings in different contexts. Sanction in this context is disagreement or condemnation. Sanction is that part of the law that assigns a penalty for violation of the law's provisions. Depending on the case, a sanction may be the suspension or revocation of a contract or business, professional or hobby license or a court order commanding a person to do or refrain from doing something. Sanction as used in this context is the blame, or revocation of license of practice from professionals whose projects collapsed.

Objective of the Research

The objective of this research work is to find out the causes of building collapse due to:

1. Substandard materials
2. Structural failure
3. Poor workmanship

Research Questions

1. What is the frequency and mean rating of building collapse due to structural failure
2. What is the frequency and mean rating of building collapse due to sub-standard materials
3. What is the frequency and mean rating of building collapse due to poor workmanship

Facts of Building Collapse

In the book "Why Buildings Fall Down", Levy and Salvadori as cited by Jambol (2012) presented a meta-analysis of the building to the human body. According to them a building is conceived when designed, born when built, alive while standing, died as a result of old age or unexpected accident (such as collapse). It breathes through the mouth of its windows; it circulates liquids through the arteries and veins of its pipes and sends messages to all parts of its body through the nervous system of its electric wires. A building reacts to changes in its outer condition through its brain of feedback systems, is protected by the skin of its facade, supported by the skeleton of its columns, beams and slabs and rests on the feet of its foundation.

The accidental death of a building, they concluded is always due to failure of its skeleton, the structure, this happens when the structural system collapses, the materials used in the construction and forces acting on the building caused by gravity, wind,

earthquake and settlement of the soil. These are the natural technical reasons for building collapse. Collapse of a building may be from manmade such as design deficiencies, poor workmanship and the use of substandard materials and lack of adequate supervision. It can be recalled that there were once celebrated "seven wonders of the world". Only one, the mountain like pyramid of Khufu in the Egyptian desert of Giza has survived all the others have fallen (collapsed). Jambol (2012). This therefore suggests that building collapse is natural, universal, inevitable but controllable.

Reported Cases of Building Collapse in the last Ten Years from 2006-2015 in Nigeria

So many cases of building collapse are reported in Nigeria with so many casualties. It is unfortunate that not many sanctions or liabilities are reported, thereby leaving many victims of building collapse to their fate.

Perceived causes of Building Collapse in Nigeria: Liabilities and Sanctions

S/no	Type of Building Structure	Location	Date of Collapse	Suspected Causes	Use	Lives Lost
1.	Building under construction	Benjamin Okpara street Port Harcourt Rivers state	2006	Structural failure	Residential	0
2.	Four storey building	53, Cemetery Road, Amukko, Lagos.	January 2006	Ignorance on the part of the Landlords	Residential/ Commercial	7
3.	Three storey building	Abuja	2006	Sub standard materials	Offices/ Churches	0
4.	Two storey building	Ikpoba-Okha Edo state.	2006	Structural failure	School Building	2
5.	Four Storey Building	Titanic-house Ebute-Meta Lagos	2006	Faulty construction	Residential	28
6.	3 story building	Lagos	2006	Poor construction	Under construction	2
7.	Multi story building	Kano	2007	Poor materials	Residential/commercial	Several people
8.	School building	Ibadan	2008	Poor materials	School building	13
9.	5 story shopping complex	Wuse area Abuja	2008	Structured failure	Commercial	2
10.	2 Story building	Abeokuta Ogun state	2008	Bad workmanship/ substandard materials	Residential	2

S/no	Type of building	location	Date	Causes	use	Lives lost
11.	3 Story building under construction	Port Harcourt	2008	Faulty construction	Residential	3
12.	6 Story building	Ogbomosho Oyo state	2009	Substandard materials	Hospital complex	5
13.	A fence wall	Enugu	2009	No drainage	Fence	1
14.	Uncompleted building	Abeokuta	2009	Use of substandard materials	-	3
15.	Uncompleted Building	Oshodi, Lagos	2010	Use of substandard building materials.	-	4

16.	Uncompleted building	Oniru Estate Lagos	2010	Use of substandard materials	of -	4
17.	Uncompleted four storey building	Abuja	2010	Substandard materials	-	23
18.	4 storey building	Victoria Island	2010	Structural defects	Residenti	3
19.	urch building	Lagos Kaduna	2011	Rainstorm	al Abandon ed	5
20.	Building under construction	Abuja	2011	Overloading	-	100
21.	5 storey office complex	Maryland, Lagos	2011	Failure of structure	of Offices	Not disclosed
22.	3 storey building	Enugu	2012	Structural failure	Residenti al	Not available
23.	Uncompleted three storey building	Owerri	2012	Flooding	Residenti al	-
24.	4 storey building under construction	Umuahia	2012	Non adherence to building regulations	Residenti al	Undisclose d
25.	Church building	Adamgbe state	Benue 2012	Structural failure	Church building	22
26.	3 storey building	Kaduna	2013	Substandard materials	Residenti al	3
27.	3 storey building	Bukuru, Jos	2013	Structural defects	School building	10
28.	3 storey building	Ebute Meta Lagos	2013	Structural defects		7
S/no	Type of building	Location	Date	Causes	Use	Lives lost
29.	Building under construction	Umuahia	2013	Structural failure	Residenti al	7
30.	4 storey building	Onitsha	2013	Flooding	Residenti al/Comm ercial	
31.	6 storey building	Lagos	2014	Structural failure	Church	116
32.	3 storey building	Lagos	2015	Weak struct	Residenti al	-

Table 1: Building collapse in Nigeria from 2006- 2015 highlighting perceived causes

Source: Nigeria Daily Newspapers 2006-2015, The Best Option 20th-27th April, 2012

Causes of Building Collapse

Generally, buildings are designed to meet the needs of functional objectives of safety, serviceability, and economy. When building collapse, there is that

unpleasant feelings by the owner, the professionals involved, the general public and those in academia who are interested in research would want to know the causes of the building collapse. Akinjare (2010) researched on

'Building Collapse: Nigeria Policy Direction' the study revealed that most cases of building collapse are as the result of the use of low quality building materials coupled with employment of incompetent artisans and weak supervision of workmen on sites.

In the opinion of Abimbola and Rotimi (2012), Nwafor (2013), building collapse were due to non compliance with specification/standards, use of substandard building materials, equipment and the engagement of incompetent contractors. Those in academia fee that causes of building collapse are mainly due to non enforcement of Nigeria Building

Codes and the poor work ethics of Nigerians.

Reports from those who visit collapsed buildings attribute the causes to be the use of sub standard building materials and construction methods, design errors and changes in design, poor workmanship, structural failure as a result of substandard materials, poor maintenance, non adherence to building regulations, by-laws and codes, professional incompetence and inadequate supervision by relevant agencies/experts. From 2006-2015, covering a period of ten years, thirty two cases of building collapse which the author was able to cite revealed the causes of building collapse as shown below:

Table 2: Frequency and mean Ratings of the causes of Building Collapse

S/no	Causes of Building Collapse	Frequency	Mean Rating	Rank
1.	Structural failure	12	0.36	1
2.	Sub standard materials	10	0.28	2
3.	Poor construction/workmanship	3	0.09	3
4.	Non compliance to building codes	2	0.06	3
5.	Flooding	1	0.03	5
6.	Unauthorized conversion	1	0.03	5
7.	Weakness of structure as a result of fire	1	0.03	5
8.	Ignorance	1	0.03	5
9.	No drainage system	1	0.03	5

From Table 2, it is observed that the prevalent cause of building collapse in Nigeria in the past ten years is structural failure, which has a frequency of 12 out of 32 cases and a mean rating of 0.36. Building failure or structural failure is an unacceptable difference between expected and

observed performance (Ayinola and Olalusi 2004) in Abimbola and Rotimi (2012), Nwafor (2013), When the component can no longer be relied upon to fulfill its principal functions; insignificant deflection in floors which causes a certain amount of cracking /distortion in partitions could be

considered a defect but not a failure. Whereas excessive deflection resulting in serious damage to partitions, ceilings and floor finished could be referred to as failure.

Substandard materials ranked second in the causes of building collapse with a frequency of 10 out of thirty two cases reviewed with mean ratings of 0.28. The utilization of sub standard materials in the building arises from inadequate supervision and defects in design specifications. Materials like blocks, steel bars, and timber and cement form integral part of building construction and provide structure functions required of a building. The author visited some block industries and discovered that most of the block industries in Makurdi-Benue State are established by business men who have no idea about mix ratio, what they are looking for is the profit margin. Same visit to industrial layout at Naka Road Makurdi showed that the standard sizes of timber like $2 \times 6 \times 12$, $2 \times 2 \times 12$, $2 \times 3 \times 12$, $2 \times 4 \times 12$, $1 \times 12 \times 12$ are no longer available, same substandard measurement apply to steel bars.

The third cause of building collapse as revealed is poor construction/workmanship, which has 3 frequencies out of 32 cases with a mean rating of 0.09. When cheap labour and materials are used in construction, the resultant effect is poor construction. Contractors employ poor skilled labour and under pay them

to maximize profit. Other causes of building collapse are, non compliance to building codes, According to Orji and Nzizu (2016) building regulations and codes are an embodiment and collection of what is considered acceptable standards that will lead to quality and prevent failure. Regulations and codes are supported by law and become enforceable by the authority with the power to do so. Professionals in built environment in Nigeria developed Building Code in 2006; however the enforcement bill is yet to be passed.

Liabilities and Sanctions

There is a saying that where there is no law, there is no offence. For an industry as complex and strategic as the building industry, to lack robust, efficient and effective legal framework is highly regrettable. This explains why many buildings collapse kill people and destroy property yet only very few are prosecuted. This is because the sanctions in the NBC (2006) cannot be enforced for it lacks legal backing; as such the professionals only come out to trade blames at each other. Jambol (2012), described such action as unprofessional, unethical and indeed wicked. It is a direct affront to the provisions of the National Building Code (NBC) 2006 natural justice.

For professionals to live up to their responsibilities there must be liabilities and sanctions. In the

primitive era, there were sanctions and liabilities, in 1790 BC, King Hammurdi of Babylon prescribed death penalty for the builder whose building collapsed and killed the occupants.

The National Building Code 2006 (NBC) has provided for safety of operations for all stages of building. Under section 13, it provided for the control of building works under the building code enforcement Division/Section/ units in all Federal/State/Local Government Urban Development Agencies respectively. These comprise of the Architects, Engineers, Town Planners, Fire officers, Land Surveyors, Builders, Quantity Surveyors, Estate Surveyors, Valuers and Public Health and Safety Officers (section 13-1-12). They have adequate powers for control of building works as provided in section 13-1-1-3(1-16). Section 13.12 provides for control of building works with respect to workmanship and supervision. Other critical areas include quality of materials section 13.5; Test of Materials Section 13.6. With these provisions in the NBC 2006, what is left for the building industry in Nigeria to be safe is the enforcement of the laws which is yet to be passed by the law makers.

CONCLUSION

The major causes of building collapse in Nigeria in the last ten

years are traced to structural failure. The failure is as a result of inadequate supervision, use of sub standard materials and poor workmanship. The absence of robust legal frame work to prosecute professionals and contractors whose building projects collapse has made the professionals involved to show little or no concern when their projects collapse. The provisions in NBC 2006 are adequate but lack enforcement powers. The National Assembly is therefore urged to as a matter of urgency to pass the NBC 2006 Bill for it to have the enabling powers to prosecute the perpetrators.

The license of practice should be withdrawn from the professionals whose building projects collapse and be prosecuted. The use of substandard building materials, poor construction resulting to building failure is criminal and such charges leveled against professionals involved that their buildings had collapsed.

The Standard Organization of Nigeria (SON) should be alert to their responsibilities; the open sale of substandard building materials should be checked. The situation where Nigeria is a dumping ground for all sort of materials that are rejected in other countries of the world and are brought to Nigeria should be stopped and standard measurements for all building materials be adopted, offenders be thoroughly sanctioned.

REFERENCES

- Abimbola, O.W; Rotimi James O. (2012). Contemporary issues in building collapse and its implications for sustainable development. www.mdpi.com/journal/buildings.
- Ayininuola, G.M; Olalusi, O.O.(2004). Assessment of building failures in Nigeria: Lagos Case Study-*African Journal of Science and Technology* 5, 73-78
- Chendo I.H and Obi N (2015). Building collapse in Nigeria: The causes, effects consequences and remedies. *International Journal of Civil Engineering Construction and Estate Management Vol3 No.4 pp 41-49*.
- Cowan, H.J. (1998). The causes of Structural Failure. *Architectural Science Review* 32(3) 65-66
- Egunjobi, L., Ademola .A. (2016). Incidence of Building Collapse in Nigeria: Case of Lagos State. *OIDA International Journal of Social Science and Management .com/link*
- Federal Republic of Nigeria (2006.) National Building Code Lexis NEXIS Butterworth; Cape Town South Africa.
- Jambol D.D (2012). Curbing the Incidences of Building Collapse in Nigeria: Sanctions, Liabilities and Legal Imperatives. *Proceedings of the 42nd National Conference/Annual General Meeting of NIOB held at Enugu*.
- Madu, L.C. (2005). Building disasters in Nigeria: Causes and remedies, *Journal of Institute of Architectures Vol.1/No3 pp 43-48*
- Orji S.E. and Nzizu C.C. (2016). Stemming the incessant collapse of buildings in Nigeria by engaging a professional Builder. *Imperial Journal Interdisciplina Research. Vol2, issue2 115-121*.
- Roddis, M.K. (1993) Structural Failure and Engineering Ethics. *American Society of Civil Engineering (Structural Division) 119(5) 1539-1555*
- The Best Option News paper (20th-27th April 2012). Death in the Church. Publishers: Culture Media Nig. Ltd Makurdi Benue State Vol. 2 2017*