

An Examination of the Impact School Building Collapse in Nigerian Educational Institutions

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Abstract: The paper explores the impact of school building in Nigeria educational institutions. The paper depends on secondary source of data which relied on secondary evidences inform of published books, journal articles, newspapers, government official documents, seminar papers, conference papers as well as related information from the internet. The paper identified structural failure, use of substandard materials, natural occurrences, foundation failures, fire outbreaks and flammable building material, improper supervision, inspection and monitoring of construction works, engagement of incompetent contractors, illegal conversion, alteration, and additions to existing structures, no building plan, occurrence of nature, quality control and corruption. Based on the finding, the paper recommends that the federal and state governments should improve the supervision of school building across the federation and states by properly funding all quality assurance agencies and commission in charge of building industries in Nigeria. Government should ensure integrity test are carried out on every school building every five years interval. Government should involve all building industries stakeholder in the management of school building to ensure quality work.

Key words: Educational institutions, School Building, School building collapse



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1.0 Introduction

Incessant collapsing of buildings is fast becoming a common phenomenon in Nigeria and of course all over the world. The rate at which fatal collapse of buildings in Nigeria occurs has reached a stage that every Nigerian should be concerned about prevention of reoccurrences. The frequency of building collapses in Nigeria has become a paramount issue in the development of the country as their occurrences and the losses encountered and being recorded in terms of loss of precious lives and properties are what people should be concerned about (Ogunode, Okpunukpang & Ngozi Ugwa 2024).

School building collapse has been one of the national disasters in Nigeria as all the geo-political zones of the country have experienced the disaster in the last three decades. This menace has been a serious challenge to the government, non-governmental organisations and professional bodies. For instance, in October 4, 2024, Akinrogb reported that Eghereka Primary School located in

Ewu town in Ughelli South Local Government Area of Delta State which was made up of six block of classrooms collapsed and fell on a student led to his death. Salvation met his untimely death yesterday when the block of six classrooms that collapsed fell on him and injured three others. According to reports, the dilapidated building collapsed under the heavy rain. The block of six classrooms, which was without a roof, was said not to have been in use just as prompt efforts led to the rescue of the other pupils. Also, a five-storey building under construction at Dennis Memorial Grammar School in Onitsha, Anambra State collapsed. The building which was being constructed by the Anglican School old students association was said to have reached an advanced stage before it collapsed on June 12, 2024. No casualty was recorded (Ogunode, et al 2024).

On July 12, 2024, Ojo reported that at least 22 persons, including students, died when a two storey-building collapsed at Saint Academy, Busa-Buji community of Jos North Local Government Area of Plateau State. The Nigerian Building and Road Research Institute (NBRI) attributed the cause of the collapse to substandard materials and poor construction work. Also, Ojo in Ogunode, et al (2024) reported that in central Lagos Island, a four-story building housing a school collapsed on individuals, most of whom were pupils. Substandard construction and the addition of additional floors without proper authorization were identified as the primary causes. According to a recent study, school building collapse is becoming a major concern in Nigeria and educational stakeholder are calling for urgent action to address the problem. This paper

2.0 Literature Review

A school is a social institutions for implementation of teaching and learning and other extra-curriculum activities. A school is an institutions designed for impartation of knowledge. A school is a micro part of the society curve out for the purpose of teaching and learning. A school is a formal and non-formal institutions that brings together teachers, students and school administrators for the purpose of teaching and learning. A school is considered a second home for students, and teachers as a second set of parents (Ogunode, Edinoh, & Olatunde-Aiyedun, 2023). The objectives of the school is to provide teaching and learning environment (Ogunode, & Ndayebom, 2023), the school is house in a building (Ogunode, Audu & Ahaotu, (2020); Olowonefa, & Ogunode, 2021), the building helps both the teachers and students to carry out teaching and learning processes (Okpunukpang, Ogunode & Suleiman, 2024). The school building support implementation of teaching and learning services.

School building is a planned and organized plant designed for the implementation of teaching and learning. School building is according to Osagie (2003) is the infrastructure that represents the aesthetic picture of the school conveyed by the position of structures in relation to one another. It also represents the empirical relevance of the totality of the school environment for the realization of the school business (teaching/learning). He asserted in specific terms that school plant is made up of landscape, trees, lawns, hedges, and accompanying paths, playgrounds, buildings, security facilities and utilities Ogunode, et al (2024) plant or facility officially approved for the execution of educational services such as teaching, learning and extra-curriculum programme. School building is a building set aside for the purpose of providing education services for the citizens.

School building is a plant and facility prepared and organized for students, teachers and school administrators for the implementation of school curriculum and for the provision of quality education. School building is a special space and location where educational resources are provided for the implementation of teaching, learning and carrying out research. School building are made up different component such as classrooms, libraries, laboratories, administrative offices, halls, hostels and workshops (Ogunode, et al 2024).

3.0 Method

This paper discussed the impact of school building collapse school in Nigeria. The paper depends on secondary source of data which relied on secondary evidences inform of published books, journal articles, newspapers, government official documents, seminar papers, conference papers as well as related information from the internet.

4.0 Factors Responsible for Building Collapse in Nigerian Educational Institutions

The factors responsible for building collapse in Nigerian educational institutions includes; structural failure, use of substandard materials, natural occurrences, foundation failures, fire outbreaks and flammable building material, improper supervision, inspection and monitoring of construction works, engagement of incompetent contractors, illegal conversion, alteration, and additions to existing structures, no building plan, occurrence of nature, quality control and corruption.

Structural Failure

Structural failure ranked as the highest in frequency as cause of Building Collapse globally and in Nigeria as contained (Ogunode, et al 2024). Fredrick et.al (1989) suggested that the overturning of structures due to heavy wind loads, sliding of structures due to high wind, roof uplift or sliding, and building sway due to lateral loads are major types of failures of buildings. Akinpelu (2002) and Fadamiro, (2002) categorized the following as major causes of structural failures, environmental changes, natural and man-made hazards, improper presentation and interpretation in the design, Richard (2002) opined that deterioration of reinforced concrete could occur as a result of corrosion of the reinforcement caused by overloading, subsidence or basic design faults, and construction defects.

Use of Substandard Materials

The use of substandard blocks for and fake building resources (Blocks with less than 1inch web and 40-45 blocks per 1 bag) construction was first noticed in Lagos in early 80's and the act of using substandard compromised building materials for construction spread to Port Harcourt and other towns in the country. The report showed that of the reported cases of building collapse, 60% of these, cases occurred in Lagos, 11% in the South Western States, 8% in the North Western States, 7% in the South-South, East and North Central states (Ede, 2010b; Uji, Zanzan Akaka 2014; Orikpote, et al 2023; Ogunode, et al 2024), Uji 2014. Cement sand ratio for block moulding and mortar and cement sand Aggregate ratio for concrete works can be compromised by contractors. With effective supervision this can be checked and controlled to meet approved standards and specifications.

Natural Occurrences, Foundation Failures, Fire Outbreaks and Flammable Building Material

In Nigeria, the most common natural events are heavy rain storm, high wind, flood, thunder, lightning and landslides in ravine environments. Many reported cases of building collapse in Nigeria caused by natural disasters have been reported as contained (Orikpote, et al 2023). Earth quake is not prevalent in Nigeria currently, but it may start and become more prevalent if incessant destruction of basement rock in our environment by drilling of bore holes is not controlled or stopped with immediate effect. A building structure can collapse if built on poor soil, or if the building is not uniformly loaded or if suitable foundation was not specified according to soil type or due to earth movement under the foundation due to erosion. Most materials used in building construction and finishes are flammable (Olagunju, 2002), in Chendu et al. (2015). These materials for example PVC ceiling, gloss paints encourage fire spread. Fire weakens structural members such as reinforcement bars and steel trusses. These materials fail in the process of

providing supports to components and the main structure and in the event of fire, may lead to total or partial collapse of the building.

Improper Supervision, Inspection and Monitoring of Construction Works

Most professionals in the building industry that are either in practice or in government often are guilty of this practice either due to their busy schedules, negligence or they are not paid or commissioned officially to handle the aspect of the work (Orikpete, and Ewim, 2023).

Engagement of Incompetent Contractors

In Nigeria, Orikpete, and Ewim, (2023) noted that it is common that most contracts are first awarded to politicians who sublet or sell to businessmen as contractors known to them without following the normal contract procedures and without investigating the competence of the contractor. The result is substandard performance during construction which can lead to building collapse.

Illegal Conversion, Alteration, and Additions to Existing Structures

Orikpete, and Ewim, (2023) observed that imposing additional floors beyond original design provision is a common practice in Nigeria. For examples, a bungalow building being converted to storey, thereby imposing more loads on the foundation; Creating additional rooms on suspended floors, changing the use of building, for example, converting residential to mini-factory whereby heavy duty equipment are placed on suspended floors or converting residential buildings into church with under-designed life loads from people. Also creating vibrations on suspended floors by breaking of slabs, beams, or exposing old foundation to flood and erosion may lead to structural failure.

No Building Plan

It is wrong to commence any construction work without an approved building plan from an Architect, Structural Drawings from Structural Engineer, Electrical/Mechanical Drawings from Electrical/Mechanical Engineer properly sealed by consultants and approved by the City Development Planning Authority. Many drawings are used for construction without approval from the approving authority (Orikpete, & Ewim, 2023).

Occurrence of nature

Rainfall is one of the key natural variables that cause structure collapse; others may include land slide, earthquakes, and so on. According to Chinwokwu (2020), whenever there is a heavy downpour, there is a chance that one or more buildings whether finished or uncompleted will carve in the mud. The reality remains that this is an uncontrollable natural factor; structures must thus be built with such uncontrollable factors in mind.

Quality control

The importance of tight quality management in material consumption in the Nigerian construction sector cannot be overstated (Ede, 2020). The construction industry's disregard for quality control has resulted in numerous defective and unsightly buildings, as well as an increase in the number of collapsed structures in recent years. The quality achieved in the Nigerian building industry is influenced by several elements, which are addressed more below (Orikpete, et al 2023).

Corruption

According to the Global Corruption Report (2005), corruption has resulted in a substantial increase in the cost of building supplies, which has increased the use of building materials of poor quality are used in the construction, affecting the economy's quality and standard of construction. award of contract, planning, implementation, and handover after completion are all examples of corruption. Corruption, on the other hand, may exist in one or more forms in any of the above-

mentioned stages. It involves bribery, fraud, and collusion, with the effect that the building industry's quality is lowered, repair and maintenance costs are increased, and some flaws may go undetected until the project falls according to Kazeem et al. (2020).

Impact School Building Collapse in Nigerian Educational Institutions

There are many psychological implication of school building on teachers and students in Nigeria. Some of this implications includes; creation of fear and trauma on teachers and students, disability on teachers and students, death of teacher and students and negative international image.

Creation of fear and trauma on teachers and students

School building collapse created trauma and fear on teachers and students. The teachers and students that experienced and escaped from school building collapse are always faced with trauma and fear because of the negative choke that came with the incidence (Ogunode, et al 2024). Adebowale, Gambo, Ankeli, and Daniel, (2016) in their study identified that the effects of building collapse are usually in the form of economic and social implications which include: Loss of human life, Loss of materials, Loss of capital investments, Physical damage and psychological trauma. Thisday (2024) asserted that many buildings have collapsed, sowing deaths and fear among the populace in schools and resident building. That is because there are procedures to follow when constructing a building. But in Nigeria, these conventions are hardly adhered to because of poor enforcement of laws. Putting aside the quantifiable economic sums, the stress, trauma and shocks may have far-reaching effects upon the building owner and /or employees, occupants and others involved in one way or the other with the structure (Ede, 2013).

Creation of disability on teachers and students

Many teachers and students became disable persons because of school building collapse in Nigeria. The collapse of some schools in Nigeria has causes many teachers and students to be disable today. Ogunode, et al (2024) noted that many other people has been rendered permanent disable in one form or the other as a result of increasing rate of building collapse in the country. Oke, (2011) carried out a research on the Causes and Effects of building collapse in Nigeria and identified the following as the consequences of building collapse. Apart from loss of lives (mostly innocent citizens), many other people have been rendered permanently disabled in one form or the other as a result of increasing rate of building collapse.

Death of teacher and students

School building collapse in Nigeria has led to the death of many teachers and students. students. Ojo, (2024) also reported that the school building collapse that occurred in Delta state in 2024 led to the death of a students. Ogunjide, (2020) concluded that schools building collapse in Nigeria often resulted to death of staff and pupils. The two-storey building housing Saint Academy, located at the Busa Buji community in the Jos North Local Government Area of the state, collapsed on Friday at about 8:30 am, claimed 22 persons and left about 154 trapped persons who were evacuated to various hospitals (Abraham et al 2024). The collapse of a building has tremendous effects that cannot be easily forgotten by any of its victims. The consequences are usually in the form of economic and social implications, and they include loss of human lives, injuries, economic waste in terms of loss of properties, investments, jobs, incomes, loss of trust, dignity and exasperation of crises among the stakeholders and environmental disaster (Ede, 2013; Umo, Uduak Peter, & Udoh, Usen 2016)..

Creation of negative international image

The continuous collapse of school building in Nigeria can create a picture of negative image of our school to international communities. The situation can reduce the rank of educational institutions and may prevent international students from patronizing the school in Nigeria.

Chendo, and Obi, (2015) identified the following as the consequences of building collapse in Nigeria and they include: loss of life property and huge sum of capital, loss of reputation and integrity leading to psychological trauma, Loss of new commissions and contracts, Withdrawal of practising licenses. Nwafor (2015) in his study identified the reputational effects of building collapse on the Nigerian building industry including: de-market of the values and integrity of building professionals, portray Nigerian building industry as being corrupt and professionals' marketability to foreign firms/clients has been devalued.

Orikpete, and Ewim, (2023) outline the following as impact of school building collapse;

- a) Physical, mental, emotional and psychological trauma and death to victim
- b) Loss of property and huge sum of invested money. About 968 people lost their lives and over 336 people injured between 1974 – 2017 as contained in table 2 and table 2.1.
- c) Professionals, contractors and other stakeholders in the construction team lose confidence, reputation and integrity before clients and employers each time any building collapse happens
- d) Loss of capital invested in the construction of the collapsed buildings. Components and materials so damaged during collapse are not recoverable and cannot be re-used. Capital investments are not recoverable, leading to bankruptcy and extra cost in burying victims.
- e) A lot of money that would have been used for other purposes is always wasted when cleaning debris from the collapsed building site.
- f) Money and time will be wasted by setting up committee and the sessions the committee members will be meeting to investigate causes of building collapse for production of reports that may not be published for others to correct themselves. These suggest why many unconfirmed.

4.1 Conclusion and Recommendation

The paper discusses the factors responsible school building collapse in Nigeria. The paper identified structural failure, use of substandard materials, natural occurrences, foundation failures, fire outbreaks and flammable building material, improper supervision, inspection and monitoring of construction works, engagement of incompetent contractors, illegal conversion, alteration, and additions to existing structures, no building plan, occurrence of nature, quality control and corruption. Based on the finding, the paper recommends that the federal and state governments should improve the supervision of school building across the federation and states by properly funding all quality assurance agencies and commission in charge of building industries in Nigeria. Government should ensure integrity test are carried out on every school building every five years interval. Government should involve all building industries stakeholder in the management of school building to ensure quality work.

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