

## An Empirical Ascertainment of the Causes of Building Failure and Collapse in Nigeria

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**Abstract** *The incessant of building failure and collapse in the recent past has become a source of national concern and embarrassment in Nigeria. News reports of such incidents are frequently reported in the country by both the print and electronic media. In 2006 alone, no fewer than thirteen of such cases were recorded in Lagos State alone while statistics of the previous and subsequent years were not better off either. This study was set out to empirically ascertain the causes of such building failure and collapse from the perspectives of the stakeholders (comprising of the professionals in the building industry, contractors and house owners/developers) with a view to proffering appropriate recommendations to guide against future occurrence. Lagos State was chosen as the case study based on the frequency of occurrence building collapse in the state. To achieve the objective of the study, questionnaires were randomly administered on the professional Estate Surveyors and Valuers, Architects, Town Planners, Quantity Surveyors, Engineers (Structural and Civil), building contractors and Landlords/developers in the study area to seek their opinion on their perceived causes of building collapse. The study identified the use of sub-standard building materials, poor workmanship by contractors, use of incompetent contractors, faulty construction methodology, heavy downpour, non compliance with specifications/standards by developers/contractors, inadequate/lack of supervision/inspection/monitoring, structural defects, defective design/structure, illegal conversion/alterations/additions to existing structures and dilapidating structures as the major causes of building collapse in Lagos State nay Nigeria. The study recommends education of all the stakeholders including the professionals in the building industry and landlords/developers on the inherent dangers of building collapse and the need to be safety conscious while building houses.*

**Keywords:** *Building Collapse, Workmanship, Supervision, Nigeria.*

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### 1. Introduction

The frequency of building collapses in Nigeria in the recent past has become major issue in the development of the country as the frequencies of their occurrences and the magnitude of the losses being recorded in terms of lives and properties are becoming worrisome and alarming. The spate and frequency of occurrence has become a major source of concern not only to the governments but to all well meaning Nigerians and most especially the stakeholders in the building industry in the country as the magnitudes of the incidents are becoming very unprecedented.

Even though the proportion of buildings that collapse is very small compared with the vast majority that are in use, but the human and material wastes associated with such building collapses apart from psychological wounds often inflict on both the affected residents of such houses and their owners also constitute huge loss to the nation at large. It is noteworthy many lives and properties have been lost through the collapse of buildings in most big cities such as Lagos, Abuja, Port Harcourt and Ibadan just to mention a few. Infact many property owners have developed high blood pressure while some have been sent to an untimely death as a result of the collapse of their buildings. Even though the occurrences of building collapse are found to be more prevalent in the urban centres of the country, however, cases of building collapses in the country are found not to be limited to urban cities of the country as they cut across cultural , ethnic and geographical barriers in such a manner that their occurrences apparently reflects what can be described as 'federal character'. Buildings are structures which serve as shelters for man, his properties and activities.

They are expected to be properly planned, designed and erected to obtain desired satisfaction from the environment. Factors to be considered in the course of building construction include durability, adequate stability to prevent its failure or discomfort to the users, resistance to weather, fire outbreak and other forms of accidents. The styles of building construction are constantly changing with introduction of new materials and techniques of construction. Consequently, the work involved in the design and construction stages of buildings are largely that of selecting building team, materials, components and structures that will meet the expected building standards and aesthetics on economy basis. Several codes of practice universally accepted are available for the design and construction of buildings and these codes, though foreign, should be followed as a guide to building construction by the building team. A high level of skill is needed in designing and constructing buildings, competence and craftsmanship from the team, which include the Architects, the Engineers or Contractor (Structural, Mechanical and Electrical), and the Local Authority. The aim of this study was to ascertain the causes of building collapse in the country from the perspectives of the stakeholders who are directly involved in the building industry in the country using Lagos State as the case study and proffer solutions to identified problems.

## 2. The Study Area

According to US Census Bureau (2006), Lagos is the economic hub of Nigeria and the largest city in Africa with a population of approximately 11 million (UN, World Bank and US Census Bureau estimates, 1999). It is currently the 7th largest city in the world, and with current annual growth rates of about 6%-8% (i.e. up to 600,000 persons per annum or 1,644 people daily) it is projected to become the 3rd largest city in the world by 2015 (US Census Bureau, 2006). It was the formal capital city of Nigeria before it was replaced by Abuja on 12<sup>th</sup> December, 1991 but remains as the commercial and industrial nerve center of the country.

Lagos was originally founded as a trading port in 17<sup>th</sup> century by the Portuguese and became colonial administrative headquarters of the newly formed Nigeria in 1914 and remained as capital even after independence in (1960) and until 1991 when a new federal capital territory was built in Abuja. It is the smallest of the administrative states in the country in terms of land area occupying only 3,577sq km of mostly coastal plains. The state is surrounded by lagoons which make up about 22% of the state's land mass. Metropolitan Lagos itself accounts for only 37% of the states land area, but is occupied by more than 80% of the states population, such that population densities in the state reaches up to 20,000 persons per sq km (Lagos State Government, 2004). Figure 1 is the map of the state showing the component Local Government Areas constituting the state. Lagos State has 16 Local Government Councils as shown in Figure 1 and 57 Local Government Development Areas.

Fig 1. Map of Metropolitan Lagos showing the Local Government Areas



Source: Lagos State Ministry of Information

The state has witnessed rapid growth in demand for all types of properties, especially during the era of economic boom of the late 1970s up to 1980s according to Oni, (2010). Developers and owners attempts at meeting the shortages in supply of properties either through construction of new structures or through redevelopment of existing structures. In attempt to meeting skyrocketed and soaring demand for properties, many properties especially residential properties which were originally approved for one storey buildings were converted to two or more storey buildings (Adediji, 2006). The unprecedented rush by developers to increase the stock of housing units partly accounted for great activities in the construction industry during these periods whereby many of the construction activities lacking proper monitoring (Oni, 2010).

### 3. Literature Review

The past few decades in Nigeria witnessed collapse of many buildings in various stages of completion, wherein several lives were lost and properties worth millions of Naira destroyed. Structural collapse occurs all over the world, but the rate of occurrence in Nigeria is what has been giving the concern stakeholders serious concern.

Several causes of building failure had been attributed to either natural or man-made phenomena. A natural phenomenon may be attributable to earthquakes and typhoons while man-made phenomena consists of disaster which may be borne out of man's negligence in areas such as soil type, building design and planning for extra loads and stress from strong winds and earthquake for tall buildings, foundation works, quality of building materials, lack or inadequate monitoring of craftsmen and poor quality of workmanship according to Oloyede et al (2010).

The causes of building collapse in Nigeria has been traced by Ede (2010a) to abnormal factors not obtainable in many other developing nations. Ede (2010b) was further of the opinion that apart from the generally known causes of building collapse such as design flaws, ageing, material fatigue, extreme operational and environmental conditions, accidents, terrorist attacks and natural hazards, that the 'Nigerian factor' become a prominent issue to contend with. The 'Nigerian factor' in the building industry in the word of Ede (2010b) rears its ugly head in different forms such as corruption, lawlessness and the presumption that any engineer or professional in the built environment can assume all forms of responsibility in the building process even in the absence of basic skill required for such job. Corruption is made manifest in greed and tendency to cheat in virtually every aspect, starting from poor materials and quality of work to the quantities used for construction works. Just as disobedience to civil laws is common in Nigeria, the case in the building industry cannot be different. For this, lawlessness finds a fertile ground in the non-adherence to the building codes and hasty construction. The use of unskilled labour, inexperienced professionals, tendency of some professionals as pointed out by Ede (2010b) to cross-carpet to lucrative specialist duties where they lack the necessary skill, ignorance and abundance of quacks in the building industry are all facts to contend with. Excessive rain falls and poor drainage systems equally pose a serious problem to structures along the Nigerian coastlines. Adebayo (2000) opined that skill, experience and personal ability of the workmen involved in the building construction is of utmost importance in creating value. He was of the opinion that the so-called ready-made hollow sandcrete blocks sold by some block-making industries do not measure up to standard in an attempt to make abnormal profits. Once these lapses are tolerated intentionally or otherwise, the quality of the sub-structure or super-structure cannot be guaranteed.

The quality of the workmen is a measure of their effectiveness and efficiency at all times during construction while the level of building maintenance after its occupation depends on the performance of workmen. The conclusion of Adebayo (2006) can only be relied upon where the building developer or the contractor are capable and willing to appreciate quality and ready to pay for same. In addition, the developer or client must be able and willing to provide the contractor handling the construction work with high quality building materials and at the right quantity. Moreover, he must be ready to hire competent Project Manager or Site Supervisor for the supervision of works at site.

#### 4. Research Methods

The aim of the study was to examine the causes of building collapse in Lagos metropolis with a view to proffering solution to identified causes and in attempt to achieve the objective, data were sourced from both primary and secondary sources. Primary data were collected with the aid of structured questionnaires administered to the professionals in the built environment (Estate Surveyors and Valuers, Architects, Town Planners, Quantity Surveyors and Engineers (Civil and Structural Engineers)), building contractors and some Landlords/developers. Fifteen members of each of the professional bodies were randomly selected and given questionnaires to complete while 150 landlords/developers were also randomly selected and given questionnaires to fill while 40 building contractors were equally randomly selected for the purpose of administration of questionnaires. In all a total of 75 questionnaires were administered on the professionals out of which 42 questionnaires were returned duly filled and found useful for the study. Also out 150 questionnaires given to the landlords/developers for completion, only 85 questionnaires were returned completed and found useful for the study while out of 40 questionnaires given to the building contractors, only 14 of them were returned. The questionnaires distribution and returned rates are as shown in Table 1 below. Secondary sources included historical data of buildings that had collapsed in the past in Lagos State sourced from various publications in the newspapers, magazines as well those obtained from Lagos State Physical Planning and Development Authority and Lagos State Materials Testing Laboratory. The data so collated were analysed using descriptive and analytical statistical tools.

**Table 1. Questionnaire Distribution to the Respondent Stakeholders and Response Rates**

| Stakeholders<br>(Professionals Contractors & Landlords/Developers) | Questionnaire<br>Distribution | Response<br>Rate | Percentage<br>(%) |
|--|-------------------------------|------------------|-------------------|
| Estate Surveyors & Valuers   | 15                            | 8                | 53                |
| Architects   | 15                            | 10               | 67                |
| Town Planners  | 15                            | 7                | 47                |
| Quantity Surveyors   | 15                            | 9                | 60                |
| Engineers<br>(Civil/Structure)                                     | 15                            | 8                | 53                |
| Landlords/Developers   | 150                           | 85               | 57                |
| Building Contractors   | 40                            | 14               | 35                |
| Total  | 245                           | 141              | 57.5              |

Source: Author's Field Survey, 2011

#### 5. Some Reported Cases and Possible Causes of Collapsed Building in Lagos State

In Lagos State, the incidents of building collapse in the past decades has resulted in the loss of many lives and properties worth several millions of Naira. Table 2 illustrates some reported cases of building collapse in Lagos State between the period of 2000 and 2010. Many families have been traumatized while many landlords and developers have lost their hard earned savings in the process while several others have died of high blood pressure.

**Table 2. Details of Collapsed Buildings in Lagos State Between 2000 and 2010**

| S/N | Building/Location              | Recorded Date<br>Collapse | Casualties | Suspected Causes of Collapse |
|-----|--------------------------------|---------------------------|------------|------------------------------|
| 1   | Eleganza Building, Ikota, Ajah | 2000                      | 2 deaths   | Structural failure           |

|    |  |      |                              |  |
|----|--|------|------------------------------|--|
|    |  |      | 25 injured                   |  |
| 2  | St. Dennis Catholic Church, Bariga                                     | 2000 | 3 deaths                     | Structural failure   |
| 3  | State High School, Alimosho  | 2000 | 1 death<br>2 injured         | Crowd pressure/Overloading                                       |
| 4  | Folami Pry School, Atunrase, Surulere                                  | 2000 | 1 death<br>2 injured         | Un-braced walls  |
| 5  | 14, Semi Sarumi Street, Itire, Surulere                                | 2000 | 1 death<br>1 injured         | Deterioration of structural slab                                 |
| 6  | 10/12, Suenu Street, Lagos Island                                      | 2000 | 2 deaths                     | Deteriorated structural slab                                     |
| 7  | 12A, Okedeji Lane, Lagos   | 2000 | N/A                          | Flooding   |
| 8  | 14, Ogba Road, Agege   | 2000 | N/A                          | Flooding   |
| 9  | 1, Olorishade Street, Agege  | 2000 | N/A                          | Structural Defect  |
| 10 | Building at Isako Village, off Lekki-Epe Highway                       | 2000 | 5 deaths                     | Structural failure   |
| 11 | Karunwi Central Mosque, 21 Buhari Street, Mushin                       | 2001 | 7 deaths,<br>Several injured | Structural defect  |
| 12 | 15, Akewusola Street, Oworonsoki                                       | 2001 | 1 death                      | Structural failure   |
| 13 | 20, Otigba Street, off Pabble Street, Ikeja                            | 2002 | 10 deaths<br>31 injured      | Structural failure   |
| 14 | 3 Storey Building at Mosadolohun Street, Iba                           | 2002 | 15 deaths<br>Several injured | Structural failure   |
| 15 | 12, Fredrick Faseun Avenue, Okota, Isolo                               | 2002 | 15 deaths<br>Several injured | Structural failure   |
| 16 | Agege Road   | 2002 | N/A                          | Structural Defects   |
| 17 | 3 Storey Building along Allen Avenue, Ikeja                            | 2002 | N/A                          | Structural failure   |
| 18 | Isiaka Street, off Agege Road  | 2002 | N/A                          | Structural Defects   |
| 19 | 10, Jones Street, Ebute Metta West                                     | 2002 | N/A                          | Structural defects   |
| 20 | 49, Olonode Street, Yaba   | 2002 | N/A                          | Structural defects   |
| 23 | 31, Tapa Street, Coker Road, Orile-Iganmu                              | 2003 | 9 deaths<br>Several injured  | Structural failure during construction work                      |
| 24 | 31, Shakili Street, off Ajisomo Street,                                | 2003 | 4 deaths<br>Several injured  | Structural failure   |
| 25 | 2 Buildings at 28 Idumagbo Street and 10, Pedro Street on the same day | 2003 | 30 deaths<br>Several injured | Explosion  |
| 26 | 50, Willoughby Street, Ebute Metta                                     | 2003 | N/A                          | Structural defects   |
| 27 | 28, Idumagbo Avenue  | 2003 | 30 deaths<br>60 injured      | Explosion from storage of pyrotechnic devices used in fire works |
| 28 | Pedro Street, near Idumagbo Avenue                                     | 2003 | N/A                          | Impact of the explosion at 28 Idumagbo Avenue                    |
| 29 | Bereka Lane  | 2003 | N/A                          | Structural defect  |
| 30 | Adeniji Adele Road   | 2003 | N/A                          | Structural defect  |
| 31 | Ojuelegba Road   | 2003 | N/A                          | Construction defects   |
| 32 | 22, Makurdi Street, Ebute Metta  | 2004 | N/A                          | Structural defects   |

|    |   |                                  |   |  |
|----|---|----------------------------------|---|--|
| 33 | Ilasamaja Mushin  | 2004                             | N/A   | Use of poor building materials   |
| 34 | 10, Eliags Street, Lagos Island   | 2004                             | N/A   | Dilapidation/Lack of Maintenance   |
| 35 | 40, Market Street, Shomolu  | 2005                             | N/A   | Structural defects   |
| 36 | Kodesho/Mobolaji Bank-Anthony Way, Ikeja  | 2005                             | N/A   | Structural defects   |
| 37 | Adeniji Adele Street, Lagos Island  | 2005                             | N/A   | Structural defects   |
| 38 | 6, Princess Street, Lagos Island  | 2005                             | N/A   | Poor construction materials  |
| 39 | Mende, Maryland area, Ikeja   | 2005                             | N/A   | Structural defects   |
| 40 | 53, Cemetery Road, Amukoko, Ijora, Ajegunle   | 2006                             | N/A   | Structural defects   |
| 41 | NIDB Building, Broad Street, Lagos Island   | 2006                             | N/A   | Fire incidence   |
| 42 | 71, Ibadan Street, Ebute Metta East   | 2006                             | N/A   | Structural Defects   |
| 43 | 42, Ibadan Street, Ebute Metta East   | 2006                             | N/A   | Structural defects   |
| 44 | 1, Murtala Muhammed Airport Road, Oshodi  | 2006                             | N/A   | Structural defects   |
| 45 | 6A, Milverton Close, Ikoyi  | 2006                             | N/A   | Dilapidation   |
| 46 | 118, Ojuelegba Road, Surulere   | 2006                             | N/A   | Structural defects   |
| 47 | Opposite Rosellas, LASU/Iba Road, Iba   | 2006                             | N/A   | Structural defects   |
| 48 | 48, Adams Street, Lagos Island  | 2006                             | N/A   | Structural defects   |
| 49 | 38, Idumagbo Avenue, Lagos Island   | 2006                             | N/A   | Structural defects   |
| 50 | 32B, Egerton Lane, Oke Arin   | 2006                             | N/A   | Structural defects   |
| 51 | 71, Agoro Street  | 2006                             | N/A   | Structural defects   |
| 52 | 8, Ashaka Street, Abule-Nia, Ebute Metta  | 2006                             | N/A   | Structural defects   |
| 53 | Ebute-Metta, Lagos  | 2007                             | Several people                                | Unauthorised Conversion/Poor Supervision/Use of Poor Quality Materials   |
| 54 | Building Under Construction at Isopako, Odowo Street, Cairo, Oshodi; Lagos                          | 26 <sup>th</sup> April, 2010     | 4 persons killed while 12 others were injured | Use of Substandard Building Materials  |
| 55 | Uncompleted Storey Building at Adenike Street, Off New Market, Oniru Estate, Victoria Island, Lagos | 2 <sup>nd</sup> June, 2010       | 1 person killed, 2 others injured             | Use of Substandard Building Materials, Non-Compliance by House-owners and Contractors with the Approved Building Plan and Weak Structure |
| 56 | 4 Storey Building at 24, Alli Street, off Tinubu Street, Victoria Island, Lagos                     | 28 <sup>th</sup> September, 2010 | 3 persons killed, Several others injured      | Structural Defects/Overloading   |

## 6. Data Analysis and Discussion

Table 3 summarises the frequency of the occurrences of building collapse in Nigeria over the period of ten (10) years spanning 2000 and 2010 as extracted from the records of collapsed buildings in the metropolis

contained in the above Table 2. The analysis revealed that the incident of building collapse in Lagos reached its peak in the year 2006 when a total number of 13 building collapse occurred which represent 24.10%. This is closely followed by year 2000 when 10 building collapse also occurred which represented 18.52% of the total building collapse in Lagos. However, the figures of building collapse for years 2008 and 2009 could not be ascertained from the secondary sources employed for the study.

**Table 3. Analysis of the Recorded Building Collapse in Lagos State Between 2000 and 2010**

| Year  | Frequency of Building Collapse | % of Total Building Collapse |
|-------|--------------------------------|------------------------------|
| 2000  | 10                             | 18.52                        |
| 2001  | 2                              | 3.70                         |
| 2002  | 8                              | 15.00                        |
| 2003  | 9                              | 16.70                        |
| 2004  | 3                              | 5.55                         |
| 2005  | 5                              | 9.26                         |
| 2006  | 13                             | 24.10                        |
| 2007  | 1                              | 1.85                         |
| 2008  | -                              | -                            |
| 2009  | -                              | -                            |
| 2010  | 3                              | 5.55                         |
| Total | 54                             | 100                          |

Source: Author's Analysis, 2011

The data collected through the questionnaires from the professionals in the building industry, contractors and landlords/developers were analysed using Relative Importance Indices (RII) as shown in Tables 4, 5 and 6 ranked the reasons adduced by the stakeholders. Table 4 showed the ranking of the professionals in the building industry regarding their perceived causes of building collapse. The use of sub-standard building materials, poor workmanship by contractors, use of incompetent contractors, faulty construction methodology, heavy downpour, non compliance with specifications/standards by developers/contractors, inadequate/lack of supervision/inspection/monitoring, structural defects, defective design/structure, illegal conversion/alterations/additions to existing structures and dilapidating structures were identified as the combined causes responsible for building collapse in Lagos. Going by the reasons adduced by the professionals, poor workmanship by contractors, sub-standard building materials, illegal conversion/alterations/additions to existing structures and structural defects were ranked first, second, third and fourth respectively.

**Table 4. Reasons Adduced for Incessant Building Failure and Collapse From the Building Professionals Perspective**

| Perceived Causes   | SA | A  | N | D | SD | Total | RII  | Ranking         |
|--|----|----|---|---|----|-------|------|-----------------|
| Sub-Standard Building Materials  | 16 | 12 | 3 | 6 | 5  | 154   | 3.67 | 2 <sup>nd</sup> |
| Poor Workmanship by Contractors  | 17 | 16 | 1 | 3 | 5  | 163   | 3.88 | 1 <sup>st</sup> |
| Use of Incompetent Contractors   | 13 | 11 | 6 | 4 | 8  | 143   | 3.40 | 6 <sup>th</sup> |
| Faulty Construction Methodology  | 8  | 13 | 5 | 6 | 10 | 129   | 3.07 | 9 <sup>th</sup> |
| Heavy Downpour   | 9  | 14 | 7 | 5 | 7  | 139   | 3.31 | 8 <sup>th</sup> |
| Non-Compliance with Specifications/Standards by Developers/Contractors | 12 | 13 | 4 | 4 | 9  | 142   | 3.38 | 7 <sup>th</sup> |
| Inadequate/Lack of   | 15 | 10 | 6 | 4 | 7  | 148   | 3.52 | 5 <sup>th</sup> |

|   |    |    |   |   |    |     |      |                  |
|---|----|----|---|---|----|-----|------|------------------|
| Supervision/Inspection/Monitoring                               |    |    |   |   |    |     |      |                  |
| Structural Defects  | 13 | 12 | 8 | 3 | 6  | 149 | 3.55 | 4 <sup>th</sup>  |
| Defective Design/Structure                                      | 8  | 10 | 6 | 5 | 13 | 121 | 2.88 | 11 <sup>th</sup> |
| Illegal Conversion/Alterations/Additions to Existing Structures | 16 | 11 | 4 | 4 | 7  | 151 | 3.60 | 3 <sup>rd</sup>  |
| Dilapidating Structure  | 10 | 12 | 5 | 6 | 9  | 134 | 3.19 | 10 <sup>th</sup> |

Where SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree and SD = Strongly Disagree

Source: Author's Field Survey, 2011

Table 5 below concerns the reasons alleged by the landlords/developers as the main causes responsible for building collapse in Lagos. Just like the professionals in the building industry, the reasons adduced for building collapse include the use of sub-standard building materials, poor workmanship by contractors, use of incompetent contractors, faulty construction methodology, heavy downpour, non compliance with specifications/standards by developers/contractors, inadequate/lack of supervision/inspection/monitoring, structural defects, defective design/structure, illegal conversion/alterations/additions to existing structures and dilapidating structures while faulty construction methodology, use of incompetent contractors, poor workmanship by contractors, defective design/structure and inadequate/lack of supervision/inspection/monitoring were ranked as first, second, third, fourth and fifth respectively. Dilapidating structures and illegal conversions/alterations/additions to existing structures were ranked tenth and eleventh respectively. It is pertinent to note that both building professionals and landlords/developers ranked dilapidating structure as number ten in the hierarchy of the causes of building collapse. However, while the professionals ranked poor workmanship as the number one reason for occurrence of building collapse, the landlords/developers were of the opinion that faulty construction methodology was the first major reason responsible for building collapse.

**Table 5. Reasons Adduced for Incessant Building Failure and Collapse From the Landlords/Developers Perspective**

| Perceived Causes   | SA | A  | N  | D  | SD | Total | RII  | Ranking          |
|--|----|----|----|----|----|-------|------|------------------|
| Sub-Standard Building Materials  | 18 | 15 | 16 | 21 | 15 | 255   | 3.0  | 9 <sup>th</sup>  |
| Poor Workmanship by Contractors  | 20 | 17 | 17 | 18 | 13 | 268   | 3.15 | 3 <sup>rd</sup>  |
| Use of Incompetent Contractors   | 15 | 25 | 14 | 19 | 12 | 278   | 3.27 | 2 <sup>nd</sup>  |
| Faulty Construction Methodology  | 16 | 14 | 26 | 24 | 5  | 307   | 3.61 | 1 <sup>st</sup>  |
| Heavy Downpour   | 14 | 22 | 12 | 25 | 12 | 256   | 3.01 | 7 <sup>th</sup>  |
| Non-Compliance with Specifications/Standards by Developers/Contractors | 11 | 17 | 21 | 22 | 14 | 244   | 2.87 | 10 <sup>th</sup> |
| Inadequate/Lack of Supervision/Inspection/Monitoring                   | 16 | 16 | 22 | 18 | 13 | 259   | 3.04 | 6 <sup>th</sup>  |
| Structural Defects   | 18 | 15 | 24 | 14 | 14 | 264   | 3.10 | 5 <sup>th</sup>  |
| Defective Design/Structure   | 21 | 18 | 11 | 22 | 13 | 267   | 3.14 | 4 <sup>th</sup>  |
| Illegal Conversion/Alterations/Additions to Existing Structures        | 18 | 14 | 8  | 21 | 24 | 236   | 2.78 | 12 <sup>th</sup> |
| Dilapidating Structure   | 14 | 17 | 14 | 21 | 19 | 241   | 2.83 | 11 <sup>th</sup> |

Where SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree and SD = Strongly Disagree

Source: Author's Field Survey, 2011



Table 6 underneath contains the analysis of the causes of building failure and collapse from the view point of the contractors handling the building construction. Dilapidating structure, illegal conversion/alterations/additions to existing structures, use of sub-standard building materials and defective design/structure were ranked first, second, third and fourth respectively by the contractors. Inadequate/lack of supervision/inspection/monitoring and use of faulty construction methodology ranked fifth and sixth with structural defects and heavy downpour following. An in-depth interview conducted with some of the stakeholders as well as the result of the analyses of the causes adduced by them actually showed the level of bias amongst the stakeholders. Each of the stakeholders in attempt to justify themselves tried to lay the blame at the door step of other stakeholders involvement in the building construction and/or actions or inactions.

**Table 6. Reasons Adduced for Incessant Building Failure and Collapse From the Building Contractors Perspective**

| Perceived Causes   | SA | A | N | D | SD | Total | RII  | Ranking          |
|--|----|---|---|---|----|-------|------|------------------|
| Sub-Standard Building Materials  | 5  | 4 | 1 | 2 | 2  | 50    | 3.57 | 3 <sup>rd</sup>  |
| Poor Workmanship by Contractors  | 0  | 1 | 1 | 4 | 8  | 23    | 1.64 | 11 <sup>th</sup> |
| Incompetent Contractors  | 0  | 1 | 1 | 5 | 7  | 24    | 1.71 | 10 <sup>th</sup> |
| Faulty Construction Methodology  | 3  | 2 | 2 | 3 | 4  | 39    | 2.78 | 6 <sup>th</sup>  |
| Heavy Downpour   | 2  | 2 | 1 | 4 | 5  | 34    | 2.43 | 8 <sup>th</sup>  |
| Non-Compliance with Specifications/Standards by Developers/Contractors | 0  | 1 | 2 | 4 | 7  | 25    | 1.78 | 9 <sup>th</sup>  |
| Inadequate/Lack of Supervision/Inspection/Monitoring                   | 2  | 3 | 3 | 3 | 3  | 40    | 2.86 | 5 <sup>th</sup>  |
| Structural Defects   | 2  | 1 | 4 | 2 | 5  | 35    | 2.50 | 7 <sup>th</sup>  |
| Defective Design/Structure   | 3  | 4 | 2 | 2 | 3  | 44    | 3.14 | 4 <sup>th</sup>  |
| Illegal Conversion/Alterations/Additions to Existing Structures        | 5  | 4 | 2 | 2 | 1  | 52    | 3.71 | 2 <sup>nd</sup>  |
| Dilapidating Structure   | 6  | 5 | 1 | 1 | 1  | 61    | 4.36 | 1 <sup>st</sup>  |

Where SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree and SD = Strongly Disagree

Source: Author's Field Survey, 2011

## 7. Conclusion and Recommendations

From the foregoing analysis and discussion it became obvious that the causes of building failure, from the view points of the stakeholders range from sub-standard building materials, poor workmanship by contractors, incompetent contractors, faulty construction methodology, non-compliance with specifications/standards by developers/contractors, structural defects, defective design/structure, defective design/structure, defective design/structure and defective design/structure. However, the analyses of the information gather from the stakeholders consisting of the represented by the professionals in the building industry, the landlords/developers and the contractors revealed showed that there was divergent of opinions as to the causes of building collapse by these various stakeholders in attempt by each of them to exonerate themselves from the blames for building collapse.

This finding could be attributable to the level of understanding of the stakeholders regarding the consequences of building collapse. It is rather disheartening to note that in attempt by the clients (and lords/developers) to save cost, they tend to resort to using low quality materials, employ the services of quacks or incompetent contractor in building construction.

In addition, they take to illegal conversion/alterations and/or additions to existing structures without the

consideration of stability requirement in attempt to derive maximum benefit/returns from such structures. Moreover, from interaction with the stakeholders, it has been observed that the quacks or non-professionals have taken up the services of architects and Engineers in building construction thereby resulting to erection of defective buildings which are susceptible to structural failure and collapse of such buildings.

Rather than for the stakeholders accepting their culpabilities where there was cause for such and take necessary corrective actions, they were all engaging in bulk passing which will not pay for any of the stakeholders. In view of the above findings, the following recommendations are proffered to minimise the incidence of building failure and collapse in Lagos State in particular and the country as a whole.

While the issue of collapse building cannot be totally eradicated but the degree can to a large extent be reduced or minimised if the government at all levels and the stakeholders can accept to tackle the problem proactively. First, the public must cultivate the culture of not looking the other way whenever they see any building they suspect of capable of collapsing by reporting such cases to appropriate government authorities before such buildings reaches the level of collapsing with their attendant risks of claiming lives and properties.

Each professional body (including the press and not limited to the industry) in the state should have the lists of their members and their residential and office addresses within each zonal planning office or local government and select representative Lagos should as a matter of necessity assist the official of the Urban and Regional Planning Authority in monitoring physical developments going on in their area of operations. They should be empowered to approach and bring to the attention of physical planning authority any sign of temporary fencing, excavation, conversion, alterations or addition to existing structures within their neighbourhood and monitor the progress of such works.

The state Ministry of Environment and Physical Planning in collaboration with the stakeholders as well as the public should review existing planning regulations and byelaws with the aim of updating them and making such revised versions readily available. The state government in collaboration with the professional bodies in building industry should ensure full compliance with new byelaws and building regulations and violator sanctioned appropriately.

## References

- Adebayo, S.O. (2000). "Improving Building Techniques" Proceedings of a Workshop on Building Collapse: Causes, Prevention and Remedies> The Nigerian Institute of Builders, Lagos State
- Adediji, B. (2006). "Incessant Building Collapse: Estate Surveyors and Valuers' Roles, Responsibility and Liability". A Paper Delivered at the CPD Seminar Organised by Lagos State Branch of the Nigerian Institution of Estate Surveyors and Valuers on 30<sup>th</sup> August, 2006.
- Ede, A.N. (2010a). "Structural Stability in Nigeria and Worsening Environmental Disorder: The Way Forward". The West Africa Built Environment Research Conference, Accra; Ghana, July 26-28, pp 489-498
- Ede, A.N. (2010b). "Building Collapse in Nigeria: The Trend of Casualties in the Last Decade (2000-2010)". International Journal of Civil and Engineering, Vol. 10. Pp 32-42
- Nigerian Tribune (2008). "Building Collapse: Will Building Code Be The Saving Grace?" African Newspapers of Nigeria PLC (Tuesday 12<sup>th</sup> August, 2008)
- Oloyede, S.A., Omoogun, C.B. and Akinjare, O.A. (2010) " Tackling Causes of Frequent Building Collapse in Nigeria" *Journal of Sustainable Development, Vol. 3, No. 3, pp. 127-132.*
- Oni, O.A. (2010) "Analysis of Incidences of Collapsed Buildings in Lagos Metropolis, Nigeria". International Journal of Strategic Property Management Vol. 14 pp 332-346
- U.S. Census Bureau (2006) State and Country Quick Facts. Retrieved October 18, 2010 (<http://quickfacts.census.gov/qfd/states/26/26165.html>).