ASSESSMENT OF THE EFFECTS OF BUILDING COLLAPSE RISKS ON PROFESSIONALS IN THE NIGERIAN CONSTRUCTION INDUSTRY

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Abstract
The study examines the effects of building collapse risks on the professionals in the Nigerian construction industry. Survey research design was adopted in carrying out the research and five cities in Nigeria were selected (Abuja, Ibadan, Port Harcourt, Owerri and Lagos). The target population for the study is the key professionals in the Nigerian construction industry and they are: Architects, Builders, Engineers, Quantity Surveyors and Town Planners. A sample size of 1,231 professionals was determined using Taro Yamane formular for determining sample size for a finite population. Questionnaire was used for data collection and data generated from 1146 respondents were presented in frequency tables, pie charts and bar charts, while the analysis was done using percentages and weighted mean. The results of the study show that the identified building collapse risks have significant effect on the professionals in the Nigerian construction industry. The result of the mean shows that the key building collapse risk factors that impact significantly on the professionals include; loss of reputation (6.04), waste of resources, time and labour (5.98), loss of lives (5.78), among others. The building collapse risks that have predominant effect on the professionals in the Nigerian construction industry are: loss of reputation, waste of resources, time and labour, withdrawal of practicing licenses and loss of trust. The study recommends that all collapsed buildings should be properly investigated and the stakeholders found responsible for the collapse persecuted to serve as deterrent to others.

Keywords: Building collapse risks, Professionals, Nigerian construction industry, Millennium Development Goals (MDGs)

Introduction

The incidences of building collapse have become common phenomena in the Nigerian society. The occurrences of such collapse are posing serious challenges to all the stakeholders in the building industry: professionals, developers, governments, landlords, clients and users, as well as the residents.

Over the years, numerous lives and properties worth billions of naira have been lost, and construction workers/users of the building facilities are rendered permanently disabled as a result of building collapse. The society continues to lose the contributions of such victims towards the socio-economic development of the country.

In the same vein, some of the developers/investors may have the collapsed building as the only investment from their life time savings and the only hope for survival, loss of such investment could lead to psychological damage (fear, helplessness, distress, depression and suicides). The money invested could be a bank loan and loss of the investment due to building collapse may result to bankruptcy and equally contributes to the shortage of available housing stock.

In the past, Nigerian government had made policies to address the issue of housing shortage, affordability and availability, but due to incessant building collapse and its attendant risks witnessed in the Nigerian housing sector, these efforts have been marred. . In

addition, this increasing rate of risks from building collapse in Nigeria runs against the United Nation Millennium Development Goals (MDGs) programs aimed at reducing the mortality rate and improving safety and life expectancy of the world population.

Literature Review

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 2010).

The complete quantification of the effects of any collapse is extremely difficult, as there are so many factors involved which include emotional and subjective factors. Apart from the number of deaths that can often be truly identified, the rest of the effects are surrounded by so many uncertainties which make analysis only approximate. 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, 2010). More so, various site of building collapse scattered across the length and breadth of Nigeria is making the environment unhealthy as such collapsed buildings have become hideouts for hoodlums, touts etc. Dangerous animals like snakes have also made such buildings their place of abode, which is a danger.

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. Other consequences include: economic losses, loss of countless properties, unhealthy environment, and hideout for hoodlums and places of abode for dangerous animals like snake.

Nwafor (2015) in his study identified the reputational effects building collapse on Nigerian building industry to include: de-market of the values and integrity on building professionals, portray Nigerian building industry as being corrupt and professionals' marketability to foreign firms/clients has been devalued. The researchers agree with Nwafor (2015) on the reputational effect of building collapse on Nigerian construction industry considering the spate of building collapse in Nigeria and the attendant losses.

Dimuna (2010) stated in his study, that the incidences of building collapse witnessed in the country in the recent years has resulted in the loss of many lives and destruction of properties worth several millions of naira. Many families have been traumatized and many developers have lost their life investments.

According to Olumide (2012), the consequences of building collapse can be summarized as: loss of lives, loss of money invested, material wastage, loss of prestige of the owner, loss of reputation of the contractor, loss of the buildings' aesthetic values, increase in the cost of maintenance and shortage of manpower.

Akande, B.F, Debo-Saiye, B., Alao, T.O and Akinrogunde, O.O (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.

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 practicing licenses and Loss of materials and capital investments.

Janssens, V, Dermot, W.O and Marios (2010) in their study on building failure consequences classified the consequences resulting from a building failure into three groups: economic, human and environmental consequences. This study classified building

collapse risks into six groups: economic/financial risks, socio-political risks, human related risks, environmental risks, physical risks and law/legal risks.

1. Economic/financial risks: Economic/financial risks can be described as building collapse risks associated with money. These risks include: loss of property, loss of annual income/capital investment, loss of materials, bankruptcy of the investor/developer, decrease in the contributions of real estate sector to the nation's GDP, loss of investment, increase in the cost of maintenance, shortage in the supply of real estate facilities, clean up costs, rescue costs, cost of investigation/compensation, treatment of injured people, cost of rebuilding/repair, cost of loss of functionality, cost of replacement/repair of its contents, cost of temporary relocation, regional economic effects, waste of resources, time and labour, cost of legal dispute, etc.

2. Socio-political risks: The sub-risks under this category include: loss of reputation and integrity of the contractors, psychological trauma and shocks, loss of new commission and contracts, withdrawal of practicing licenses, loss of trust, discourages investment in property development, loss of jobs, scarcity of property, loss of prestige of the owner, shortage of manpower, de-marketing the values of industry professionals, portrays Nigeria building industry as being corrupt, professionals marketability to foreign firms/clients has been devalued, etc.

3. Human related risks: These are building collapse risks that directly affect human beings/human lives. They include: loss of lives, injuries, disruption of educational activities, loss of contributions from the victims towards the socio-economic growth of the nation, increase in death rate against the United Nations Millennium Development Goals (MDGs), leads the victims to permanent disability, psychological damage (fear, helplessness, distress, depression and suicides), disruption of economic activities, etc.

4. Environmental risks: The environmental risks in building collapse consist of: provides hideout for robbers and hoodlums, place of abode for dangerous animals like snakes, environmental damage, loss of functionality in the neighbourhoods, CO_2 emission/pollution, reduction in the energy use, increase in toxic emission, environmental studies/repair, loss of building aesthetic values, degrading of the environment, etc.

5. Physical risks; These are building collapse risks that are often associated with the physical nature of the building that collapsed. They include: structural damage, damage to contents, loss of functionality, replacement/repair of structure, replacement/repair of contents, temporary relocation, loss of strength of the building, shortage of manpower, increment of sick citizens, street blockage, evacuation difficulty, travel distance increment, damage of materials beyond re-use, loss of fauna and flora, etc.

6. Law/legal risks: Legal risks associated with building collapse include: exasperation of crises among stakeholders, legal tussle among stakeholders, arbitration/mediation to resolve crises arising from building collapse, conflicts resolution, apportioning blames and arbitrary words of mouth among the stakeholders,

Research Methodology

Survey research design was adopted for the study. The study was carried out in five selected cities in Nigeria and they are Abuja, Ibadan, Lagos, Owerri and Port Harcourt. The study focused on the professionals in the Nigerian construction industry. A sample size of 1231 was determined using Taro Yamane formular for determining sample size for finite

population. The data for research were collected through questionnaires and personal observations, and analyzed using percentages and weighted mean.

DATA ANALYSIS AND RESULTS

Socio-Economic Characteristics of Respondents

Table 1: Age of Respondents

Age (years)	**Number of Response**
Less than 30	42 (2%)
31 – 40	192(10%)
41 – 50	410(22%)
51 – 60	821(44%)
61 and above	395(21%)
Total	1860(100%)

Source: Field Survey, 2018

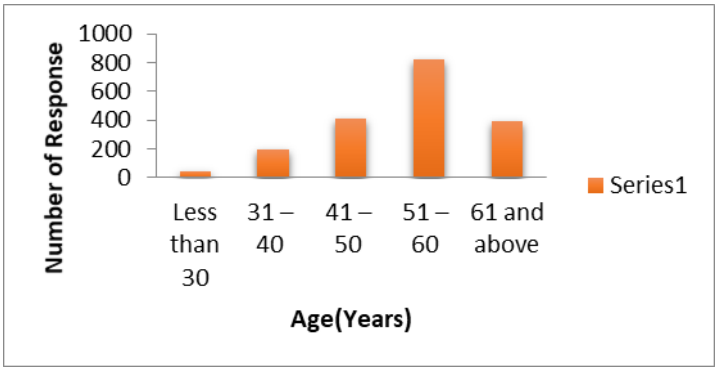


Fig 1: Response on Age of respondents

Table 1 shows that 2 percent of the respondents are less than 30 years of age, 10 percent are between the age ranges of 31-40 years, 22 percent are 41-50 years, 44 percent are within 51-60 years while 21 percent are 61 years and above. The above analysis shows that the majority of the respondents are between the ages of 31 and above. This shows that majority of the respondents are enough to understand the problem of the study and therefore experienced to give adequate answers to the questions.

Table 2: Profession of the Professionals

Response Option	**Number of Response**
Architects	275(24%)
Builders	197(17%)
Engineers	328(29%)
Quantity Surveyors	161(14%)
Town Planners	185(16%)
Total	1146(100%)

Source: Field Survey, 2018

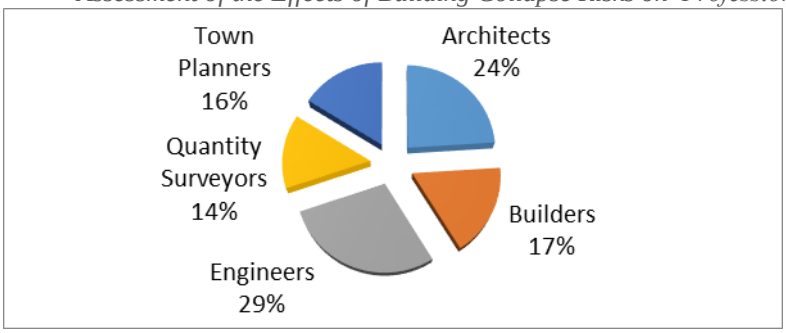


Figure 2: Response on Profession of Respondents

Table 2 shows that 24 percent of the respondents are Architects, 17 percent are Builders, 29 percent of the respondents are Engineers, 14 percent are Quantity Surveyors while 16 percent of the respondents are Town Planners. This shows that majority of the respondents are Engineers, followed by Architects, Builders, Town Planners and Quantity Surveyors which form the key players in the Built Environment.

Table 3: Working Experience of the Professionals

Response Option	**Number of Response**
Less than 5 years	15(1%)
6 – 10 years	198(17%)
11 – 15 years	405(35%)
16 – 20 years	381(33%)
21 years and above	147(13%)
Total	1146(100%)

Source: Field Survey, 2018

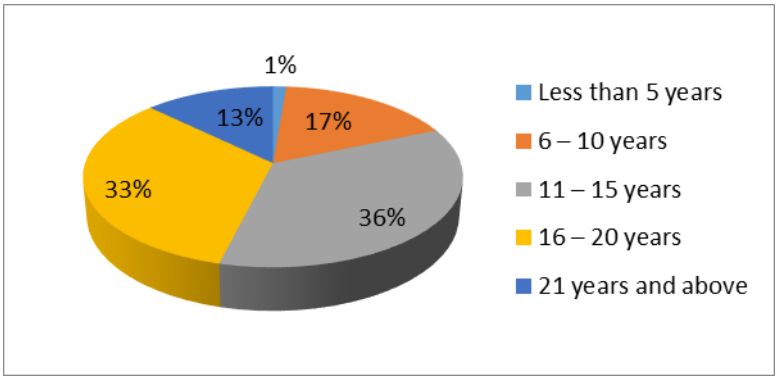


Figure 3: Response on Working Experience

The analysis in Table 3 shows that 1 percent of the respondents have worked for less than 5 years, 17 percent of the respondents have working experience of 6-10 years, 36 percent have work for 11-15 years, 33 percent have working experience of 16-20 years while 13 percent of the respondents have working experience of 21 years and above. This shows that majority of the respondents have reasonable working experience in construction industry to understand the problem of the study and other related issues. Therefore, the information given could be used and relied upon for data analysis.

Effects of Building Collapse Risks on the Professionals in the Nigerian Construction Industry

Table 4 shows the analysis of the data from responses on the effects of building collapse risks on the professionals in the Nigerian construction industry.

Table 4: Effects of Building Collapse Risks on the Professionals in the Nigerian Construction Industry

S/No	Building Collapse Risks	Very Severe(5)	Severe (4)	Moderate (3)	Minor (2)	No injury (1)	Mean	Rank
1	Loss of lives	806(43%)	589(32%)	248(13%)	155(8%)	62(3%)	5.78	3rd
2	Loss of Aesthetics value	465(25%)	899(48%)	403(22%)	93(5%)	0	4.79	12th
3	Loss of jobs	527(28%)	775(42%)	310(17%)	248(13%)	0	5.21	9th
4	Loss of income	620(33%)	806(43%)	403(22%)	31(2%)	0	5.49	7th
5	Legal tussle among the stakeholders	589(32%)	744(40%)	403(22%)	124(7%)	0	5.36	8th
6	Waste of resources, time and labour	806(43%)	682(37%)	341(18%)	31(2%)	31(2%)	5.98	2nd
7	Increment of sick citizens	496(27%)	620(33%)	434(23%)	279(15%)	31(2%)	4.98	11th
8	Loss of reputation	868(48%)	775(42%)	124(7%)	93(5%)	0	6.04	1st
9	Shortage of manpower	527(28%)	558(30%)	496(27%)	248(13%)	31(2%)	5.18	10th
10	Loss of trust	775(42%)	775(42%)	217(12%)	31(2%)	62(3%)	5.62	5th
11	Loss of commission and contracts	651(35%)	713(38%)	434(23%)	62(3%)	0	5.57	6th
12	Withdrawal of practicing licenses	806(43%)	558(30%)	341(18%)	93(5%)	62(3%)	5.70	4th

Table 4 represents the analysis and ranking of the effects of building collapse risks on the construction professionals. It shows that loss of reputation has the predominant effects on the professionals followed by waste of resources, time and labour, loss of lives, withdrawal of practicing licenses and loss of trust, while loss of aesthetic value has the least effect.

Conclusion and Recommendations

Assessment of the effect of building collapse risks on the professionals in the Nigerian construction industry was studied and the specific objectives attained. The aim and objectives of the study were achieved through the analysis of the views of the key professionals in the built environment in the study area

From the study carried out, it is evident that building collapse risks exist in the Nigerian environment. These building collapse risks have multifarious factors which were

categorized as economic/financials risk factors, socio-political risk factors, human related risk factors, physical risk factors, environmental risk factors and law/legal risk factors.

The building collapse risks have significant effect on the professionals in the Nigerian construction industry. The building collapse risks that have predominant effect on the professionals in the Nigerian construction industry are loss of reputation, followed by waste of resources, time, and labor, loss of lives, withdrawal of practicing licenses and loss of trust.

The mitigation measures towards reducing/eliminating the effects of building collapse risks on the professionals include: evacuating and emergency services, life insurance, medicare to the injured, prompt assistance to the injured/affected persons etc. The study recommends that life insurance should be made mandatory in Nigeria especially for the construction workers. This will help to alleviate the suffering of the victims and their relations in event of death, injuries or permanent disability. All collapsed buildings should be properly investigated and the stakeholders found responsible for the collapse persecuted to serve as deterrent to others.

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