ASSESSMENT OF DEVELOPMENT CONTROL UNIT OF FEDERAL CAPITAL DEVELOPMENT AUTHORITY IN CURTAILING BUILDING FAILURE IN ABUJA

BY

HAMZA DEE SANI

2007/28311BT

DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION, FEDERAL UNIVERSITY OF TECHNOLOGY MINNA, NIGER STATE

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A PROJECT SUBMITTED TO THE DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION, SCHOOL OF SCIENCE AND SCIENCE EDUCATION, FEDERAL UNIVERSITY OF TECHNOLOGY MINNA, NIGER STATE.

IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF BACHELOR OF TECHNOLOGY (B.TECH) IN INDUSTRIAL AND TECHNOLOGY EDUCATION

OCTOBER, 2012

CERTIFICATION

I Hamza Dee Sani, Matriculation Number: 2007/28311BT an undergraduate student of Industrial and Technology Education Department wishes to certify that the work embodied in this research project is original and has not been submitted in any part or full for any other Diploma or Degree programmes of this or any other University.

…….....
.....

Name **Sign-Date**

APPROVAL PAGE

This research project has been read and approved as meeting the requirements for the award of B.Tech in Industrial and Technology Education with option in Building Technology Education. School of Science and Science Education, Federal University of Technology Minna

..... **.....**

Supervisor **Signature & Date**

..... **.....**

Head of Department **Signature & Date**

..... **.....**

External Examiner **Signature & Date**

DEDICATION

This research project is dedicated to Almighty Allah the most high, who created me, and nourished me, who gave me the golden opportunity to serve Him and to the leader of creation, the intercessor and the emancipator of mankind from the worship of desire to the worship of the Almighty creator; Muhammad peace be upon him.

ACKNOWLEDGMENT

My sincere appreciation and profound gratitude goes to Almighty Allah the most high for being my helper and sustainer for granting me favor since my existence till date. It has been Allah alone, without him this research work would not have been possible and if possible wouldn't have been a success. Grateful is your servant, 'O' Allah the exalted and most high.

I honestly commend the effort of my project supervisor in person of Mallam Dauda Ibrahim (Abu Hamidah) for his great support and kind gesture all through this research work despite my weaknesses. He exhibited high level of tolerance and patience by taking his time to guide me throughout the research and the presentations of the work. His understanding and patience is worthy of emulation. May Allah grant you peace and also relief you of all your worries in this world and hereafter (Amin).

A big thanks to the head of Industrial and Technology Education Department, Dr Emmanuel .J. Ohize and all my lecturers for inculcating into me technical and vocational education training so as to become that experienced and successful man I have always wish to be, Thanks a lot.

To my ever patient, persevering and understanding mother in person of Hajia Aisha Sani who suffered with me right from my childhood till date and has continued in that light. I am grateful mother for coming to this world through you by the mercy of Allah and to my loving and caring father in person of Alhaji Sani Omar Ebbo who has always been supportive. I have completed the mission Dad. I am overwhelmed by the penchant and support given to me by my brothers and sisters, especially, Khalil Sani and my step mothers despite the inconveniences I caused them. I am sincerely grateful. May Allah protect and guide us as one big family and be united as such in Jnnatul Firdaus (Amin)

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Abstract

This study was carried out to assess Development Control unit of Federal capital Development Authority in curtailing building failure in Abuja. Specifically, this study determined:- the roles of Development Control unit of FCDA in building construction projects in Abuja , the abilities of development control unit of FCDA in building construction projects in Abuja and ways of curtailing consistent building failure in Abuja. Three research questions and two null hypotheses were formulated and tested to guide the study. Some related literatures were reviewed, among which are: concept of building failure, roles of building inspection team in Nigeria, abilities of building inspection team in Nigeria and ways of curtailing consistent building failure in Nigeria. The descriptive survey approach was used and the target population for this study was made up of Development Control staffs and Site Supervisors within some selected companies in Abuja. Thirty-nine (39) item-questionnaires were used as instruments for data collection which were analyzed according to research questions. The data collected from the respondents was analyzed using frequency count, mean standard deviation and t-test statistics. The findings among others include: Development Control do not coordinate activities with construction professional bodies to ensure code compliance, do not review construction plans and specifications, construction work are not carried out by registered contractors and supervised by registered architects, engineers and builders, development Control unit are not adequately staffed and equipped with professionals to ensure safety and others. It was recommended that Development Control should be staffed with adequate experienced personnel to ensure effective inspection of both new and existing houses for compliance with building codes and standards; The roles, responsibilities, and ethical obligations of Development control staffs in the construction industry should be adequately communicated to the professionals, artisans and the general public for compliance with building regulations.

TABLE OF CONTENTS

CHAPTER II

REVIEW OF RELATED LITERATURE

CHAPTER III

METHODOLOGY

CHAPTER IV

PRESENTATION OF ANALYSIS OF DATA

CHAPTER V

SUMMARY, CONCLUTION AND RECOMMENDATIONS

LIST OF TABLES

CHAPTER I

INTRODUCTION

Background of the study

Construction industry plays an important and dynamic role in the process of sustainable economic growth and development of any nation. More than 50% of the gross fixed capital budget in Nigeria normally takes the form of construction output (Wase, 2004). Building industry (a sub-sector of the construction industry) is the most complex of all the industries in Nigeria economy today (Akindoyeni, 2002). The basis of its complexity is on the fact that all other industries (whether small scale or large scale) and sectors of the socio-economic development depend on building industries and the environment to actualize their goals. Murphy's Law state that "if everything seems to be going on well, one obviously does not know what is going on." The building industry is not an exception to this law, and this is based on various unpalatable occurrences in the recent years. Building collapse has been one of the salient issues and this incidence has continued to occur unabated in most major cities of the country.

Building is "an enclosure for spaces designed for specific use, meant to control local climate, distribute services and evacuate waste" (Fadamiro, 2002). More so, buildings are defined "as structures for human activities, which must be safe for the occupants" (Odulami, 2002). However, these same buildings have been posing threats and dangers to people either during or after construction as a result of its collapse. Oxford Advanced Learner Dictionary (2000) described the word collapse as an act of falling down or falling suddenly, often after breaking apart". Collapse as a whole occurs when part or whole body of a structure fails and suddenly gives way, the structure, as a result of this failure, could not meet the purpose for which it was meant for. Building collapse is an extreme case of building failure. It means the

superstructure crashes down totally or partially (Arilesere, 2002). Buildings through the ages have been an important aspect of socio-economic development of any country in the world but one of the deterrents of meaningful development is the frequent collapse of buildings. More worrisome is the fact that the spate of building collapse across the country has led to loss of lives and properties. Abuja, the nation's capital is not immune to the grisly tale of this menace.

On 7th of August, 2012, three people died and nine others got trapped when an uncompleted building collapsed in Dutse Alhaji (NAN, 2012). Also, on 30th of June, 2011, four people died and twelve others got trapped when a two storey building under construction collapsed in Nyanya, suburb of of Abuja (Shuaibu, 2011). Furthermore, Infostrides (2012) reported that on 28th of January, 2012, one person died and many others were trapped when the Navy building acclaimed to be the largest residential estate in Nigeria collapsed in Gwarinpa. (Folagbade, 2001 and Chinwokwo, 2000) enumerated forty two (42) cases of building collapse as occurring between 1980 and 1999 in Nigeria while (Makinde, 2007) listed fifty-four (54) cases occurring between January, 2000 and June, 2007 alone. These seem pathetic and one could not but wonder why such contraptions could not have been abated or to what extent people can go to cut corners at the expenses of respect for safety and lives. The cost of these failures in terms of human lives and enormous economic waste, loss of investments, job, and income, among others cannot be over emphasized.

It is not surprising that (Adeniya, 2002) sought the answer for the rhetorical question, why must preventable incidence continue to traumatize people all the time? These incidents have brought to question the effectiveness of building contractors in the country. The ugly trade mark also casts a slur on the competence of the nation's building community of architects, structural engineers and builders – who are the professionals responsible for

designing and monitoring construction works at building sites. For obvious reasons, these professionals are being attacked from all angles because of the recurring incidents of building collapse. But the building professionals should not bear the blame alone because it has been proved that owners of building under construction derail from their approved plans relying more on imagination and fantasy. In the same vein, some building owners shun professionals in order to cut costs. More so, building materials has led greedy contractors' with eyes on profits, to patronize substandard materials. To possibly reduce or eliminate this acts, development control unit of Federal Capital Development Authority (FCDA) was established as a potent tool for city management to ensure that the growth and development of Abuja can be such that will make orderliness and improve structural development while ensuring that environmental challenges resulting from construction growth can be reduced to tolerable levels or even out rightly eliminated.

Despite the creation of Development Control Unit charged with the responsibility of ensuring compliance to building codes and standards through inspection of designs and construction activities in the city, there has been proliferation of unprofessionalism in the industry in Abuja. Unfortunately, the menace still persists because of ineffective inspection. Site inspection is very important as it is required to ensure quality control of site operations and all the materials used, in compliance with approved plans and standards. Inspection was seen as processes of directing and telling individuals what to do and checking up to be sure that people have done what they are expected to do. According to (Ogunmakin, 2005), the involvement of competent professionals to handle the planning of a project does not entirely guarantee its stability until accurately supervised and inspected. In the same vein, (Olusola, 2002) noted that adequate construction inspection must be available especially to solve problems that may not have been fore seen during design. It is however believed that no

matter how beautiful the plans are without adequate inspection, the probability of accident occurring will still be high.

Statement of the Problem

The Department of Development Control Unit (DCU) of Federal Capital Development Authority (FCDA) was established to provide work direction for assigned staff to oversee daily operations and perform more complex and technical duties, including inspecting and observing building constructions to ensure compliance with city standards, codes and specifications and also to check plan, issue abatements for dangerous structures and coordinate building inspection services right from the inception of a building project to its completion stage. Despite the efforts of development control unit, building collapse in F.C.T still persists. This may be as a result of the inability of the unit to ensure architectural and structural designs (and structural calculations) conform to design principles before approval. On this note, (Akanya, 2005) blamed the growing incidence of building failure across the country on ineffective inspection mechanisms. From past occurrences, the authority that ought to enforce its development control regulations can hardly be seen to be firm in enforcing its regulations. Some officials of this authority sometimes compromise their position and allow developers/landlords to recklessly contravene development control regulations. Based on the foregoing therefore, the study seeks to assess the department of development control unit of FCDA in curtailing building failure in F.C.T Abuja.

Purpose of the Study

The main purpose of this study was to Assess Development Control of Federal Capital Development Authority in curtailing building failure in Abuja. Specifically the study seeks to:

1. Determine the roles of inspection team of development control unit of FCDA in curtailing building failure in Abuja.

2. Determine the abilities of inspection team of Development Control Unit of FCDA in curtailing building failure in Abuja.
3. Determine ways of curtailing building failure in Abuja.

Significance of the Study

The findings of this research will be of immense benefit to the department of Development Control of FCDA, professional bodies such as Nigerian Society of Engineers (NSE), Nigeria Institute of architects (NIA), Nigeria institute of Builders (N.I.O.B) and others. It will also be of immense benefit to Students carrying out similar research work and the society at large.

The department of Development Control will benefit immensely from this research as the findings of this study will help the department to technically coordinate and organise their skills in inspecting and monitoring all construction activities with an aim to ensure compliance to building codes and standards.

The study will also be of great benefit to the professional bodies such as (NSE), (NIA), (N.I.O.B) to bring sanity into the industry by ensuring that construction firms are headed by professional.

Finally, the findings will benefit the Student and the Society at large, in the sense that, the Student will be able to make similar research work by making reference to this research work if it is published and kept in Library for consultation. And the society will also benefit from this research by the formulation of environmental planning.

Scope of the study

The study is delimited to assessment of development control unit of Federal Capital Development Authority in curtailing building failure in F.C.T, Abuja. Specifically, the study

will determine the role of inspection team of development control unit of FCDA in curtailing building failure in Abuja, the abilities of inspection team of development control unit of FCDA in curtailing building failure in Abuja and ways of curtailing consistent building failure in Abuja.

Research Questions

The following research questions will guide the study

1. What are the roles of inspection team of Development Control Unit of FCDA in curtailing building failure in Abuja?
2. What are the abilities of inspection team of development control unit of FCDA in curtailing building failure in Abuja?
3. What are the ways of curtailing building failure in Abuja?

Hypothesis

The following hypothesis will be formulated and tested at 0.05 level of Significance

HO_1: There is no significant difference in the mean responses of development control staffs and Site Supervisors on the roles of inspection team of Development Control Unit of FCDA in curtailing building failure in Abuja.

HO_2: There is no significant difference in the mean responses of development control staffs and Site Supervisors on the ways of curtailing building failure in Abuja.

CHAPTER II

REVIEW OF RELATED LITERATURE

Work related to the present study will be review under the following sub-headings

1. Concept of building failure.
2. Roles of building inspection team in Nigeria.
3. Abilities of building inspection team in Nigeria.
4. Ways of curtailing consistent building failure in Nigeria.
5. Summary of literature review.

Concept of Building Failure

For years, countries have been striving to develop themselves as nations in every field of human endeavour including the built environment. This built environment otherwise refer to as structure serve as place of residence, work, worship among others. They are so essential to man just as air, water and food (Salau, 1996). The exponential population growth and the consequent productive activities needed to sustain mankind, forces the demand to be more pressing. The quest to meet up with this demand has led to different approaches of realizing the housing and infrastructural development – some genuine and some fake approaches, which lead to building structures of different qualities. When the quality of these structures fall below certain standards, structural failures are inevitable, (Ede, 2010).

A failure can be considered as occurring in a component when that component can no longer be relied upon to fulfil its principal functions (Roddis, 1993). He also added that building failure is not to be taken to mean only a structural failure but it also include it's nonperforming with the requirements expected of it. According to Wikipedia (2012), it defines building failure as loss of load-carrying capacity of a component or member within a structure or of the structure itself. Further assertion was made that Structural failure is

initiated when the material is stressed to its limit, thus causing fracture or excessive failure. Salau (1996) also define building failure as when structures cease to be fit for human habitation and occurs when the limit state is reached. He further noted that building collapse arise as a result of failure in building, as the failure get to an uncontrollable measure. More so, a structure will become unfit for use if parts or all of it collapses and will also become unfit if it deflects is too much, if large cracks forms or if vibration is so great that discomforts and fear is caused to the occupants, or the operation of machinery is interfered with. This state is technically referred to as failure; it is reached when deflection exceeds span of 250 and cracks width exceeds 0.3mm.

Cowan (1989) explained building failure as a defective construction, integrated by other factors such as structural, functional, material and environmental resulting in a short fall in performance occurring at any time in the life of the dwelling or building. Generally, buildings like any other property are prone to deterioration that is wear and tear over time. It follows therefore that no structure can reasonably be expected to last forever. Hence, what makes the building prone to deterioration or depreciation can be traced to the material elements as well as the composites used in constructing them. According to Dare (2002) the geographical location and the prevailing environmental conditions of the immediate environs of the building also have significant effect on the materials specification. The effect of any collapse of a building can be so detrimental as to cause loss of lives, properties and money. A colossal waste is normally recorded as collapse of building occurs (Ekuwani, 1989).There are basically three forms of building collapse and they are partial, progressive and total or sudden collapse.

1. **Partial Collapse: -** This occurs when part of the building is affected, i.e. only a small fraction of the building or one side of it falls down.

2. **Progressive Collapse**:- In this type of collapse, there will be signs of weakness noticeable either by seeing cracks which becomes widening with time or by noticing unusual sound in the building due to structural member gradually giving way from each other.

3 Total or Sudden Collapse:- As the name implies, it happens when the building falls down suddenly it may not even give any sign prior to falling down.

In Nigeria, the common causes of building collapse have been traced to bad design; faulty construction; foundation failure; extraordinary loads, use of unqualified contractors and poor project monitoring and above all, lack of enforcement of building codes by the relevant Town Planning authority (Falobi, 2009 and Bamidele, 2000). Building collapse is common world over as it is physically present in developed Nations too. However, Ajibola, and Lawal (2011) explained that theirs are mostly due to natural occurrences like Earthquake, flood, Hurricane, Typhoon etc unlike in the developing countries where it occurs due to human error, greed and negligence. Iyagba (1991) summarized reasons why buildings fall as ignorance, (incompetent men in charge of procurement, design, construction and inspection). According to Chinwokwu (2000) ignorance in production management has caused many buildings in Nigeria to collapse. Ignorance in failure of effective management of various resources like the materials, staff, equipment and money to produce a stable and healthy building has often been at the root of its collapse. The causes of building collapse as attributed by Ometar (1987) is neglect of real professional's advice whereby the owner prefer to build the house either with half-baked professionals or the use of artisans and labourer as a means of direct labour contract. Iyagba (2000) also enumerated major causes of building failure as.

i. Absence of planning approval
ii. Proper soil investigation not carried out.

iii. Engagement of quacks and half baked professionals to take charge of the construction

iv. High cost of building materials prevents contractors from adhering to the specifications in terms of quantity and quality. Aniekwu and Orie (2006) in their study identified low quality materials as the most important cause of failure of engineering facilities in Nigeria.

v. Inadequate staffing of the Town Planning Authority combined with inadequate qualifications for the job of monitoring and control of building activities.

vi. Designers inability to effect compulsory and regular inspection

Cowan (1989) stated that in the ancient world, perpetuators of building failures were often severely punished. For example, the legal code promulgated by Hamurabi, a Babylonian king (1792–1750 bc), stated among other things that if a builder has built a house for someone and the work is not strong, and if the house he has built falls in and kills the occupant, then that builder shall be slain. This shows that there were building failures in very distant time past and the government then set Code of Laws, first in history. It was a very harsh code dealing with the social structure, industries, law, economic conditions and family life.

Government has put in place specific rules and regulations required to maintain a sense of safety of buildings to prevent disastrous occurrences in addition to generally ensure that players and referees in the building construction industry abide by certain accepted standards of moral conduct and good behavior.

Roles of building inspection team in Nigeria.

Building inspection according to Wikipedia (2012) is performed by a person who is employed by either a city, township or county and is usually certified in one or more disciplines, either as a residential or commercial building inspector, plumbing, electrical or mechanical inspector or other specialty to inspect structures at different stages of completion. These inspections are done to ensure compliance with whatever building, plumbing,

electrical, and mechanical or specialty codes, such as swimming pool codes, that are being enforced by the jurisdiction in which they work. The term building inspector according to Wikipedia (2012) is sometimes used for persons who inspect houses to assure compliance with the plans and to check workmanship as well as code compliance. Building inspection team often carry out structural building inspections for strata properties where there are structural elements of the building found to be unsafe. Whether it is the balconies, balustrades or cracking due to settlement in the walls, consulting engineers provide building inspections of the property and make the appropriate assessment and provide dilapidation reports followed by proposals for remedial action.

In Nigeria, Prospective house owners would rather patronize quacks that are willing to take peanuts. The design by these quacks, are usually "expeditiously" approved by the Local Planning Authorities who are largely working hand-in-gloves with these quacks. Often times, the right professionals are not appointed into the right positions in Local Authorities responsible for checking structural drawing. Building inspection team according to Tigard (2008) deals with these when they receives, records and investigates complaints from the public and staff regarding violations of building codes, ordinances, standards, health and safety regulations; documents violations by securing photographs and other pertinent data; researches ownership records, prior complaints to establish whether a violation has occurred.

Carlton (2011) also noted that letters are sent by the building inspectors to property owners when complains are made on violations of codes and standards. More so, Tigard (2008) further posits that they initiate contacts with residents, business representatives and other parties to explain the nature of incurred violations and to encourage compliance with building codes, ordinances; initiates abatement of dangerous properties and resolves issues regarding potential health hazard issues of vacant properties and provides information to the

public by telephone and in person regarding rules and regulations governing building construction..

According to Jeffrey (2011), building inspection team ensure that new construction, changes, or repairs comply with local and national building codes and ordinances, zoning regulations, and contract specifications. Furthermore, they spend considerable time inspecting construction worksites, alone or as part of a team, assist builders, contractors, and owners by ensuring that construction projects meet building regulations and codes of practice. They assess design documentation and make onsite inspections during building work, checking that proper method and materials are used (Lau, 2006). Some building inspection team may have to climb ladders or crawl in tight spaces. The work also requires review and interpretation of construction contracts and plan specifications; resolution of discrepancies; and providing direction to contractors when needed involving change orders, clarification of building codes, pay requests, architectural drawings and specifications to ensure completed construction complies with plan design, specifications, contract agreements and the general conditions of the contract Izomoh, (1997). Russell, Gugel and Radke (1992) listed the following as the roles of a typical building inspection team as:

- Coordinate and conducts follow-up abatement procedures including the preparation of additional correspondence, site visits, and communication with property owners and attorneys.
- Conducts follow-up investigations to ensure compliance with applicable codes and ordinances. According to Sugiharto and Keith (2001), they stated that building authority Coordinate and investigate potential code violations in response to citizen complaints and actively patrol for violations of property maintenance standards.

- Establishes and maintains accurate and complete case files
- Prepare and presents documents and evidence for court proceedings and testifies in hearings and court proceedings as necessary.
- Perform field inspections of new and existing residential properties for conformance to codes, Regulations, plans, specifications, and standards related to foundations, framing, electrical, mechanical, plumbing, housing access, life safety, and other functional elements.
- Prepares and maintains variety of correspondence, reports, correction notices and other written materials.

Waziri (2002). explained that Development Control unit otherwise called Building inspection authority is authorized to issue Stop Work Orders directing that erection, construction, alterations, installation, repairs, removal, demolition and other activities cease immediately and that the premises be vacated pending compliance with such orders whenever any structure or part thereof is found to be in a dangerous or unsafe condition due to inadequate maintenance, deterioration, damage by natural causes, fire, or faulty construction that it is likely to cause imminent injury to persons or property.

Abilities of building inspection team in Nigeria

Building inspectors assume a great deal of responsibility at each building site they oversee. As the construction sites of homes, office buildings, bridges and other structures are inspected, the inspector has to decide if the builders are adhering to the building codes that is, if the structure is safe, and if they are built to the most current codes as required by law. Inspectors usually specialize in one type of construction work or the other, either as specialist in building, public works, electrical, mechanical, plumbing, housing or fire prevention. Federal, state and local governments employ various types of inspectors to ensure projects

conform to applicable codes. Carl (2009) posit that for a building inspector to ensure that projects conform to building codes, he must be able to communicate effectively with clients and other professionals using appropriate methods and media, prepare, read, interpret and adapt drawings and other graphical representations used in the enforcement of building codes as well as other written documents used in building design and construction. Nick and Kate (2012) added that most code enforcement processes are carried out as a result of the ability to read and interpret engineering and architectural blueprints, plans and specifications. He/she ought to also select, synthesize and apply the appropriate principles of building science like applying the basic principles of structural, mechanical and electrical building systems. Applying skills and knowledge of site analysis, site planning, survey principles and problem solving skills to building codes and enforcement projects by using the principles of science, mathematics and research is inevitable to a successful structure. Application of principles of business practices are when dealing with the enforcement of codes, consider the interdependence of related disciplines that participate in building enforcement and code enforcement within a jurisdiction or municipality, conform to the ethical requirements of professional practice.

The need for Construction Inspectors as part of the construction project team is as great today as ever and their value to a contract should not be under-rated. Uninitiated site personnel according to Barry (2002) may regard the building Inspection team as an unwanted evil, while those who understand the bigger picture recognize that this is not the case. Yes, building inspection team can report unsatisfactory work and reject inferior materials, which may appear to be a short-term nuisance but if this happens then the site management team are much better placed to prevent defects and will save time and costs later. There is no credit or professional value in ignoring such reports, and in fact to construct, build or install anything

without using goods or materials that are in accordance with the drawings and specification without good reason is unprofessional and essentially fraudulent.

Keeping the building codes according to Tigard (2008) to a workable size and eliminating much duplication of unacceptable site practices depends solely on the ability of the building inspection team to be able to interpret, analyze, apply, and explain laws, regulations, codes, and departmental policies governing the construction and inspection of buildings, as well as enforce building and housing codes; review and analyze construction plans, specifications, and maps for conformance with City standards and policies. Detection of faulty materials and workmanship and determining the stage of construction during which defects are most easily found and remedied; understanding and explaining occupational hazards and standard safety are practices necessary in the area of code compliance. Jayeola (2004) maintained that large part of development control unit's function is directly linked to monitoring and controlling the building designs in other to achieve the desired standard during construction.

More so, they also maintain coordination, dealing with contractors, engineers, and property owners, as well as investigate code violations and respond to inquiries and complaints in a fair, tactful, and timely manner. It is important to read, understand, and interpret construction blueprints, plans, and specifications; prepare clear, effective, and accurate reports, correspondence, change orders, specifications, and other written materials.

Horwitz (2001), also enumerated the following as some of the skills that building inspection team must exercise. They are:

- Effectively represent the department and the City in meetings with other departments, public and private organizations, and individuals.
- Maintain accurate and precise records.

- Make accurate mathematic computations. According to Ben (2008), he noted that maintaining accurate and precise records help to have better control of work and to also have a better idea of how well things work.
- Understand and carry out oral and written instructions.
- Make sound, independent decisions within established policy and procedural guidelines.
- Organize and prioritize a variety of projects and multiple tasks in an effective and timely manner; organize own work, set priorities and meet critical time deadlines.
- Comprehend and use English effectively including producing all forms of communication in a clear, concise, and understandable manner to intended audiences.
- Use tact, initiative, prudence, and independent judgment within general policy, procedural, and legal guidelines.
- Establish, maintain, and foster positive and harmonious working relationships with those contacted in the course of work.

According to Adesanya (2005), he posits that building inspection team are not only inspectors but also superintendents. This means that they can advise the contractor about certain aspects of the work, particularly if something has gone wrong. They can also agree to minor changes. They cannot, though, give advice that could be interpreted as an instruction, particularly if this would lead to additional expense.

Inspection work usually involves climbing ladders and scaffolding and therefore inspectors are required to also have a good working knowledge of good health and safety safe working practices. For certain projects, such as tunnel construction, it may involve going underground. They often have to spend considerable time travelling to building sites and may be away from home for short periods of time.

Ways of curtailing consistent building failure in Nigeria.

A lot has been written in the academic journals and in newspapers about this national embarrassment, but the Situation does not seem to be abating either because the true causes are not yet identified or because those in charge have not taken the appropriate actions to put the situation under control. (Salau,1996) highlighted the first cases of building Collapse verified in Nigeria, their possible causes and suggested among other things the involvement of professionals in different phases of building construction process and the review of academic programs to enhance the capacity of craftsmen and technologists in the building industry. Ayininuola and Olalusi (2004) focused on the causes and possible solutions to building failures in Nigeria. The summary of their research was that the presence of unqualified professionals was the principle cause of building collapse and they therefore called on the professional bodies to step up their surveillance of the building sector as to eject the impostors. They further reiterated that for the realization of quality jobs at Conception-design stage, construction-supervision stage, and post construction-service stage, a high level of skill and professionalism is needed. The conception-design stage is the planning and feasibility studies stage in which some professionals may assist the owner to evaluate the technical and economical options available and then realize the design. The building inspection team at this stage ensures that structural drawings for the project are designed to the specifics of the site such as nature of soil, location of the building and type of structure and above all codes and standard. In order to further reduce the problems of collapsed buildings to a manageable proportion, Taiwo and Afolami (2011) recommended the following preventive measures:

- Stringent penalties should be applied for those responsible for collapse of buildings, particularly when loss of lives is involved.

- Town Planning Authorities should be adequately staffed and equipped with professionals in the construction industry. For effective monitoring of projects during and after construction. Organization or department make sure that its own activities are well coordinated before launching a major external effort.
- Government should screen those getting involved in housing projects. For any structure more than a bungalow, a structural engineer must be involved.
- Construction work should only be carried out by registered contractors and supervised by registered architects, engineers and builders rather than engaging unskilled contractors.
- Clients should obtain approvals before they begin construction. At the same time, they are to work with the approved drawings and specifications. Any alterations should be approved before their implementations.
- A regular audit of defective structures can be carried out and such structures marked for demolition is to be demolished before it causes havoc on lives and properties.
- Government at all levels should intensify public enlightenment, placing emphasis on how building disasters could be prevented rather than managing situations which might be costlier.

Fakere, Fadairo and Rufus (2012) also recommended some measures that will support in preventing the incidence of building failure in Nigeria: they are:

- All clients or building developers should be compelled to comply with approved building regulations before the construction and demolition of their buildings and that all building construction works should be well designed and supervised by a registered member of Architects' Registration Council of Nigeria (ARCON), Council for the Regulation of Engineering in Nigeria (COREN) and Council of Registered Builders of

Nigeria (CORBON). Only competent registered contractors should be employed to execute construction works or projects.

- The professional bodies should hold regular workshops and Continuous Professional Development Programmes (CPDP) in order to improve the professional competence of members.
- Enactment of a law in every state in Nigeria, providing heavy penalties for contractors who fail to have registered professionals in supervisory capacity in major building projects. Systematic inspection of building works to be enforced at the Local Government level and penalties for failure to comply with the building standard regulation be provided for.
- All building construction materials like sand, cement, aggregates, reinforcement bars and particularly foundation soil should be tested before commencement of any construction. The mineralogy and alkalinity tests of coarse aggregates are to be done to know whether the material contains some percentage of impurities, which deleterious and injurious to cement and reinforcement rods.

Fakere et al (2012) further point out that the Government should quickly promulgate a National Building Regulation for the elimination or considerable reduction of the incessant collapse of buildings in Nigeria and quick response committee for investigating incidents of building collapse. More so, the law governing all approved structural details of buildings, materials and effective inspection by the local Town Planning Authorities should be enforced and not compromised. Section 30(1) of the Nigerian Urban and Regional Planning Decree 88 of 1992, which demands that no building or structure or any part thereof is to be erected, converted, altered or enlarged unless a development permit has been obtained by the owner or his agent from the ministry is enforced. The Government should fund this board

established through the decree so as to ensure adequate monitoring of the building approval and construction in our society.

Summary of literature review

From the above related literature, it is quite clear that there are different definitions adduced to building failure. Failure in buildings could be of two types, namely: cosmetic failure that occurs when something has been added to or subtracted from the building, thus affecting the structure's outlook. On the other hand, structural failure affects both the outlook and structural stability of the building. The literature also explain building failure as having a much longer strong history compare to others and also explain how perpetuators of building failure are punished in early years.

The literature conceptualized the roles of building inspection team to see to the possibility of preventing building failure from traumatizing people before construction stage, at construction stage and during service stage. It also discussed about the abilities of building inspection team, otherwise referred to as the development control team. Development control is supposed to have qualified personnel with integrity to expertly and diligently vet and approve drawings, construction and other building activities. The literature briefly discuss on the factors responsible for building failure in Nigeria such as bad design; faulty construction; foundation failure; extraordinary loads and lack or ineffective planning authorities to enforce building codes and further asserted some preventive measures to reduce or possibly eliminate the incessant collapse of buildings.

CHAPTER III

METHODOLOGY

This chapter described the research design, area of the study, population, sampling of the population, instrument for data collection, validation of the instrument, administration of the instrument, method of data analysis and decision rules.

Research Design

The descriptive survey research designed was employed for the study. This is because the survey research design employed the use of questionnaire to elicit information/opinion from the respondents. Yalams and Ndomi (2000) define survey research as the gathering of information about a large number of people or objects by studying a representative sample of the entire group through the use of questionnaires. In support of this, Nworgu, (1991) stated that research design is a plan or blue print which specifies how data relating to a given problem should be collected and analyze. Therefore, the survey research was considered suitable since the study will seek information from a sample that was drawn from a population using a questionnaire.

Area of the Study

The study was conducted at development control unit and four building construction companies in FCT Abuja, Nigeria.

Abuja was formed in 1976 from parts of former Nasarawa, Niger, and Kogi States. The territory is located just north of the confluence of the River Niger and Benue River. It is bordered by the states of Niger to the West and North, Kaduna to the northeast, Nasarawa to the east and south, and Kogi to the southwest. It is lying between latitude 8.25 and 9.20 north of the equator and longitude 6.45 and 7.39 east of Greenwich Meridian, Abuja is geographically located in the central region of the country.

TABLE 1: Shows the location of site in which building construction companies work and Development Control Unit.

Names of companies/Authority	Site/Office location
Development Control Unit	**Wuse, Zone 6**
Citec	**Wuse Zone 3**
Modular Limited	**Wuse zone 3**
Golden Wefaq Limited	**Wuse zone 2**
Tetraco	**Gwarinpa**

Source: Wikipedia (2012)

Population of the study

The targeted population for this study consists of all the construction companies and development control unit.

Table 2: Shows the population of Development control staffs and project managers.

Industry	No of Development control unit staffs	No of Site Supervisors	Totals
Abuja	**60**	**30**	**90**

Sample size and sampling techniques

A Simple Random Sampling (SRS) was employed in the selection of Development control staffs and project managers giving the total of sixty (65) respondents. The sample of the study is made up of Development control unit of F.C.D.A and four construction companies which are Citec, Modular Limited, Golden Wefaq Limited and Setraco selected across Abuja. This method is used to give the unit and every construction company in the population equal chance of being selected into the sample.

Table 3: Shows the sample of the population on Development control staffs and project managers.

S/No	Name of Company	No. of Development Control Staffs	No. of Site Supervisors (Builder, Engineer & Architect)
1	**Development control Unit (FCDA)**	**42**	**-**

2	**Citec**	**-**	**8**
3	**Modular Limited**	**-**	**5**
4	**Golden Wefaq Limited**	**-**	**6**
5	**Tetraco**	**-**	**4**
	SUM	**42**	**23**
	TOTAL	**65**	

Source: From Table 2

Instrument for Data Collection

The instrument used for data collection was a structured questionnaire developed by the researcher for this study. It consist

ed of two (2) parts in which the first indicate the introductory part of the respondents and the second part is divided into three sections A, B and C. Section A contains (15) items which deals with the roles of development control unit of FCDA in building construction projects in Abuja. Section B also contains (14) items which deals with the abilities of development control unit of FCDA in building construction projects in Abuja. Section C contains (10) items which deals with the ways of curtailing building failures in Abuja.

Validation of Instrument

The instrument for the data collection was validated by (3) Lecturers, two(2) from Building Technology option of Industrial and Technology Education Department, Federal university of Technology, Minna and the department of Building Technology, Niger State College of Education Minna to ascertain the appropriateness of questionnaire items before administering it to respondents.

Administration of the Instrument

The instrument used for data collection was administered to the respondents by the researcher and one research assistant from Development control unit and from each

construction company which was later collected through the research assistant within one week of administration. The return rate of the questionnaire was 75%

Method of Data Analysis

The data collected was analysed using mean and standard deviation while t-test statistics was used t- test the hypotheses at 0.05 level of significance.

Decision Rule

To determine the acceptance level, a mean cut off of 2.50 was chosen. The resulting mean score was interrupted relatively to the concept of the real lower and upper limit of numbers 1 – 4 as used in the rating scale adopted for the study. Therefore any task with mean of 2.50 and above was accepted and any task with mean of 2.49 or less was rejected.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

This chapter described the presentation and analysis of data with respect to the research questions and the hypothesis tested for the study, the results of data analysis for the research question were presented.

Research Question I

What are the roles of development control unit of FCDA in building construction projects in Abuja?

In determining the roles of development control unit of FCDA in building construction projects in Abuja, 15 items was presented to the respondents in order to express their opinion. The responses of the respondents are presented in Table 4:1 below.

Table 4.1: Mean Responses of the respondents on the roles of inspection team of Development Control Unit of FCDA in curtailing building failure in Abuja.

Development control unit:

N_1 = 42, N_2 = 23

S/NO	ITEMS	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_T$	REMARK
1.	Coordinate activities with construction professional bodies to ensure code compliance.	2.79	2.00	2.40	Disagreed
2.	Receive complains from the public and staff regarding violations of codes & standards.	3.38	2.65	3.02	Agreed
3.	Receive complains from the public and staff regarding violations of health and safety regulations.	3.09	2.19	2.64	Agreed
4.	Investigate complaints from the public and staff regarding violations of municipal codes & standards.	2.20	2.73	2.45	Disagreed
5.	Investigate complaints from the public and staff regarding violations of health and safety regulations.	3.38	2.18	2.78	Agreed
6.	Document violations of codes & standards by securing photographs and other pertinent data.	3.29	2.91	3.10	Agreed

7.	Carry out research on complains and state regulations to establish whether a violation has occurred.	2.16	2.62	2.39	Disagreed
8.	Initiate contacts with residents to explain the nature of incurred violations.	3.00	2.13	2.57	Agreed
9.	Encourage compliance with building codes, ordinances, and standards	3.26	3.05	3.16	Agreed
10.	Writes "stop work" orders for work being done without permits or in an unsafe manner.	3.51	3.27	3.39	Agreed
11.	Initiates abatement of dangerous properties.	2.76	2.86	2.81	Agreed
12.	Respond to questions and inquiries on abatement of dangerous buildings.	3.14	2.57	2.86	Agreed
13.	Provides information to the public and government agencies regarding codes, regulations and ordinances.	3.61	3.55	3.58	Agreed
14.	Issue letters to property owners notifying them of violations.	3.33	3.43	3.38	Agreed
15.	Prepare noncompliance cases for legal action.	2.04	2.85	2.45	Disagreed

Key: N_1 = Development Control staff, N_2 = Site Supervisors**,** $\bar{X}_1$ = Mean of response of Development Control staff**,** $\bar{X}_2$ = Mean of response of Supervisors, $\bar{X}_t$ = Average mean of responses on the roles of inspection team of development control unit of FCDA in building construction in Abuja

The analysis of mean responses of the two groups of respondents from table 4.1: reveals that items 2,3,5,6,8,9,10,11,12,13, and 14 under this sub-heading are rated as Agreed while items 1,4,7, and 15 under this sub-heading are rated as Disagreed with mean score ranging between 2.00- 3.61 respectively. This signifies that all the items listed are the roles of development control unit of FCDA in building construction in Abuja are appropriate.

Research Question II

4. What are the abilities of development control unit of FCDA in building construction projects in Abuja?

Table 4.2: Mean responses on the abilities of inspection team of Development Control Unit of FCDA in curtailing building failure in Abuja.

N_1 = 42, N_2 = 23

S/NO	ITEMS	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_T$	REMARK
1.	Ability to Interpret laws governing construction.	3.54	3.48	3.51	Agreed
2.	Ability to apply codes and departmental policies governing the construction buildings.	3.10	3.00	3.05	Agreed
3.	Ability to review construction plans and specifications.	2.09	2.80	2.45	Disagreed
4.	Ability to review maps for conformance with City standards and policies.	3.43	2.94	3.19	Agreed
5.	Ability to interpret construction blueprints, plans, and specifications.	3.33	3.09	3.21	Agreed
6.	Ability to enforce building and housing codes to ensure conformance.	2.22	2.71	2.47	Disagreed
7.	Ability to detect faulty materials and workmanship during construction.	3.26	2.48	2.87	Agreed
8.	Ability to determine the stage of construction during which defects are most easily found & remedied	3.14	2.57	2.86	Agreed
9.	Explain occupational hazards & safety practices necessary in the area of code compliance.	2.00	2.96	2.48	Disagreed
10.	Ability to maintain accurate and precise records	2.95	2.86	2.91	Agreed
11.	Ability to carry out oral and written instructions on conformance to codes and standards.	3.16	3.24	3.20	Agreed
12.	Ability to make independent decisions within established policy and procedural guidelines.	2.88	2.35	2.62	Agreed
13.	Ability to set priorities and meet critical time deadlines.	3.23	2.39	2.81	Agreed
14.	Establish & maintain harmonious working relationship with those contacted in the course of work.	3.00	2.39	2.70	Agreed

Key: N_1 = Development Control staff, N_2 = Site Supervisors, $\bar{X}_1$ = Mean of response of Development Control staff**,** $\bar{X}_2$ = Mean of response of Supervisors, $\bar{X}_t$ = Average mean of responses of the abilities of inspection team of development control unit of FCDA in building construction projects in Abuja.

The analysis of mean responses of the two groups of respondents from table 4.2: reveals that items1,2,4,5,7,8,10,11,12,13, and 14 under this sub-heading are rated as agreed while items

3,6, and 9 under this sub-heading are rated as Disagreed with mean score ranging between 2.00- 3.54 respectively. This signifies that all the items listed are the mean of responses of the abilities of inspection team of development control unit of FCDA in building construction projects in Abuja are appropriate.

Research Question III

1. What are the ways of curtailing consistent building failure in Abuja?

Table 4.3: Mean responses on the ways of curtailing consistent building failure in Abuja

$N_1 = 42$, $N_2 = 23$

S/NO	ITEMS	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_t$	REMARK
1.	Construction work are carried out by registered contractors and supervised by registered architects, engineers and builders.	2.50	2.44	2.47	Disagreed
2.	Clients obtain approvals from Development control unit before they begin construction.	2.68	2.00	2.34	Disagreed
3.	Development Control unit carry out regular audit of defective structures and mark for demolition.	3.05	3.13	3.09	Agreed
4.	Development Control unit are adequately staffed and equipped with professionals to ensure safety.	2.20	2.22	2.21	Disagreed
5.	Public enlightenment is intensified to ensure compliance to codes and policies.	3.24	2.78	3.01	Agreed
6.	Development Control unit compel clients/developers to comply with approved building regulations before construction.	3.49	2.87	3.18	Agreed
7.	Development Control unit's inspections are enforced with stringent penalties on perpetuators.	3.24	2.48	2.86	Agreed
8.	Materials are tested by Development Control unit before commencement of any construction.	3.30	3.09	3.20	Agreed
9.	Quick response committee is set up by development to investigate incidents of building collapse.	3.44	3.29	3.37	Agreed
10.	Development Control unit ensures regular maintenance of structures.	2.57	2.26	2.42	Agreed

Key: N_1 = Development Control staffs, N_2 = Site Supervisors, $\bar{X}_1$ = Mean of response of Development Control staff**,** $\bar{X}_2$ = Mean of response of Site Supervisors, $\bar{X}_t$ = Average mean of responses on the ways of curtailing consistent building failure in Abuja.

The analysis of mean responses of the two groups of respondents from table 4.3: reveals that items 3,5,6,7,8,9 and 10 under this sub-heading are rated as agreed while 1,2, and 4 under this sub-heading are rated as Disagreed with mean score ranging between 2.00- 3.49 respectively. This signifies that the ways of curtailing consistent building failure in Abuja are appropriate.

Hypothesis I

HO_1: There is no statistical significance difference between the mean responses of respondents on abilities of inspection team of development control unit of FCDA in building construction projects in Abuja

Table 4.4: t– test of mean responses of Development Control staffs and Site Supervisors on the roles of inspection team of Development Control unit of FCDA in curtailing building failure in Abuja.

$N_1 = 42, N_2 = 23$

S/NO	ITEMS	SD_1	SD_2	t-cal	REMARK
1.	Coordinate activities with construction professional bodies to ensure code compliance.	1.19	1.15	2.63	S
2.	Receive complains from the public and staff regarding violations of municipal codes & standards.	0.85	1.13	1.97	S
3.	Receive complains from the public and staff regarding violations of health and safety regulations.	1.02	1.18	2.20	S
4.	Investigate complaints from the public and staff regarding violations of municipal codes & standards.	0.99	1.19	2.48	S
5.	Investigate complaints from the public and staff regarding violations of health and safety regulations.	0.95	1.07	0.53	NS
6.	Document violations of codes & standards by securing photographs and other pertinent data.	0.67	1.14	1.12	NS
7.	Carry out research on complains and state regulations to establish whether a violation has occurred.	0.84	0.90	1.69	NS
8.	Initiate contacts with residents to explain the nature of incurred violations.	1.02	0.99	2.42	S

9.	Encourage compliance with building codes, ordinances, and standards	1.01	0.93	0.57	NS
10.	Writes "stop work" orders for work being done without permits or in an unsafe manner.	0.67	0.91	0.80	NS
11.	Initiates abatement of dangerous properties.	0.93	1.12	-0.26	NS
12.	Respond to questions and inquiries on abatement of dangerous buildings.	0.90	1.28	1.38	NS
13.	Provides information to the public and government agencies regarding codes, regulations and ordinances.	0.49	0.89	0.22	NS
14.	Issue letters to property owners notifying them of violations.	0.65	0.58	-0.45	NS
15.	Prepare noncompliance cases for legal action.	0.93	1.08	-0.24	NS

Key: N_1 = Development Control Staffs, N_2 = Site Supervisors, SD_1 = Standard Deviation Mean of response of Development Control Staffs, SD_2= Standard Deviation Mean of response of Site Supervisors, S= Significant, NS= Not significant, t- cal= t calculated

The result presented on Table 4.5: revealed that the t-test calculated for item 1, 2, 3, 4 & 8 were more than the t-table value. Therefore, the hypotheses for those items were rejected. Accordingly, the opinion of the respondents differs significantly on 4 items. While the t-test calculated for item 5, 6, 7, 9, 10, 11, 12, 13, 14 & 15 were less than the t-table value; therefore the hypothesis for those items was not rejected. Accordingly, the opinion of the respondents did not differ significantly on those 11 items.

Hypothesis II

HO_2: There is no statistical significance difference between the mean responses of ways of curtailing consistent building failure in Abuja**.**

Table 4.5: t– test of mean Responses of Development Control staffs and Site Supervisors on the ways of curtailing consistent building failure in Abuja.

N_1 = 42, N_2 = 23

S/NO	ITEMS	SD_1	SD_2	t- cal	REMARK
1.	Construction work are carried out by registered				

	contractors and supervised by registered architects, engineers and builders.	0.60	0.44	-0.26	NS
2.	Clients obtain approvals from Development control unit before they begin construction.	0.47	0.49	0.39	NS
3.	Development Control unit carry out regular audit of defective structures and mark for demolition.	0.99	0.85	-0.44	NS
4.	Development Control unit are adequately staffed and equipped with professionals to ensure safety.	0.69	0.88	-0.07	NS
5.	Public enlightenment is intensified to ensure compliance to codes and policies.	0.83	1.06	2.09	S
6.	Development Control unit compel clients/developers to comply with approved building regulations before construction.	0.71	1.12	1.82	NS
7.	Development Control unit inspection's are enforced with stringent penalties on perpetuators.	0.63	1.06	2.38	S
8.	Materials are tested by Development Control unit before commencement of any construction.	0.85	0.83	0.70	NS
9.	Quick response committee is set up by development to investigate incidents of building collapse.	0.74	0.88	0.48	NS
10.	Development Control unit ensures regular maintenance of structures.	0.55	0.53	1.55	NS

Key: N_1 = Development Control Staffs, N_2 = Site Supervisors, SD_1 = Standard Deviation Mean of response of Development Control Staffs**,** SD_2= Standard Deviation Mean of response of Site Supervisors, S= Significant, NS= Not significant, t- cal= t calculated

The result presented on Table 4.6: revealed that the t –test calculated for item 5 & 7 were more than the t-table value. Therefore, the hypotheses for those items were rejected. Accordingly, the opinion of the respondents differs significantly on 2 items. While the t-test calculated for items 1, 2, 3, 4, 6, 8, 9 & 10 were less than the t-table value. Therefore, the hypothesis for those items was not rejected. Accordingly the opinion of the respondents did not differs significantly on those 8 items.

Findings

The following findings were made, based on the data collected and analyzed according to the research questions posed for the study.

Findings related to the role of development control unit of Federal Capital Development Authority (FCDA) in building construction in Abuja reveal that:

1. Development Control unit provides information to the public and government agencies regarding codes, regulations and ordinances.
2. Issue letters to property owners notifying them of violations.
3. Writes “stop work” orders for work being done without permits or in an unsafe manner.
4. Development Control unit do not coordinate activities with construction professional bodies to ensure code compliance.
5 Development Control Unit do not investigate complaints from the public and staff regarding violations of municipal codes & standards.

Findings related to the abilities of development control unit of FCDA in building construction projects in Abuja reveals that the Development Control unit has the

1. Ability to interpret construction blueprints, plans, and specifications.
2. Ability to maintain accurate and precise records.
3. Explain occupational hazards & safety practices necessary in the area of code compliance
4. Ability to review construction plans and specifications.

Findings related to the ways of curtailing consistent building failure in Abuja reveals that

1. Construction work are not carried out by registered contractors and supervised by registered architects, engineers and builders.

2. Materials are tested by Development Control unit before commencement of any construction.

3. Development Control unit are not adequately staffed and equipped with professionals to ensure safety.

4. Public enlightenment is intensified to ensure compliance to codes and policies.

Discussion of Findings

The discussion of findings was based on the research questions posed for the study.

The research finding reveals that the Development Control unit Provide information to the public and government agencies regarding codes, regulations and ordinances. According to Tigard, (2008), he posits that development control unit provides information to the public by telephone and in person regarding code and regulations. This is in line with the view of the Jagboro (2002) who maintained that the development control unit provides general information on the building Code and other relevant standards. Building codes are not enforceable if it is not through a program of providing information to the public by specially qualified personnel. Information has a significant importance and serves as guidelines for both public and government agencies to ensure conformance to building codes and standards.

The research finding reveals that the Development Control Issue letters to property owners notifying them of violations. This is in line with Carlton (2011) who asserted that letters are sent by the building inspectors to property owners when complains are made on violations of codes and standards. More so, letters are also sent to show that the complaints have been withdrawn after compliance. The unit writes “stop work” orders for work being done without permits or in an unsafe manner (Tigard, 2008). This conform to the assertion made by Waziri (2002) that Development Control is authorized to issue Stop Work Orders

directing that erection, construction, alterations, installation, repairs, removal, demolition and other activities cease immediately and that the premises be vacated pending compliance with such orders whenever any structure or part thereof is found to be in a dangerous or unsafe condition due to inadequate maintenance, deterioration, damage by natural causes, fire, or faulty construction that it is likely to cause imminent injury to persons or property.

The research findings reveals that Development Control do not coordinate activities with construction professional bodies to ensure code compliance. According to Fakere, Fadairo & Rufus (2012), they posit that an organization or department make sure that its own activities are well coordinated before launching a major external effort. Internal coordination is easier to carry out than coordination between organizations, due to the presence of a single formal authority structure. The research finding reveals that Development Control unit do not investigate complaints from the public and staff regarding violations of municipal codes & standards. This is contrary to the view of Sugiharto and Keith (2001) who posits that building authority Coordinate and investigates potential code violations in response to citizen complaints and actively patrol for violations of property maintenance standards.

The research finding reveals that Development Control interpret instruction blueprints, plans, and specifications. This is in line with the assertion made by Nick and Kate (2012) that most code enforcement processes are carried out as a result of the ability to read and interpret engineering and architectural blueprints, plans and specifications.

The research finding reveals that Development Control maintain accurate and precise records. Accurate records according to Ben (2008) help to have better control of work and to also have a better idea of how well things work. Development control Conduct routine tests consistently with accuracy and precision so as to ensure compliance to codes. The research finding reveals that Development Control do not explain occupational hazards & safety

practices necessary in the area of code compliance. The research finding reveals that the Development Control review plans and specifications because Jayeola (2004) opined that large part of their function is directly linked to monitoring and controlling the building designs in other to achieve the desired standard during construction.

The research finding reveals that construction work are not carried out by registered contractors and supervised by registered architects, engineers and builders. The view was in line with the view of Iyagba (1991) who summarized Ignorance that is incompetent men in charge of procurement, design, construction and supervision of building construction. More so, the research finding also reveals that Materials are tested by Development Control unit before commencement of any construction. This is so because according to Hall (1984), he posited that use of low quality materials is one of the major causes of structural failure. This is in support of the view of Aniekwu and Orie (2005) who in their study, also identified low quality materials as the most important cause of failure of engineering facilities in Nigeria

The research finding reveals that Development Control unit are not adequately staffed and equipped with professionals to ensure safety. This is in line with the view asserted by Akanya (2005) that the growing incidence of building collapse across the country especially Abuja is due to absence of effective inspection mechanisms. The rates of collapse reduce when competent people are given the chance to carry out their work. The research finding reveals that Public enlightenment is intensified to ensure compliance to codes and policies. This view is in support of the view of Anyeale (2003) who identifies the methods of disseminating new codes and policies into three: - The individual method or personal contact which includes Industrial and Home visit, offices call, telephone calls and the use of letters and correspondence through an agent. The group method; includes organizing lectures, seminars and symposia and conducting tours.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATION

Summary of the Study

The summary of the study on assessment of Development Control unit of Federal Capital Development Authority in curtailing building failure in Abuja is paramount in order to bring out the quality structure that will be needed in Abuja thereby ensuring safety of lives and properties. Abuja as a modern city and arguably one of the fastest growing cities in the world is not immune to the grisly tale of building failure. The quality of structure is declining because of noncompliance to codes and standards which is conceived from ineffective inspection of buildings before, during and after construction by the relevant authorities.

The study considers the weaknesses of development control unit of Federal Capital Development Authority (FCDA) which leads to building failure and resulting to loss of lives and valuable properties. The purpose of the study therefore emphasize, the roles of Development Control unit of Federal Capital Development Authority in building construction projects in Abuja, the abilities of Development Control unit of Federal Capital Development Authority in building construction projects in Abuja and ways of curtailing consistent building failure in Abuja.

Survey approach was used to develop the study. The questionnaire was validated by three lecturers, two lecturers from the department of Industrial and Technology Education, Federal University of Technology Minna and one from the department of Building Technology, Niger State College of Education Minna. The validated items 39 are used for the study. The validated instrument was questionnaire prepared for 42 Development Control staffs and 23 Site supervisors in some selected Areas and companies in FCT, Abuja.

The instrument was analyzed using frequency count, mean, standard deviation and t-test. The research question were formulated and answered.

Implication of the Study

The findings of the study regarding; the roles of Development Control Unit of Federal Capital Development Authority in building construction projects showed that the Development Control unit should be realistic in general coordination of construction processes. Part of her roles is to work hand in gloves with the professional bodies such as Nigeria Society of Engineers (NSE), Nigeria Institute of Builders (NIOB), and others to form a platform of cooperation. The translation of these roles in to practical may assist in complete adherence to building codes and standards and to also reduce the rate of building collapse and it attending casualties. The implication of this finding is that, if Development Control unit fails to exhibit her roles in ensuring compliance to building codes and standards; poor quality building materials, engagement of quacks/half baked professionals, wrong conversion of buildings and so many others may be prevalent.

Another finding of this study with regard to the abilities of Development Control unit of FCDA in building construction projects in Abuja showed that the need for Development Control unit as a watch dog in construction projects is as great as ever and her abilities is so important. Keeping the building codes and standards to a workable extent and eliminating much duplication of unacceptable site practices depends solely on the ability to read and interpret construction blue prints, plans and specifications as well as make sound decisions within established policy and enforce building codes and standards.

The implication here is that, the inability of Development Control to maintain accurate and precise records of inspection; establish sound policy and enforce it building codes and standards may give rise to corruption and unprofessionalism. Olugbenkan (2001) said that ‘corruption manifest itself in all stages of construction projects from initiation to completion stage. It is suspicious that sick buildings may be at increase which will obviously result into building failure and loss of lives.

Conclusion

Base on the findings of the study, It was analysed that there is need for Development Control unit to be adequately staffed and equipped with professionals to ensure effective inspection of building construction at all stages because of the rapid development of houses in Abuja as a result of the continuous growing population rate. More so, there is an enormous backlog of violations of building codes and standards that remain unfixed. The Development Control unit should begin a thorough auditing of professionals in charge of checking design, drawings and specifications for all quality and safety related issues. It should not take more tragedies to prompt the review of current building production process and its inspection regimes. The building production process requires a creative and sustainable solution that will transform quality performance within the construction industry.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. The Standard Organization of Nigeria (SON) should have a more positive response to their responsibility in sanitizing building materials that are offered for sale in Nigerian market. There is a need for them to double their effort by emulating the Nigeria Agency for Food and Drug Administration and Control (NAFDAC) in carrying out their responsibility.
2. Building professionals should also ensure proper and efficient supervision of workmen as well as efficient checking of materials before incorporation into building works.
3. Development Control Unit should be staffed with adequate experienced personnel to ensure effective inspection of both new and existing houses for compliance with building codes and standards.

4. The roles, responsibilities and ethical obligation of Development Control Unit in building construction industry should be adequately communicated to the professionals, artisans and the general public for compliance with building regulations.

Suggestions for Further Research

Based on the findings of this research study; the following suggestions were made for the study:-

1. Assessing the level of awareness and implementation of health and safety regulations among residents of Abuja.
2. Strategies on the implementation of stage inspection in building construction projects in Abuja.

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APPENDIX B

QUESTIONNAIRE

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

SCHOOL OF SCIENCE AND SCIENCE EDUCATION

DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION

QUESTIONNAIRE FOR THE ASSESSMENT OF DEVELOPMENT CONTROL UNIT OF F.C.D.A IN CURTAILING BUILDING FAILURE IN ABUJA.

PART ONE

Introduction: This research work is aimed at assessing the development control Unit of FCDA in reducing building failure in F.C.T, Abuja.

Please kindly complete this questionnaire by ticking (✓) the column that represents best your perception about the topic marking the options that are closest to your experience. Be as honest as you can. All information provided will be highly confidential and strictly used for the purpose of this research work.

Development control staffs ☐

Site Supervisors ☐

A four (4) point rating scale is used to indicate your opinion as stated below:-

Strongly Agreed (SA)

Agreed (A)

Strongly Disagreed (SD)

Disagreed (D)

PART TWO

SECTION A

What are the roles of inspection team of development control unit of FCDA in building construction projects in Abuja?

S/NO	ITEMS	SA	A	SD	D
1.	Coordinates activities with other staff and code compliance personnel.				
2.	Receive complaints from the public and staff regarding violations of municipal codes & ordinances.				
5	Receives complaints from the public and staff regarding violations of standards, and health and safety regulations.				
6	Investigates complaints from the public and staff regarding violations of municipal codes & ordinances.				
7	Investigates complaints from the public and staff regarding violations of standards, and health and safety regulations.				
8.	Documents violations by securing photographs and other pertinent data.				
9.	Researches prior complaints and state regulations to establish whether a violation has occurred.				
10.	Initiate contacts with residents and parties to explain the nature of incurred violations.				
11	Encourage compliance with building codes, ordinances, and standards				
12	Writes “stop work” orders for work being done without permits or in an unsafe manner.				
13.	Initiates abatement of dangerous properties.				
14.	Respond to complaints, and inquiries on abatement of dangerous buildings.				
15.	Provides information to the public and government agencies regarding codes, regulations and ordinances.				

SECTION B

What are the abilities of inspection team of development control unit of FCDA in building construction projects in Abuja?

S/NO	ITEMS	SA	A	SD	D
15.	Interpret laws & regulations governing construction and inspection of buildings.				
16.	Apply codes and departmental policies governing the construction buildings.				
17.	Review construction plans and specifications.				
18.	Review maps for conformance with City standards and				

	policies.
19.	Interpret construction blueprints, plans, and specifications.
20.	Enforce building and housing codes.
21.	Detect faulty materials and workmanship.
22.	Determine the stage of construction during which defects are most easily found & remedied
23.	Explain occupational hazards & safety practices necessary in the area of code compliance.
24.	Maintain accurate and precise records
25.	Carry out oral and written instructions.
26.	Make independent decisions within established policy and procedural guidelines.
27.	Set priorities and meet critical time deadlines.
28.	Establish & maintain harmonious working relationships with those contacted in the course of work.

SECTION C

What are the ways of curtailing consistent building failure in Abuja?

S/NO	ITEMS	SA	A	SD	D
11.	Construction work should only be carried out by registered contractors and supervised by registered architects, engineers and builders.				
12.	Clients should obtain approvals before they begin construction.				
13.	A regular audit of defective structures should be carried out and should be marked for demolition				
14.	The unit should be adequately staffed and equipped with professionals to ensure safety.				
15.	Public enlightenment should be intensified to ensure compliance to codes and policies.				
16.	Building developers should be compelled to comply with approved building regulations before construction				
17.	Building inspection should be enforced with stringent penalties on perpetuators.				
18.	All building materials should be tested before commencement of any construction.				
19.	Set up quick response committee to investigate incidents of building collapse.				
20.	Enforcement of regular maintenance.				

APPENDIX C

COMPUTATION OF MEAN AND STANDARD DEVIATION FOR DEVELOPMENT CONTROL UNIT STAFF AND SITE SUPERVISORS

Table 1: the mean response of Development Control Unit Staffs

Responses	X	F	fX
Strongly Agreed	4	19	76
Agreed	3	13	39
Strongly Disagreed	2	01	02
Disagreed	1	09	09
		∑f = 42	**∑fX = 117**

MEAN ($\overline{X}$) = $\frac{\sum f}{\sum f} = \frac{117}{42}$ = 2.79

Table 2: The mean for Site Supervisors

Responses	X	F	fX
Strongly Agreed	4	04	16
Agreed	3	02	06
Strongly Disagreed	2	06	12
Disagreed	1	11	11
		∑f = 23	**∑fX = 45**

MEAN ($\overline{X}$) = $\frac{\sum fX}{\sum f} = \frac{45}{23}$ = 2.00

Table 3: Standard Deviation for Development Control Unit Staffs

Responses	**X**	**F**	**FX**	$(X - \bar{X})^2$	$f(X - \bar{X})^2$
Strongly Agreed	4	19	76	(4 – 2.79) = 1.46	27.74
Agreed	3	13	39	(3 – 2.79) = 0.04	0.52
Strongly Disagreed	2	01	02	(2 – 2.79) = 0.62	0.62
Disagreed	1	09	09	(1 – 2.79) = 3.20	28.80
		$\sum f = 42$	**$\sum fX = 117$**		**$\sum f(X - \bar{X})^2 = 57.68$**

Variance (S^2) given as $\frac{\sum f(x-\bar{x})2}{N-1}$

$$(S^2) = \frac{57.68}{42-1}$$

$$(S^2) = \frac{57.68}{4}$$

$$(S^2) = 1.41$$

Standard deviation = $(S.D_1) = \sqrt{S_1}$

$$(S.D_1) = \sqrt{1.41}_1$$

$$= 1.19$$

Table 4: Standard Deviation for The mean for Site Supervisors

Responses	**X**	**F**	**fX**	$(X - \bar{X})^2$	$f(X - \bar{X})^2$
Strongly Agreed	4	04	16	(4 – 2.00) = 4.00	16.00
Agreed	3	02	06	(3 – 2.00) = 1.00	2.00
Strongly Disagreed	2	06	12	(2 – 2.00) = 0.00	0.00
Disagreed	1	11	11	(1 – 2.00) = 1.00	11.00
		$\sum f = 23$	**$\sum fX = 45$**		**$\sum f(X - \bar{X})^2 = 29.00$**

Variance (S^2) given as $\frac{\sum f(x-\bar{x})2}{N-1}$

(S^2) $= \frac{29}{23-1}$

(S^2) $= \frac{29}{22}$

(S^2) $= 1.32$

Standard deviation = ($S.D_1$) = $\sqrt{S_1}$

($S.D_2$) $= \sqrt{1.32}$

$= 1.15$

T – test

$$t - test = \frac{\overline{X1} - \overline{X2}}{\sqrt{\frac{\overline{S.D_1^2}}{N1} + \frac{S.D_2^2}{\square 2}}}$$

$$t - test = \frac{2.79 - 2.00}{\sqrt{\frac{(1.19)2}{42} + \frac{(1.15)2}{23}}}$$

$$t - test = \frac{2.79 - 2.00}{\sqrt{0.0337 + 0.0575}}$$

$$t - test = \frac{0.79}{\sqrt{0.0912}}$$

$$t - test = \frac{0.79}{0.30}$$

t-test = 2.63