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The Study of Claims Arising from Building Collapses: Case Studies from Malaysia, Nigeria, Singapore and Thailand

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Abstract

Despite the fact that numerous solutions had been proffered by so many researchers to the frequent occurrences of building collapses around the world, this has not stem the tide of these occurrences. There is a clamor that all responsible parties must begin to pay damages for their roles in any building collapse incidence. This will reduce or terminate the negligent attitude at which building construction professionals and contractors in discharging their responsibilities and victims who had suffered losses in building collapse will be able to get compensation for their damages. In view of this fact, what are the causes of building collapse and claims that may arise when building collapsed. This study investigated the causes of building collapse and through relevant building collapse case laws the claims that may arise when building collapses. Through descriptive analytical techniques carried out on series of Court decision on some selected building collapse case laws, the result of the findings revealed that contractual and tortious claims were major claims that may arise from incident of building collapse cases. The study therefore concludes that owners of collapse building that has a contractual relationship with the professionals and the contractors can make both contractual and tortious claims to regain their loses and also third parties who has no contractual relationship with the parties can also make claims under tortious, once it is obvious that they have suffered losses in the event of any building collapse.

Keywords: Building Collapse, Contractual Claims, Tortious Claims, Claimant, defendant.

1. Introduction

The frequency of building collapses in the recent times has become a major concern to all and sundry. The rate at which it is occurring and the magnitude of the losses being recorded in terms of lives and property is becoming worrisome to the government, all the stakeholders in the construction industry and also to the society at large.

The human and material waste associated with building collapses are enormous, On June 29th 1995, an estimate figure of about 502 people were feared dead, 937 were categorized as seriously injured, and properties worth 210 billion won ($216million) were destroyed when a five storey departmental store in Seoul, South Korea collapsed.

Furthermore, on 11th of December, 1993, a Highland tower an apartment building collapsed in Tamm Hillview, ulu klang Selangor, Malaysia, leaving 48 people dead. A building also collapsed in Western Norwegian Coastal town of Alesund, on Wednesday 25th march, 2008, in which 15 people were injured and 5 people were confirmed dead, Jaya supermarket at section 14, PJ in Malaysia, collapsed on 28th May 2009.

Also in Kuala Terengganu, a stadium Roof collapsed on 2nd June 2009. It was also reported that a four storey shopping complex collapsed in Abuja – Nigeria on Tuesday 29th July 2008, where about 100 people were trapped. In addition to this endless list a building located at Oba Akran Road in Ikeja, Lagos Nigeria collapsed

on Tuesday, November 29th 2011. The building, which was a cold store owned by Hano Industry, began to shake few minutes before it collapsed.

On 27th June, 2009, a 13 storey residential building under construction collapsed in Shanghai, China. On Wednesday 24th April, 2013, at least 1110 people were killed and many others were injured after an eight-storey building housing garment factories collapsed in Savar, Darkar, Bangladesh. Ayedun, et al (2012), in their research of the collapse of building in Nigeria from 2000- 2010, put the estimation of human life loses to 145 deaths, 250 injured and several properties worth millions of naira destroyed.

Building is defined as any human-made structure used or intended for supporting or sheltering any use or continuous occupancy, or an act of construction (I.e. the activity of building,) Collins (2003). Buildings serve several needs of the society – primarily as shelter from weather and as general living space, to provide privacy, to store belongings and to comfortably live and work. A building as a shelter represents a physical division of the human habitat (a place of comfort and safety) and the outside (a place that at times may be harsh and harmful) this was supported by Olusola, (2002) who viewed building as a space that is necessary for protection from natural environment and constructed for a specific use.

The past few decades has witnessed occurrences of so many buildings collapses at various stages of completion and with several lives lost and property worth millions destroyed. Several reasons and causes had been put forth by different researchers.

Ayodele (2009) viewed reinforcement as one of the major factors in the collapse of building in Nigeria, Fadamiro (2002); Dare (2002); Windapo (2001); Ogunsemi (2002) also carried out research on how poor materials had been the causes of building failure in Nigeria. Ogunsemi (2002) observed that the use of lack of qualified and inappropriate professionals form part of the major causes of building collapse in Nigeria. Holland (1992) also opines that faulty design has the highest percentage of the causes of building collapse.

Meanwhile, the Consumer Association of Penag, Malaysia, established in 1970, declared that claims should be made from construction professionals for buildings collapse. Omeife (2012), supported the view by calling for arraignment of construction Professionals that are indicted over the incessant building collapse. He further said that, “charging professionals with negligence and conspiracy to commit damage and loss of lives when a building collapses will check unprofessional indulgence”. **In the case of Dr Abdual Hamid Rashid & Anor v Jerusan Malaysia Consultants (sued as a firm) & Ors-(MLJ 546-15)**. All the professionals and the contractor were held liable for the collapse of the building.

Also Simon (1979) viewed, contractor as one of the building team that could be liable for his failure to exercises reasonable care and skill in Building construction. Moreover, when building collapse occurs, the main issue that may arise is financial compensation for the losses in term of properties and loss of lives, even though the loss of life cannot be regained but it can be compensated. In view of this forgoing, what are the causes responsible for building collapse and the possible types of claims that can arise from it? The main objectives are to determine the causes of building collapse and claims that can arise from it.

2. Research Methodology

To achieve these objectives, a secondary data and legal case law on building collapse were used. The 72 occurrences of building collapse cases were selected from 4 countries based on operation of common law in their legal systems; namely, Malaysia, Nigeria, Singapore and Thailand from the year 1960-2010. The analysis employed for this study is descriptive analytical technique.

3. Data Presentation and Discussion of findings

3.1 Related work

A building is structurally used for human activities and is a product of the construction industry which serves as both backward and forward linkages to other economic sector Ofori (1990). Buildings are constructed for a specific use and it must be fit for such purpose. Odunlami (2002) explained that when building meant to satisfy certain conditions during their use fail to do so it becomes a snare.

3.2 Causes of building collapses

A building collapses as a result of its structural failure Adeyemi (2002). Structural failure is refers to as the loss of the load-carrying capacity of a component or member within a structure or of the structure itself. Structural failure is initiated when the material is stressed to its strength limit, thus causing fracture or excessive deformations. In a well-designed system, a localized failure should not cause immediate or even progressive collapse of the entire structure.

(Fadilah 2013) observed that investigations into construction flaws and accidents almost always lead to the discovery that specifications and safety procedures have been compromised in the interest of profit and speed. Buildings generally are supposed to be constructed in conformity to the laid down standards and rules.

Goh (2010) observed some of the causes in the collapsed of the sports stadium at Kuala Terrengganu in Malaysia and concluded that some of the factors are familiar and common in our construction industry and almost every site are faced with these issues. He analysed that not following the laid down standard and procedure of constructing always resulted into such collapsed. Philip (2010) revealed inadequate design, roof not being properly erected resulted into misalignment, no quality control on Site, Materials and Workmanship were not in accordance to specifications and alternative designs from Contractor was adopted without proper analysis, all these lead to the collapse of the stadium.

Salau (1996) grouped the causes of collapse of building in accordance to the stages of construction and of building life, namely: planning and design stage, construction stage and the stage of building usage. This was also supported by Sobotie (1996), Makinde (1996), Fadamiro (2002) and Oloyede et al (2010).

Table 2: Percentage Frequency of Causes of Building Collapse in Four Countries (1960-2010).

No	Investigated causes of building collapse	Malaysia	Nigeria	Singapore	Thailand	Total	Percentage (%)
1	Structural failure	1	30	-	-	31	36.00
2	Faulty design	2	9	2	1	14	16.28
3	Poor workmanship	1	10	-	-	11	12.79
4	Substandard materials	1	9	-	-	10	11.63
5	Due to surrounding building development	2	0	-	-	2	2.23
6	illegal conversion	0	4	1	1	6	6.97
7	Inexperience contractor	3	2	-	-	5	5.81
8	Building usage	0	7	-	-	7	8.14
	Total					86	100

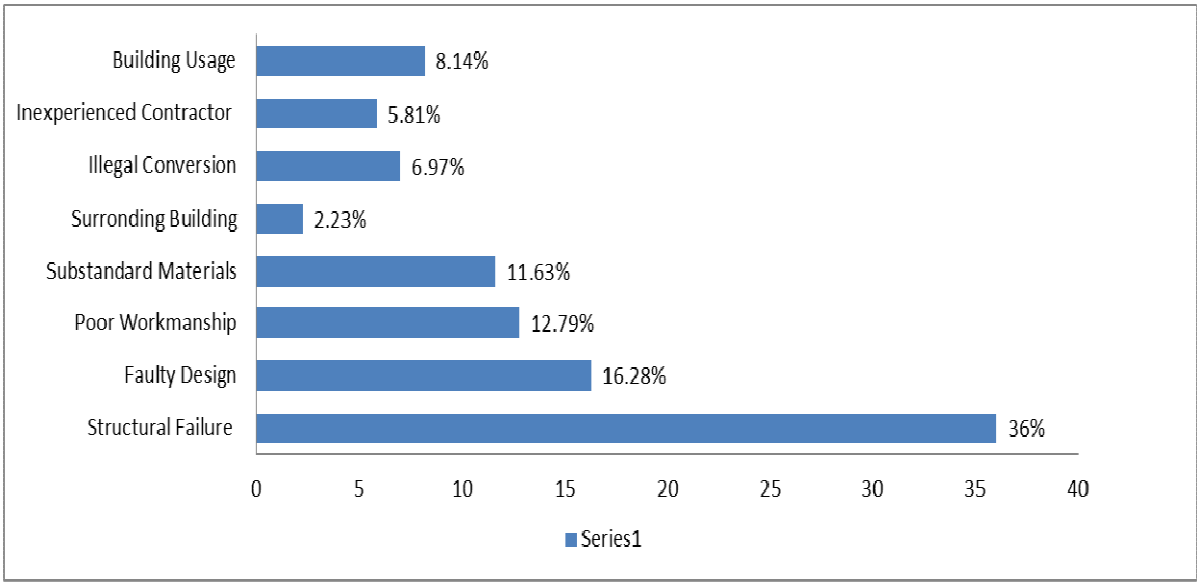

Figure 1: Causes of building collapse

Structural failure, Faulty design and poor Workmanship forms major causes of building collapse in those countries in consideration, in table 2 which was generated from table 1 in the appendix revealed that the trio had 36%, 16% and 13% occurrence respectively. Folagbade (2002) argued that there were no enabling building laws and regulation in Nigeria and those ones that are available are too weak to regulate the building construction processes, this as further explained reasons behind the structural failure that causes the collapse of so many buildings in Nigeria. Furthermore, structural failure is follow by faulty design and poor workmanship which has 16% and 12% respectively, this result of this study also corroborated the findings of (Bamidele, 2000) as cited by (Fadamiro, 2002) and (Holland et al, 1992).

3.3 Types of Claims in building Collapse

Most building collapse in construction industry always generate controversy, long and expensive argument (Feld & Carper,1997) as cited by (Mohamad et al, 2012) and most of the time this types of argument centered on who is responsible and often ends with litigation. When building collapses, it causes personal injuries or property damages, numerous parties including the building owner, design professionals and contractors may be held responsible for the resulting damages (Jonathan and Lori, 2013).

The parties involved in the collapsed building are bound to trade blames which can be resulted to making claims for the losses suffered in the incident. The potential claims that may be brought as a result of the collapse include those for property damage as in **Sharp v E.T Sweeting & Son Ltd, 1 WLR 655**, personal injury or wrongful death as experienced in Bukit Antarabangsda collapse in Malaysia on Dec. 6, 2008 in which 4 people were killed. Engineer k Thanarajah has to sue for claim for the wrongful death of his wife and damage to their properties. There could also be worker's compensation and business interruptions claims. Jonathan and Lori, (2013) explains that the property owner could also bring breach of contract and negligence claims against the responsible design professionals and contractors to the extent that faulty design or workmanship contributed to or caused the collapse as in the case of **Dr Abdual Hamid Rashid & Anor v Jerusan Malaysia Consultants (sued as a firm) & Ors-(MLJ 546-15 November 1996).**

The consequences of building collapse usually have economic (financial) and social implications. Investigations conducted on most building collapse cases have shown that, most victims are the building owners and in some cases third parties (Sobotie, 2002).

The basic legal premise controlling the possibility of a claim as a measure of seeking redress is that someone has suffered damage. Also, that such damage may have far- reaching financial implications. The following are possible claims that can be raised by any parties who suffered losses in building collapse occurrences based on legal theories of liability.

Contractual claims are as a result of contractual liability arising from breach of duty imposed by the terms of the contract. Any party that wants to make any claim under this must have a contractual relationship with the other party and it is necessary for the claimant to establish the proof of their contractual relationship before they can make claim. The claimant must show that a contract exist between the parties, that the contract was broken by an action, that the defendant is the responsible party and that the claimant suffered a monetary loss.

Every person (as an individual or corporate entity) has duties under the law of tort. These duties are set out by the law (common law or statutes) Examples: not to interfere with ones neighbor's enjoyment and comfort of his property not to intrude with someone else's property without permission.

If a person breaches his duty (as determine under the law of tort), another person suffers a loss or an injury, this will give an injured person a right to claim for damages from the party in breach, this claim for damages is a civil action as in **Osemobor v Niger Biscuit Co. Ltd (1973) NCLR 382.**

Before a tortious claims can be made there must be a wrongful or unauthorized act or omission; and that wrongful or unauthorized act or omission affects the interests or rights of others; and the injured party or victim has a right to claim for damages.

3.1.1 Difference between Tortious Claims and Contractual Claims

(a) Tort claim is done by virtues of the law while contract claim is done by the virtues of the agreement.
(b) Tort claims is not based on the relationship between the parties while contract claims are based on the existence of the legal duties or relationship between the parties.
(c) Tort is all about compensation for harm suffered as a result of the breach of duty fixed by law. The emphasis is on wrongs of commission rather than wrongs of omission. And contract claim is to enforce contractual promises and to deter breaches of contract. The emphasis is on the failure by omission to keep the terms of a promise.
(d) Tort claim is to restore the claimant as far as possible to the position he was in before the commission of the tort. Contractual claim is to award damages to the claimant to compensate him for what he would have obtained if the contract had been performed.
(e) Tortious claim is raised when the damage is suffered and contractual claims are raised when the contract is breached.
(f) Proof to establish fault is necessary to do so in tortious claims but in contractual claims the need to prove fault is not always present.

Table 3: Building Collapse Cases and the parties involves.

SAMPLE	CASE TITLE	JURICDICTION	PLAINTIFF (CLAIMANT)	DEFENDANT
1	Dr Abdual Hamid Rashid & Anor v Jerusan Malaysia Consultants (sued as a firm) & Ors- (MLJ 546-15 November 1996	High and appeal court of Malaysia.	Dr. Abdul Hamid Rashid.	Jurusan Malaysia Consultant.
2	Steven Phoa Cheng Loon & Orgs v Highland Properties Snd Bhd & orgs.	*High Court and Appeal Court of Malaysia.	Steven Phoa Cheng Loon & Orgs	Highland Properties Snd Bhd & Orgs.
3	Royal Plaza Hotel. V Nakhon Ratchasima Municipality & orgs	High Court and Appeal Court of Thailand	Royal Plaza Hotel	Nakhon Ratchasima Municipality & orgs
4	Case law on collapse of Multipurpose primary school Hall in compassvale, (case not yet reported)	District High Court in Singapore	Compassvale primary school management	*Bill Hong (Engineer) *Joseph Huang (Checker) *BKB Engineering construction (contractor)
5	Case law of the collapse of the 8 storey Mount Royal Hotel, Mende Maryland	Lagos High Court, Nigeria.	Management of Mount Royal Hotel	The Contractor.

Table 4: Summary of Tables (4a-4d in the appendix) of Types of Claims

No	Types of claims	Numbers of times the Claim Appears	Percentage	Ranking
1	Contractual	7	29%	2nd
2	Torturous	15	63%	1st
3	Both	2	8%	3rd
	Total	24	100%	

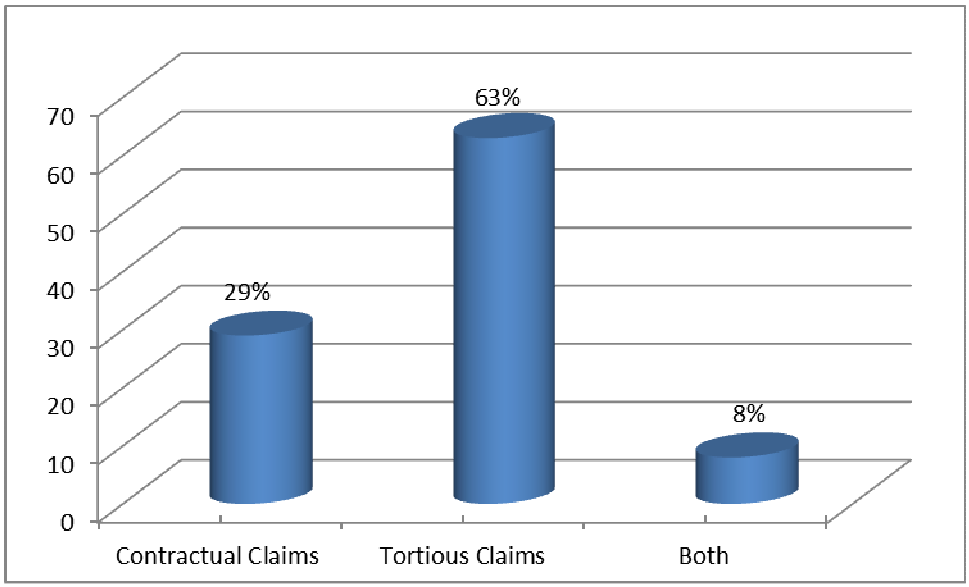

Figure 2: Types of Claims

The figure 2 above shows the result of the analysis of table (4a - 4d) in the appendix and summarizes it in table 4 and also presented the types of claims by the parties who had suffered losses from building collapse case law as shown in table 3. The percentage of claims under tortious is the highest with 63%, this indicates that it does not necessarily means that not until you have contractual relationship with the liable parties in the incident of building collapse then you can make claims from the liable parties. It also reveals that parties can make tortious claims once it can be established that there are losses suffered as a result of the collapse. Contractual claims had only 29% this signifies that most parties involve in the building construction does not involve in proper contract agreement documentation or they don't understand their rights in the contract.

4. Conclusion and Recommendation

From the foregoing analysis and discussions presented, it can be inferred that the major causes of the building collapse from the reported 72 cases in four countries has been structural failure, faulty design and poor workmanship, this could also be applicable to other countries of the world.

Also from the findings of this study, it is believed that, there are three types of claims that can arise from any incident of building collapse, namely contractual claims, tortious claims and both contractual and tortious claims; this implied that a party can makes his/ her claims in both situations.

The following are therefore recommended in order for parties who had suffered losses in building collapse incidents to make their claims:

(a) Government should endeavor to help carry out investigations of any building collapse incidences, so as to enable the victims to know the responsible parties and whom to make claim from.
(b) Government should help the owner or the third parties who must have suffered losses in building collapse incidents to prosecute their cases in court in other for them to make their claims if they are unable, due to the expensive nature of litigations.
(c) Government should make laws that will enhance the effectiveness and standard construction of a building.
(d) Also, government should monitor, regulate and enforce the Law, for its effectiveness.
(e) Every building owner should ensure that qualify professionals and experienced contractors are being engaged to carry out their building construction processes.
(f) Every professional body should monitor their members and also be ready to penalize any erring member who iss found liable in building collapse incident.

References

Adeyemi E. O (2002) An opening address on Building Collapse: Causes, prevention and Remedies. In ed. Ogunsemi DR, Building Collapse: Causes, prevention and remedies. In Workshop organized by Ondo State Nigerian Institute of Building, Akure-Nigeria.

Ayodele E. O. (2009). Collapse of Buildings in Nigeria- Roles of Reinforcement. Continental Journal Environmental Sciences 3: 1-6, 2009.

Ayedun, C. A, Durodola, O. D and Akinjare, O. A. (2012) An Emprical Ascertainment of the Causes of Building Failure and Collapse in Nigeria.

Bamidele, E.O. (2000) An Assessment of the Collapse of Building Structure in Nigeria. (A case study of Lagos State) An unpublished PGD thesis, Federal University Of Technology Akure.

Collins, T. (2003) English dictionary- Complete and Unabridge. (2nd ed) Harper Collins publisher.

Churks O. (2012), Article on the Arraignment of professionals dicted Over Building Collapse. On Leadership Magzine on 12th of August, 2012.

Dare. S. (2000), Building Design, Buildability and Site Production. Building Collapse: Causes, prevention and Remedies. In ed. Ogunsemi DR, Building Collapse: Causes, prevention and remedies. In Workshop organized by Ondo State Nigerian Institute of Building, Akure-Nigeria.

Fadilar, B. (2013). Keeping our building safe: Building standard article, Malaysia Association of standard users ed. 2013.

Fadamiro. J. A. (2002), An Assessment of Building Regulations and Standards and the Implications for Building Collapse in Nigeria. In ed. Ogunsemi DR, Building Collapse: Causes, prevention and remedies. In Workshop organized by Ondo State Nigerian Institute of Building, Akure-Nigeria.

Fagbenle, O. and Oluwunmi A. (2010) "Building Failure and Collapse in Nigeria: the Influence of the Informal Sector" Journal of Sustainable Development, Vol. 3. No. 4

Folagbade, S. O.(2002) Case Studies of Building Collapse in Nigeria. In ed. Ogunsemi DR, Building Collapse: Causes, prevention and remedies. In Workshop organized by Ondo State Nigerian Institute of Building, Akure-Nigeria.

Feld, J., and Carper, K. L. (1997). Construction failure (Vol. 78). John Wiley & Sons.

Goh, P. (2010) An article on Structural failure/ Building Failures: a look at Structural failures of the Sports Stadium at Kuala Terrengganu, Malaysis and how to avoid this failure. Mec. Engineers (mecengineers.net) retrieved 26th June, 2013.

Holland, R. , Montgomery B. E. , Smith and Moore J. F.A.(1992). Appraisal and Repair of Building Structures. London: Thomas Telford.

Makinde, R. (1996) Collapsed Buildings: Whose Responsibility- Engineer, Town planners, Architect or Government. In ed. Ogunsemi DR, Building Collapse: Causes, prevention and remedies. In Workshop organized by Ondo State Nigerian Institute of Building, Akure-Nigeria.

Mohamad, M. I., Nekooie, M. A., and Kamaruddin, N. B. C. (2012). The Adequacy of Contractual Provisions in Managing Construction Failure in Malaysia. European Journal of Business and Management, 4(1), 22-37.

Olusola. K. O. (2002) Structural Stability of Building Structures. In ed. Ogunsemi DR, Building Collapse: Causes, prevention and remedies. In Workshop organized by Ondo State Nigerian Institute of Building, Akure-Nigeria.

Oloyede, S. A, Omoogun, C.B. and Akinjare, O. A. (2010) " Tackling Causes of Frequent Building Collapse in Nigeria" Journal of Sustainable Development, Vol. 14 pp 127-132.

Odunlami, A. A. (2002). Building materials specification and enforcement on Site. In ed. Ogunsemi DR, Building Collapse: Causes, prevention and remedies. In Workshop organized by Ondo State Nigerian Institute of Building, Akure-Nigeria.

Ogunsemi. D. R. (2002), Cost Control and Quality Standard of Building Projects.In ed. Ogunsemi DR, Building Collapse: Causes, prevention and remedies. In Workshop organized by Ondo State Nigerian Institute of Building, Akure-Nigeria.

Ofori. G. (1990) The construction Industry: Aspect of Its Economics and Management. Singapore University Press, Kent Ridge, Singapore.

Salau, M. A. (1996) Structural Failure in Collapse Building: Causes and Prevention. Proceeding of a seminar on collapse Buildings in Lagos, Nigeria. On 22nd and 23rd August. 1996.

Simon, S. M. (1979), Construction Contracts and Claims. New York: McGraw-Hill Book Company.

Sobotie. I. O. (1996), Economic and Social Implications Of Collapsed Buildings. Proceeding of a seminar on collapse Buildings in Lagos, Nigeria. On 22nd and 23rd August. 1996.

Windapo B.O. (2002) The threat of building collapse on sustainable development in Nigeria. Proceedings of the 36th Annual Conference of Nigerian Institute of Building on Sustainable development and built environment, 55 – 56.

Appendix

Table 1: Reported Cases of Building Collapse from (1960-2010) in Malaysia, Nigeria, Singapore and Thailand.

NO	YEAR	COUNTRY	LOCATION	TYPE OF BUILDING / STRUCTURE	CAUSES OF BUILDING COLLAPSE	CASUALTIES
1	1968	Malaysia	Lot number 503, at Jalan Raja Laut, Kuala Lumpur.	Four storey shop house.	Poor quality of materials. Inexperience contractor. Premature striking of formwork.	7 people killed 11 injured.
2	1974	Nigeria	Mokola, Ibadan, Oyo, state.	Multi-storey Building under construction	Excessive loading/structural failure	27 people killed
3	1976	Nigeria	O.A.U., Ile-ife	Partial collapse of an Hostel	Structural Failure	Nil
4	1777	Nigeria	Barnawa Housing kaduna	Residential building	Faulty design	28 killed
5	1977	Nigeria	Government Scond. Kaduna	School building	Carelessness in usage	7 killed
6	1980	Nigeria	Barnawa Housing, Kaduna	3-Storey Residential building	Faulty structural design	Nil
7	1985	Malaysia	Lot3007,Kemendah.Selangor.	Double story bungalow.	Faulty design and inexperience contractor	Nil
8	1985	Nigeria	Allen Avenue	Storey Building	Excessive Loading/ illegal conversion	Nil
9	1985	Nigeria	Adeniji Adele, Lagos	Residential Building	Excessive Loading	2 killed
10	1985	Nigeria	Ojuelegba Area, Lagos	Residential Building	Rainstorm	Nil
11	1985	Nigeria	Iponri, Lagos	(Uncompleted four Storey Building)	Structural Failure	13 killed
12	1985	Nigeria	Victoria Island	Residential building	Excessive Loading	13 killed
13	1985	Nigeria	Gboko, Benue	Residential building	Carelessness of usage	1 killed
14	1985	Nigeria	Allen Avenue	Residential building	Carelessness of usage	Nil
15	1985	Nigeria	Adeniji Adele	Residential building	Faulty design	2 killed
16	1986	Singapore	Serangoon Road	Hotel New world	Inadequate structural design	33 killed

17	1986	Nigeria	Isala Area, Imo,	High court building	Structural failure	2 killed
18	1986	Nigeria	Oshogbo, Osun	Mosque building	Structural failure	2 killed
19	1986	Nigeria	Ona street, Enugu	Residential building	No investigation	2 killed
20	1987	Nigeria	Agege, Lagos	2-storey building under construction	Faulty design	2 killed
21	1987	Nigeria	Idusagbe Lane, Idumota	Residential Building	No Structural Design	13 killed
22	1987	Nigeria	Ikorodu , Lagos	Commercial Building	Rainstorm	4 killed
23	1987	Nigeria	Calabar,	Residential, Building	Rainstorm	3 killed
24	1988	Malaysia	Butterworth, penang.	Stadium		Not ascertain
25	1989	Nigeria	Akinwunmi street, Mende Village, Lagos	6-storey Hotel Building	Faulty design	Nil
26	1990	Nigeria	Port Harcourt,	Bungalow School Building	Absence of structural design	Nil
27	1993	Nigeria	Okupe Estate Maryland,	6-storey Hotel Complex	Structural Failure	Not Ascertain
28	1993	Malaysia	Kuala Lumpur	Highland Tower (Block1)	Rubble mud ignited a landslide, as a result of new development around the place.	48 people killed
29	1993	Nigeria	Area 10, Abuja	Multi-purpose Indoor Sports	Structural failure/Poor workmanship	Not Ascertain
30	1993	Nigeria	Karo, abuja	Multi-storey,, NICON-NOGA, House.	Structural failure/use of incompetent Supervisor.	Not Ascertain
31	1993	Thailand	Nakhon Ratchasima	Six storey Royal plaza Hotel building	Illegal conversion of structure and faulty design	137 killed
32	1995	Nigeria	Abeokuta Ogun State	A Mosque under construction	Structural failure/use of incompetent Supervisor	2 killed
33	1995	Nigeria	Central Lagos	Storey Building (under construction)	Poor workmanship/ structural failure	10 killed
34	1995	Nigeria	Alagbado Area, Ibadan	School Building	Structural failure	Nil
35	1995	Nigeria	Lagos	3-storey Church Building	Poor workmanship	6 killed
36	1995	Nigeria	Oke Igbala Area, Ibadan	3-Storey ,Building	Structural failure	6 killed
37	1996	Nigeria	Mafoluku,,Oshodi , Lagos	1-stroey Building under construction	Structural Weakness	7 killed
38	1996	Nigeria	Lagos State	Storey Building Under construction	Structural failure	People injured

39	1996	Nigeria	Lagos State	6-Storey Building under construction	Use of quacks and Structural Failure	1 killed
40	1997	Nigeria	Amu, Mushin, Lagos	2-Storey Building	Use of poor materials/ structural failure	Nil
41	1998	Nigeria	Gwarinpa Abuja	Duplex Building	Structural failure	2 killed
42	1998	Nigeria	Ibadan, Oyo State	3-Storey Building	Faulty, Design/Poor workmanship	Several people
43	1998	Nigeria	Akure, Ondo State	4-Storey Church (under construction)	Structural failure/Poor Supervision	8 killed
44	1998	Nigeria	Rd 3, fagun, Abeokuta,	2-Storey Residential Building	Use of poor materials/ structural failure	Nil
45	1999	Nigeria	Ojuelegba. Lagos	3-Storey Building	Carelessness and use of poor materials	4 killed
46	1999	Nigeria	Adeola Odeku, VI Lagos.	A-storey buiding	Rainstorm	Not ascertain
47	1999	Nigeria	Oko-Oba, Lagos	3-Storey Building	Structural failure	Nil
48	1999	Singapore	Compassvale primary school	Multipurpose hall	Faulty design	7 killed
49	1999	Nigeria	Four-square, Abuja	3-Storey Residential	Faulty design and Implementation	Not ascertain
50	1999	Nigeria	Obawole street, Iju, Lagos	A-Storey Building	Structural failure	Nil
51	1999	Nigeria	Iju-Isaga, Lagos	3-Storey Building	Structural Faulty	36 killed
52	1999	Nigeria	Dawodu street, Ifo, Ogun	2-Storey Building	Rainstorm	20 killed
53	2000	Nigeria	Idi-Oro, Mushin, Lagos	Residential Building	Faulty Design	Not Ascertain
54	2000	Nigeria	Ajah, Along Lekki Lagos	Estate Building	Structural Failure	Nil
55	2001	Nigeria	21, Buhari Street Mushin,	2-StoreyMosque Building	Unauthorized Conversion Of former Bungalow to 2-Storey Buildg	7 killed
56	2001	Nigeria	Iwoye-Ijesa, Osun State	1-Storey Building	Structural failure and use of quacks	7 killed
57	2002	Malaysia	Ulu klang, Selango	Bungalow	Structural failure	8 people killed
58	2007	Nigeria	Ebute-Meta, Lagos	Multi-storey Building	Unauthorized Conversion, poor Supervision and use of poor quality materials.	Several people
59	2007	Nigeria	Kano	Multi-Storey Building	Faulty design/structural failure	Several people
60	2008	Nigeria	Olomi Area Ibadan.	A Building	Use of poor materials and carelessness	13 pupils

61	2008	Nigeria	Wuse Area, Abuja	5-Storey Building	Structural failure incompetency/bad workmanship	2 people.injured
62	2008	Nigeria	Asero Area, Ogun	2-Storey Building	Contravening the given planning Approval, use of substandard materials incompetency, etc.	2 killed
63	2008	Malaysia	Bukit Antarabanjah, Selangor.	14 Bungalows	Landslide, as a result of water.	4 people killed
64	2009	Nigeria	Ogbomoso, Oyo State	6-Storey LAUTECH	Use of substandard materials & poor workmanship	5 killed
65	2009	Nigeria	Aghaji Enugu	A wall fence	No proper drainage	1 killed
66	2009	Nigeria	Oke Padre, Abeokuta	Uncompleted Building	Use of substandard materials, hasty construction	3 killed
67	2009	Malaysia	Kuala Terengganu	Sultan Abidin Stadium.	Faulty design	No casulaty
68	2009	Malaysia	Petalling Jaya	Jaya supermarket	Contractor inefficiency	7 persons killed
69	2010	Nigeria	Isopakodowo Oshodi, Lagos	Building under Construction	Use of Substandard building materials	4 killed
70	2010	Nigeria	Adenike Street off Newmarket, Oniru Estate, VI	Uncompleted Storey building	Use of Substandard building materials, Non-compliance of house-owners and developers with approved building plan and weak structure	1 killed and 2 injured
71	2010	Nigeria	2 Okolie Street, off Gimbiya Street in Abuja	Uncompleted 4-Storey Building	substandard materials and disregard for building regulations	23 killed and 11 injured
72	2010	Nigeria	24 Alli Street off Tinubu, V. I	4 Storey sBuilding	Structural efects/overloading	3 killed

Table 4a: Claims in case study 1

No	**Case title**	**Claimant**	**Basis of Claims**	**Types of Claims**		**Responsible parties**
				Contractual	Tortious	
Case 1	Dr Abdual Hamid Rashid & Anor v Jerusan Malaysia Consultants (sued as a firm) & Ors- (MLJ 546-15 November 1996.	The owner of the house and his wife.	Breach of contract.	Yes	No	*1st defendant(Jurusan Malaysia consultant
				Yes	No	* fourth defendant (proprietor of 1st defendant)
			Negligence.	No	yes	*1st defendant
				No	Yes	* fourth defendant
			Negligence.	No	Yes	*3rd defendant is contractor Mighty corporation sdn bhd).
			Nuisance	No	yes	*3rd defendant
	Total			2	4	

Table 4b: Claims in case no 2

S/N	Case title	Claimant	Basis of Claims	Types of Claims		Responsible parties
				Contractual	Tortious	
Case 2	Steven Phoa Cheng Loon & Ors v Highland Properties Sdn Bhd & Ors (2000) 4 MLJ 200.	73 owners and occupiers of the Blocks 2 & 3 apartments of the Highland Tower.	Negligence	No	Yes	1st Defendant - Developer
			Nuisance	No	Yes	
			Negligence.	No	Yes	2nd Defendant - Draftsman who was engaged by the developer as the Architect for the project.
			Nuisance	No	Yes	
			Negligence.	No	Yes	3rd Defendant - 2nd Defendant's brother engaged by the 1st Defendant as the Engineer for the project.
			Nuisance.	No	Yes	
			Negligence	No	Yes	5th Defendant - Arab-Malaysian Bank –owner of 50 lots of bungalow land directly at the rear of Highland Towers
			Nuisance.	No	Yes	
			Negligence	No	Yes	7th and 8th Defendant -7th defendant is the owner of Metrolux land (the higher land adjacent to the 5th Defendant's land) and 8th Defendant is the Project Manager for the 7th Defendan.
			Nuisance	No	Yes	
		Total		0	10	

Table 4c: claims in case no 3

No	Case title	Claimant	Basis of Claims	Types of Claims		Responsible parties
				Contractual	Tortious	
Case 3	Royal Plaza Hotel v Nakhon Ratchasima Municipality & org.	The management of the collapse Hotel.	Breach of statutory duty.	No	Yes	Nakhon Ratchasima Municipality Autority.
			Breach of contract.	Yes	No	Wongsinthai Limited partnership, owner; Amorn Janrattanapreeda, engineer Sathorn Promin, design and construction supervising engineer
			Negligence.	Yes	No	
	Total			2	1	

Table 4d: claims in case no 4

No	Case title	Claimant	Basis of Claims	Types of claims		Responsible parties
				Contractual	Tortious	
Case 4	Case law on collapse of Multipurpose primary school Hall in compassvale, (case not yet reported)	Compassvale primary school management	Claims for strict liability for violating building law.	Yes	No	Bill Hong (Engineer) Joseph Huang(Checker)
			Claims for breach of contract.	Yes	No	BKB Engineering construction (contractor)
	Total			2	0	

Table 4e: claims in case no 5

No	Case title	Claimant	Basis of Claims	Types of claims		Responsible parties
				Contractual	Tortious	
Case 5	Case law of the collapse of the 8 storey Mount Royal Hotel, Mende Maryland	Management of Mount Royal Hotel	Breach of Contract	Yes	No	The contractor
	Total			1	0	

Table 5: Sources of Building collapse occurrences from 1960-2010

NO	Selected Countries	Data Source
1	Malaysia	Department of occupational safety and Health, Malaysia. (website)
2	Nigeria	As Published by Canadian Center of Science and Education (Fagbenle and Oluwumi 2010).
3	Singapore	(Netto and Utristudason, 2001).
4	Thailand	(Nanette, 2009) thaiengineering.com.

Table 6: Sources of samples of building collapse Case Law

SAMPLES	COUNTRY	CASE TITLE	Source
1	Malaysia	Dr Abdual Hamid Rashid & Anor v Jerusan Malaysia Consultants (sued as a firm) & Ors-(1997)3MLJ 546-15.	Malaysia Law Report (1997)
2	Malaysia	Steven Phoa Cheng Loon & Orgs v Highland Properties Snd Bhd & orgs(2000)4MLJ 2000.	Malaysia Law Report(2000)
3	Thailand	Royal Plaza Hotel. V Nakhon Ratchasima Municipality & orgs	(Nanette, 2009) thaiengineering.com.
4	Singapore	Case law on collapse of Multipurpose school Hall in compassvale, (case not yet reported)	(Netto and Utristudason, 2001).
5	Nigeria	Case law of the collapse of the 8 storey Mount Royal Hotel, Mende Maryland, Lagos.	Reported by National dailies (Guardian of Monday July 22, 1996) and cited by (Sobotie, 1996)