AN EVALUATION OF THE ENVIRONMENTAL FACTORS THAT LEAD TO ABANDONMENT OF PUBLIC BUILDING PROJECTS IN THE FEDERAL CAPITAL TERRITORY, ABUJA

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APRIL, 2016

DECLARATION

I declare that the work in this dissertation entitled 'AN EVALUATION OF THE ENVIRONMENTAL FACTORS THAT LEAD TO ABANDONMENT OF PUBLIC BUILDING PROJECTS IN THE FEDERAL CAPITAL TERRITORY, ABUJA' has been carried out by me in the Department of Building, Faculty of Environmental Design. The information derived from the literature has been duly acknowledged in the text and a list of reference provided. No part of this dissertation was presented for another degree or diploma at this or any other institution.

Dada Solomon Adedeji		
Name of Student	Signature	Date

CERTIFICATION

This dissertation entitled AN EVALUATION OF THE ENVIRONMENTAL FACTORS THAT LEAD TO ABANDONMENT OF PUBLIC BUILDING PROJECTS IN THE FEDERAL CAPITAL TERRITORY; ABUJA by DADA SOLOMON ADEDEJI meets the regulations governing the award of the degree of Master of Science in Construction Management of the Ahmadu Bello University Zaria, and is approved for its contribution to knowledge and literary presentation.

Dr. A. D. AbdulAzeez	_____	_____
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(Member, Supervisory Committee)	Signature	Date
Dr. Dikko Kado	_____	_____
(Head of Department)	Signature	Date
Prof. Kabir Bala	_____	_____
(Dean, School of Postgraduate Studies)	Signature	Date

DEDICATION

This research work is dedicated to my father, Mr. Samuel Adebayo Dada for his love, caring and support.

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I thank Almighty God for His mercy and protection in making this research work see the light of day.

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ABSTRACT

The successful implementation of building projects may be impaired without a good knowledge of the environmental factors that contribute to building projects abandonment and this abandonment makes it difficult to achieve the benefit to be derived from the projects. The aim of the study was to evaluate the environmental factors that lead to abandonment of public building projects, with a view to proffering solutions to public building projects abandonments in Abuja . The study identifies the characteristics of abandoned public building projects, examine the environmental factors that are responsible for public building projects abandonment and also assess the effects of public building projects abandonment on the environment. The research adopted the quantitative method in which the checklist was developed to obtain the inventory of abandoned public building projects in Abuja. A structured questionnaire was also designed and administered to the in-house consultants of the F.C.D.A. Data was analyzed using statistical tools like Means, Percentages and Relative Importance Index (RII) and presented using Charts and Tables. The study revealed that 67% of the public building projects are abandoned after the contract period has elapsed. It also revealed that lack of funds constitute about 50% of the factors affecting completion as well as none of the abandoned public building projects achieved 50% completion. The study found that inadequate working capital is the highest ranked factor among the other environmental factors with a RII of 0.87. The study also revealed that cost overrun is the most significant effect of abandonment of public building projects with a RII of 0.81. The research concluded that the inadequate working capital, importation of materials and equipments, instability in governance, type of contract, civil conflicts and unexpected geological condition are the environmental factors that contribute largely and immensely to the abandonment of public building projects. The research recommends that there should be proper cost analysis of the project to be embarked upon.

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CHAPTER 1

1. INTRODUCTION

1.1 Background of the Study

The construction industry contributes greatly to the growth of any nation even though it contributes less than the other industries. Therefore, it is a key player in the socio-economic progress of several countries internationally (Usman, Kamau and Mireri, 2014). Also the Nigeria construction industry is a broad variety of loosely incorporated organizations that jointly erect, adjust and restore a large range of different buildings and public engineering projects. The building industry is also defined as financial activities that center on the construction of physical projects, such as buildings and road and rail network, despite of the construction being land or maritime based (Osman, 2006). The success of a project is a very critical issue in the industry.

Unluckily a lot of these projects in Nigeria are out rightly abandoned still at commencement (Olapade and Anthony, 2012). Dahlan (2001) contends that, from the development point of view, the word 'abandoned project' refers to a project in which the construction job has been delayed, even though planning consent has been approved to the developer. Also, Olapade and Anthony (2012) defined abandoned project as a project in which the client refuse to provide maintenance and working services to a building. However, this study view abandoned building project as a project in which the construction work is incomplete and suspended. Therefore, the importance that the continual abandonment of projects would bring numerous effects on real properties and its values and the financial system cannot be overemphasized since some of the building projects provide the fundamental services that should improve the real

properties developed **(**Ihuah and Benebo**,** 2014). By most accounts, abandoned buildings have numerous risks and danger associated with them.

The abandonment of building projects most especially the public building projects scattered across the length and breadth of Nigeria. According to a report by Nasir (2012), there are about eleven thousand, eight hundred and eighty-six (11,886) abandoned projects that will cost an expected N7.78 trillion to complete! These shocking figures are from the statement of the Presidential Projects Assessment Committee (PPAC) set up in March 2011, by The President Goodluck Jonathan of Nigeria to look into cases of abandoned projects. If the government does not begin any fresh projects, it will take more than five years budgeting about N1.5 trillion yearly to finish them all - and that is assuming no cost-over runs or delays.

However, Faniran, Love and Smith (2000) recommended that there is a need to build up proper management tools and techniques particularly modified to the project environment of developing countries. According to Ajayi, Ogunsanmi and Ofili (2010) the four most significant external environmental factors in declining order include community issues, weather conditions, economic situation (boom or meltdown) and government policy.

Olusegun and Michael (2011) discussed that the mission in increasing infrastructural projects are mostly to give new and valuable product and services to the public. It also encourages the artistic part of the environment but this purpose is somehow compromised and not accomplished owing to the incessant problem of project abandonment.

Therefore, the problem of abandoned building projects is enormously affecting the building industry in terms of economy, and needs a more serious view on this issue in order to have a good understanding of the problem so that the industry could take the basic steps required to overcome this issue.

1.2 Statement of the Research Problem

In developing nation, the building sector forms a high proportion of the financial system and it also represents one of the major active and composite industries environments (Rahman and Sufian, 2008). According to a report by Stanley (2014), about 437 abandoned buildings in Abuja had so far been captured. Despite the growing rate of construction activities in FCT, limited research works has been carried out to identify and tackle the problem of abandonments.

Nwachukwu and Nzotta (2010) opined that the speed at which building construction projects are abandoned, some even under construction, is rising majorly in a developing economy like Nigeria. Therefore, the problem of incessant abandonment of building projects by the governments is a very important issue to be addressed. This applies to Nigeria where construction investments account for over 50% of the gross fixed capital structure.

Previous studies done on abandonments had focused on other aspect. For instance, Khalid (2010) and Dahlan (2010) have done related researches but focused mainly on housing projects. Ihuah and Benebo (2014) focused on development projects while Akindele (2013) focused on residential building projects. Khalid (2010) conducted questionnaire survey, interviews and literature review relating to developers from six states in Malaysia. However, the questionnaire survey did not consider the contractors and consultants. Also, Dahlan (2010) focused on the issue of abandoned housing projects by conducting case studies and literature review on undergraduate projects and research reports but Dahlan (2010) study did not entail a questionnaire survey.

Ihuah and Benebo (2014) investigated and determined the various causes of abandoning development projects and the effects of such causes on real properties and its values in Nigeria

using a questionnaire survey. But the questionnaire survey did not involve the consultants. Akindele (2013) appraised the effects of landed property abandonment in Osogbo and Ogbomoso, Nigeria using questionnaire survey only. The questionnaire involved only the residents/tenants but did not involve the contractors and consultants.

Base on these previous studies on abandonment, there was no known study that had focus on investigating the factors within the environment that posed greater challenges not only to projects but also to management and organizational structure. This study therefore sought to investigate the environmental factors that are responsible for abandonment of public building projects.

1.3 Justification of the Study

The eradication of abandonment shall develop the provision of housing for all particularly low-income earners, establishment of employment opportunity for professionals in the building industry, decreasing the wastage of public funds, human and resources on the aspect of the client, as well as improved physical and socio-economic growth of the nation amid others (Olapade and Anthony, 2012).Therefore, the abandonment of building projects has resulted in several unfavorable consequences to the economy, the public and environment. Cost-effectively, it is a waste of valuable resources (Yap, 2013).According to Ahmed and Ahmed (2014), the problem of abandoned projects is a global occurrence and this issue is a harmful factor to the stakeholders of those projects.

However, the prevailing and continual abandonment of building projects are disturbing that it creates numerous harmful effects to the values of real property, as well as, to the owners, inhabitants, the surroundings and the economy as a whole (Ihuah and Benebo, 2014). According to Parameswaran (2006), there are unforeseen environmental factors beyond the control of the

organization that has caused project abandonment. Based on these facts, it therefore justify why the environmental factors that are responsible for building projects abandonment and the overall effects of building projects abandonment on the environment should be thoroughly investigated.

1.4 Aim and Objectives

1.4.1 Aim

The aim of this research is to evaluate the environmental factors that lead to abandonment of public building projects, with a view to proffering solutions to the abandonment of public building projects in Abuja.

1.4.2 Objectives

The objectives are:

1. To identify the characteristics of the abandoned public building projects in Abuja
2. To examine the environmental factors that are responsible for the abandonment of public building projects
3. To assess the effects of public building projects abandonment on the environment.

1.5 Scope and Delimitations of the Study

1.5.1 Scope

The scope of the study is to evaluate the environmental factors that lead to abandonment of public building projects. The study considers the project consultants of the abandoned public building projects in Abuja. The Federal Capital Territory, Abuja was chosen as a location due to increase in the rate of construction activities in Abuja.

1.5.2 Delimitations

The contractors are not included in this study as a result of their inaccessibility and mobile nature. Another difficulty for this study is that, there was no free access to the abandoned project files due to some confidential reasons; therefore as a result of this, nine of the abandoned projects were gotten.

CHAPTER 2

2. LITERATURE REVIEW

2.1 Introduction

The building industry is established to be the foundation and center of rapid financial expansion of any country (Bhavesh, 2006). Kimura and Maeda (2005) viewed building practice, procedure and maintenance as challenging and require huge investment whose income comes gradually with probable outflow through lack of cash flow management. According to Eric (2003), "the industry is likely to remain a major area of development activity as the need for the provision and replacement of infrastructure become more important in the years ahead". Therefore, construction projects should be made to be successful since its implementation and activities frequently engage extensive funds, the failure through abandonment, has a harmful effect on the capabilities of the investors, the financiers and for the fact that limited capital are fixed for a long time as opportunity cost for its alternative uses. Thus, the significance of this sector as an instrument of expansion is encouraged by its capability (Chinedu and Fidelis, 2011).

Based on the fact that the development sector of the construction industry is a mechanism and the strongest base for rapid financial growth, it therefore becomes very important that building projects are managed professionally to succeed. The successful execution of a building project is very essential in a developing nation by analyzing the quantum of funds wasted and its negative impact to the Gross Domestic Product (GDP) of the nation's financial system (Chinedu and Fidelis, 2011). Also according to Turner (2006) opines that the major aim of the construction industry is to deliver and preserve the built environment. Thus the built environment comprises housing, educational, industrial, and commercial and infrastructure facilities. Infrastructure is a broad term that consist the provision of electricity, communications, water,

sewerage, gas, air, railways, harbors, roads and the like. Therefore these amenities may be any public work procured by a public authority such as government sector, municipal utilities or private job procured by a private holder or organization or by a private developer (DTI, 2004).

Fellows, Langford, Newcombe and Urry (2002) in their works identify the characteristics that influenced the building industry's capability to deliver the built environment as:

i. plan is separated from construction;
ii. Products have a tendency to be physically huge and costly;
iii. Products are typically executed at the client's site;
iv. Presence of hazard and insecurity;
v. There is disintegration and broad occupation; and
vi. Cost determination is regularly based on a structure of bidding.

All these characteristics indicate that the delivery of the built environment is project-based with the contribution of many participants whose tasks are set out in the agreement.

Most times, the building project brings collectively individuals or parties that are separate and different to form what has been termed a short-term multi-organization or a temporary project partnership (Murray, Langford, Hardcastle and Tookey, 1999). Therefore the products of building industry are preferred primarily for the services which they assist to build as most company, community, religious, financial, engineering activities etc. work on building infrastructure (Nwachukwu, 2008).

2.1.1 Building Projects

Building projects, a constituent of infrastructure improvement, are key drivers of economic expansion of a country. Governments globally thus spend greatly in this sector. Their involvement on the other hand, can simply be determined by their feat, with the final objective being project success. Therefore, building is as aged as humankind whose invention it is; and has emanated through centuries of actions, from residing in caves to skyscrapers and presently to intelligent structures that can elegantly react to stimuli in its surroundings. The building practice may also be grouped into three main phases: the conception/design phase, construction phase and operation or use phase (Horsely, France and Quatermass, 2003). The conception and design phase is when majority of the decisions that control the performance of the building are made; the construction phase represents the actualization stage when a large amount of the capital expenditure is incurred; and the operation or use phase account for the maximum proportion of time phase of the building life span – typically in the range of 60 – 100 years, as against the small number of weeks, months or years generally used for the first two phases (Horsely *et al.*, 2003).

2.1.2 Types of Construction Projects

According to Grace (2010), the different types of construction projects are highlighted below:

i. Residential
ii. Building
iii. Institutional and Commercial
iv. Industrial
v. Specialized Industrial Construction

vi. Highway Construction

vii. Heavy Construction

2.1.2.1 Residential

Residential construction projects consist of townhouses, houses, apartments, cottages, single unit dwellings and subdivisions. The home designs are usually prepared by architects and engineers and the construction is carried out by builders who appoint subcontractors for structural, electrical, mechanical and other professional work. This category of project should obey the rules of local building authority policy and codes of practice. A lot of new builders are involved to residential projects as a result of its ease of access in the real estate market. Therefore, this makes it a greatly competitive market with potentially great risks as well as great rewards (Grace, 2010).

2.1.2.2 Building

Building construction is perhaps the mainly popular type of construction project. It is the procedure of adding structure to real assets. Majority of the projects are room additions and little renovations. Most new building construction projects are creation of protected enclosures with walk-in entrance for the intention of accommodating people, apparatus, machines or materials. (Grace, 2010).

2.1.2.3 Institutional and Commercial

This type of building construction covers a large range of project types and sizes such as hospitals, primary and secondary schools and tertiary institutions, sports amenities and stadiums, big shopping centre, light built-up plants and warehouses and skyscrapers for offices and hotels. Expert architects and engineers are frequently hired for designing a particular type of building. This market sector has little competitors as a result of the huge costs and larger complexity of

institutional and commercial buildings when compared to residential construction projects (Grace, 2010).

2.1.2.4 Industrial

Industrial construction is simply a small division of the entire construction industry however it is a very vital part of the industry. They are usually owned by large, for-profit manufacturing corporations such as industrial, electricity generation, medicine, petroleum etc. (Grace, 2010)

2.1.2.5 Specialized Industrial Construction

This usually involves very huge range projects with a high degree of scientific complexity such as nuclear power plants, chemical processing plants, steel mills and oil refineries (Grace, 2010).

2.1.2.6 Highway Construction

Highway construction involves the creation, modification, or renovation of roads, highways, streets, alleys, runways, paths, parking areas, etc. It includes all secondary construction in concurrence with the highway construction project (Grace, 2010).

2.1.2.7 Heavy Construction

Heavy construction projects typically involve projects that are not appropriately classified as either "building" or "highway." Examples of this type of project are irrigation and septic tank projects, dams, sewage management plants and amenities, flood control projects, dredging projects, and water treatment plants and amenities (Grace, 2010).

Each type of construction project requires an exceptional team to plan, design, build and preserve the project. Mosaku, Kehinde and Kuroshi (2006) observed that building practice has also undergone an enormous deal of transformation in reaction to the vibrant nature of human

requirements and growth. Basically, building design and erection are processes which usually engage numerous professionals collaborating for quite a short periods to build up a facility (Anumba, 2006).

The concept of project has been one of the most conducted and misunderstood concepts, by construction professionals connected with the use of the word "Project". Consequently, numerous attempts had been made by authors to provide meaning to the concept of project. Amirize (2004) presented project as "any planned or deliberate programme of activities which can provide the support base, to complement efforts of individual to enhance their well being and solve their peculiar problems". There are two dimensions to project. The tangible and the non-tangible projects. This study will focus on the tangible dimension, which results on the execution of physical projects (i.e. buildings) that brightens the nation as a whole.

2.1.3 Project Abandonments

Longman dictionary (2005) defines Abandonment as the action of suspending activities on something totally, with no definite intention of when to restart. When events and actions on building projects are postponed without any confirmed time of recommencement the projects are said to be abandoned**.** Project abandonment can also be defined as the unexpected postponement of the work progress particularly at the implementation stage such as inability to complete a contract after the completion period has elapsed. Abandonment and unsuccessful projects which are more widespread in the government sector litter every array of the nation's environment such as government quarters, university campuses, public schools etc. The occurrence cuts across various financial sectors including the building, manufacturing/engineering and service sectors (Chinedu and Fidelis, 2011).

According to Makalah (2008) define "Abandonment" as the building on which levies and mortgages are no longer paid, and those structures for which services are neither paid for nor provided. They are vacant, vandalized, boarded-up, dilapidated or those which have unmaintained basis. "Abandonment" can also be defined as when the client refuse to provide maintenance and working services to a building, or the failure of an owner's authoritative right to a building, or the destruction of a building (Olapade and Anthony, 2012).

It is imperative to note that there have been cases when non-functional, unusable or unserviceable projects have been commissioned as "completed". Consequently, a massive financial loss is incurred in terms of severe cost overruns, periodic misuse of funds and projects that transform into endless pits gulping limited resources with no actual completion time in view (Chinedu and Fidelis, 2011).

Andy (2007) in his study developed a model to formalize the dynamic theory that the outline of project escalation and abandonment is caused by the accumulation of new requirements for the duration of the project life phase. Andy (2007) further explained this makes the owners and project managers approach to conclusion about the feasibility of a project that is being undertaken. Andy (2007) discussed that the perception of project feasibility is a non-linear function of time overruns and resource overruns. Andy (2007) defined time overruns as the ratio of the planned completion date to the original completion date for the project. Andy (2007) opined that resource overruns as the ratio of the work previously done plus the work that is required to be done to the original quantity of work that was projected. The model in Figure 2.1 illustrates this occurrence.

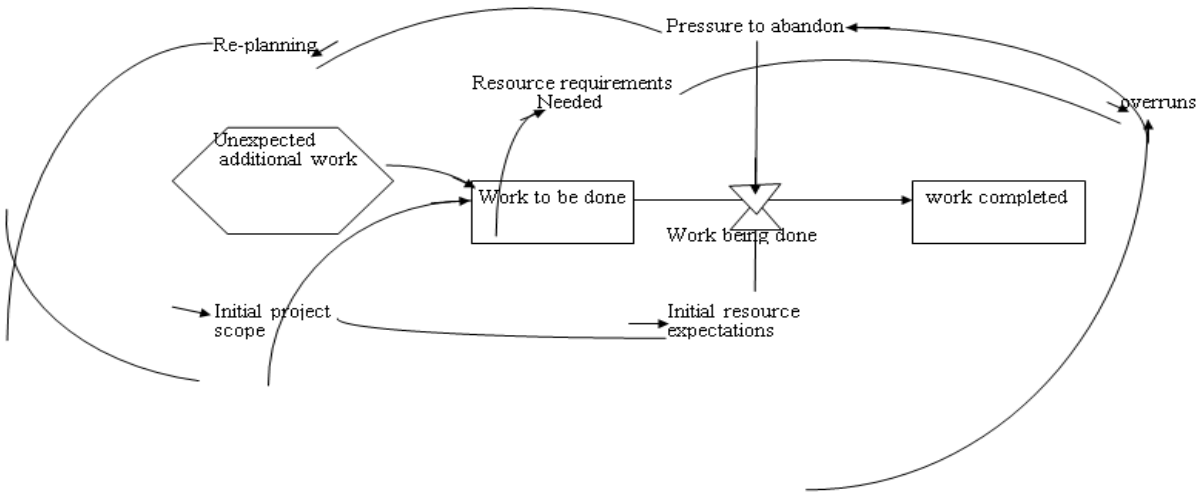


Figure 2.1: Project Abandonment Cycle; Adapted from Andy (2007)

According to Ajanlekoko (2001), the projected marriage of interests between the client's requirements and contractor's anticipation is not often attainable in most projects as provided by the conventional procedures, therefore the need for project management principles. Ajanlekoko (2001) further argued that the economic environment in Nigeria and definitely other developing nations characterized by regular changes in financial and monetary policies, lack of accurate productivity records, inaccurate project objectives, uncertain project manager's proficiency and over reliance on imported resources may be accountable for the situation of uncompleted projects in many developing countries.

2.2 Characteristics of Abandoned Building Projects

It is useful to present an exact definition of the theory of building abandonment for this study. This is because the meaning and the concept of building abandonment might be diverse from one country to the other. For example in the Malaysia, when the development of a certain work faces numerous problems and seems to be impracticable to carry on further thereby resulting it to end completely, it is therefore defined as abandoned project (Sunitha, ZainalAbidin and Riduan, 2013).

Dahlan (2001) stated that the abandoned building projects in the court case of Syarikat Faber Merlin Sdn.Bhd referred to a project in which large funds had been spent and the physical activities had been stopped. However, if the sum of money which has been exhausted on that project is small, i.e. less than 10 percent of the whole project cost, and the construction activities has stopped, it is not referred to as an abandoned project. Dahlan (2001) further contends that the meaning of abandoned building projects was derived from the project management point of view. Dahlan (2001) argues that different parties in building development can describe abandoned projects in a different way: for example, either the beneficiary in the case where the company of the developer has been winding up defined the abandoned project as the project which had to be stopped due to economic problems. From the above definitions of abandoned projects in Malaysia, it can be concluded that the term 'abandoned building project' refers to a building project which is not complete and the construction work or activities has stopped.

In Nigeria, Olusegun and Michael (2011) discussed that the task in developing infrastructural projects are mostly to present new and valuable product and services to the public and also to encourage the artistic component of the environment. This purpose is in some way compromised and not achieved owing to the incessant problem of project abandonment.

According to Olapade and Anthony (2012), when a project has commenced at an earlier date, but for several reasons has been stopped, it is referred to be an abandoned project. Such abandonment is just not restricted to buildings only, but also includes roads, engineering structures, bridges, factories, dams, power, communication projects and so on, that are abandoned too. Consequently, an abandoned building project can be thought as an unfinished project in a time frame of a contract. Hanachor (2012) opined in his study that a project is termed abandoned when a number of the physical features are observed to be draining out and be

coming out of use, such that it will draw extra cost of replacement. Building projects developments in Nigeria is not just the means of making life more comfortable for members of a society; as well results to empowerment, wakening of grass root organization and cooperative achievement toward personal-improvement. Hanachor (2012) in his study confirmed that a project is termed abandoned when the time interval between postponement and recommencement is so much to attract loss and deteriorating of materials.

Therefore, studies by Kolawole (2006) have revealed that a good number of building project embarked upon with good intentions are abandoned most especially at diverse stages of the design and construction procedure.

According to Sunitha *et al.* (2013), the important characteristics of abandoned projects are project title, site location, contract sum, year of inception, completion year and contract duration and these are shown on Table 2.1

Table 2.1 Inventory of the Characteristics of Abandoned Projects in Ondo State Nigeria

Project Title	Site Location	Contract Sum	Year of Inception	Completion Year	Contract Duration
A	Ondo Road Akure	500 million	1986	____	12 months
B	Oba Ile Road	10 million	2001	_____	_____
C	Alagbaka Akure	15 million	2003	_____	_____
D	Akungba Akoko	11.5 million	2008	_____	_____
E	Alagbaka Akure	738 million	2008	_____	10 months
F	Oke Aro Akure	11.5 million	2008	_____	6 months
G	Akungba Akoko	44 million	1999	_____	24 months
H	Ijuita Ogbolu	3 million	2004	_____	_____
I	Iyere Owo	11.5 million	2008	_____	6 months
J	Owo	17 million	2007	_____	_____
K	Okitipupa	800 million	2007	_____	_____
L	Ode Ekitan Ilaje	10 million	2008	_____	_____
M	Ode Ekitan Ilaje	8 million	2008	_____	_____
N	Ode Aye	11.5 million	2008	_____	6 months

Source: Sunitha et al. (2013)

2.3 Project Environmental Factors

According to Walker (1989) and Hughes (1989) in Akanni, Oke and Akpomiemie (2014), the factors that encompass environment of projects are political, legal, institutional, cultural, sociological, technological resources, economic, financial, and physical (infrastructure). Their studies concentrated on some factors within the environment that pose greater challenges to projects, management and organizational structure than others and recommended that these factors ought to form the center for the management of the projects environment (Akanni *et al.*, 2014).

2.3.1 Economic and Financial

This aspect of environmental factor is concerned with the level of general financial activity, as well as the capital accessible to execute the work and it includes the economic rivalry of various degrees around the engagement of all the parties of the building project (Akanni *et al.*, 2014). Therefore, cost restrictions always appear to be present on building projects according to Obalola (2006) whose study clarified that financial environment forces are differentiated from economic ones on the basis that economics is concerned with the deployment of resources, whereas financial restrictions are strictly to do with capital.

An important task for any project manager is to make sure that a project is financially feasible within a changeable economic environment (Odeh and Battaineh,2002) and since periodic economic cycles extensively affect the actions of the construction industry, precise and efficient forecasting of economic trends both local and global is significant (Oladapo and Olotuah, 2007).

2.3.2 Construction Technology

The technological factor is an aspect of the environment that must be considered in developing tactical plans. Oladapo and Olotuah (2007) in their works affirmed that the proper construction technology can be calculated by the accessibility of locally manufacture plant and equipment, trained manpower resources, degree of local material resources and the degree of exploitation of such local construction resources. Since the building industry in Nigeria after the oil boom in 1970/71 was characterized by the development projects which required the construction technology and resources of developed countries. Shortage of technical expertise and the shortage of administrative manpower were considered to be one of the main problems and constraints confronting the nation. The condition as at 1980 was described thus: "lack of basic knowledge of production methods and design techniques for machinery constitute a serious constraint to rapid industrialization of the country. The situation is aggravated by acute shortage of managerial manpower". As at present, the nation still remains a net importer of technical manpower, almost majority of spare parts are imported and most venture in research and development are done overseas, apart from those sponsored by the government in public owned institutions and universities (Akanni *et al.*, 2014).

2.3.3 Political

This is concerned with government policy and the significance of political decisions upon building projects. The roles played by the government in the building industry are generally clients, regulators of the national financial system, and regulators of the construction environment such as laws that conduct ethics and building practices and several others. This means that governments can considerably enhance or reduce the demand for construction

services through budgetary procedures and economic policies. In its capability as regulators of the construction environment, governments control the development and building permission processes and impose conformity with Acts and Regulations (Akanni *et al.*, 2014). According to Thomas and Martin (2004), they assumed that no project exists in a vacuum but is quite subject to collection of influences from regulatory power to political and industrial involvement and opined that managers of the construction project will acquire cognizance of the political facet that can create an uncertain environment such as unstable government and unforeseen changes in customer demand.

2.3.4 Legal Factors

This aspect of project environment is becoming more composite and affecting businesses more directly. It is now very difficult for businesses to take action without encountering laws and rules. The construction operates within the covers of planning and environment rules, codes of conduct, security policy, licensing, insurances and excise laws. These laws, codes and regulations are usually well defined, making it possible to forecast their impact on construction projects with realistic accuracy (Akanni *et al.*, 2014). Therefore, Martin and Thomas (2004) discovered that changes to industrial, safety, excise and environmental laws are not rare and problems may occur when the law changes during the existence of a project. This issue affects client's actions directly, through factors such as safety, planning ruleand building policy as it influences the contractual interaction within projects. Also, Oladapo and Olotuah (2007) also pointed to the awareness of stakeholders that the legislation in Nigeria is based on the British form, has been an ex-colony and that the Standard form of Building Contract issued by the Joint Contract Tribunal (JTC) in Britain was customized for use in Nigeria. The burden is on the

managers of construction activities to get familiarized with Planning rule and Land Use Acts legislation which form parts of the legal environment.

2.3.5 Physical Factors

The physical environment within which a building project is situated might have an impact significantly on its development as construction projects are all the time affected by physical influences. The geographical position of a project, land situation and climate patterns are the most frequent examples of physical influences. The physical factors are volatile and as such organization actions find it difficult to stop their occurrence (Akanni *et al.*, 2014). However, Martin and Thomas (2004) discussed that managers of construction works will take important reflection of physical effects when forecasting the organization strategies to evade extremes which can obtain advantage of obtainable resources.

2.3.6 Socio-Cultural Factors

This consist of traditions, lifestyles, and principles that describe a society (William,2002) while population demographics, increasing educational levels, norms and standards, verbal communication and attitudes in the direction of social responsibilities are examples of socio-cultural variables (Engobo, 2009). All these variables have the prospective to control or change organizations that operates within the society.

At the same time the persistent kidnapping of expatriate construction workers, militancy and the claim by the groups of unemployed youths for unlawful fees usually called “settlement” which generally causes delays ranging from days to weeks on construction works are examples of the lifestyles. Therefore, William (2002) and Engobo (2009) opined that managers and supervisors

of construction work within the society must to adopt suitable leadership styles in the management of projects to prevent needless time and cost overruns.

2.3.7 Institutional

The professionals within the construction industry in Nigeria have constituted institutions which are established by an Act or a Decree and are also acknowledged by the Government (Akanni *et al.,* 2014).However, Oladapo and Olotuah (2007) affirmed that the experiences gained in the course of several years of professional practice can be applied during research processes.

2.4 Effects of Building Projects Abandonment on the Environment

The abandonment of building projects have specific harmful effects that come alongside with it. Whatsoever the causes that might lead to project abandonment, it generally affects the building industry and the financial growth of a nation roughly (Sunitha *et al.,* 2013).

These effects are not different with the effects encountered in Malaysia as a result of project abandonment (Sunitha *et al.,* 2013). Abdul and Abdel (2011) further affirmed in Malaysia, the end users suffer in which they are not capable to dwell in the houses on time as stated in the Sales & Purchase Agreement. Although the end users have not occupied the houses, however they are compelled to give monthly installments with interests to the banks. Aside from that, it is also frequent for destruction of project sites owing to project abandonment which have also lead to criminal activities to be carried out at this particular site. They also observed that the other effects are cost of raw materials rising, building requirements changes and land being foreclosed. In the meantime, the likelihood of non-reactivating of abandoned projects where it is subjected as not

feasible, or no companies are interested in investing for the intention of restoration, results to financial loss.

Unfortunately, along with discouraging the value of properties, vacancies and abandonments can cause other vacancies and abandonments. Vacant and abandoned houses can generate an environment that lowers confidence, discourages investment, and essentially encourages homeowners to abscond the vicinity (Immergluck, 2006). Numerous studies have established that higher foreclosure charge are connected with higher vacancy tax and contribute to the predicament (Baxter and Lauria, 2000). Andy (2007) also identified resource overruns, schedule overruns as well as cost overruns due to re-awarding of the contract.

In Nigeria, Akindele (2013) confirmed that this issue of landed property abandonment can be more embedded in less developed countries like Nigeria. Buildings will certainly depreciate and might afterward be abandoned as they mature except they are accurately maintained. Moreover, changes in technology and business development might edge out some structures; making the structure out of date and prone to abandonment. Building projects abandonment can cause common health problems in the metropolis such as diarrhea, typhoid fever, malaria and other dirt associated health problem. Such abandoned sites are also vagrant's enchantment, miscreant's suitable residence and the hideout where criminals plan their activities, conclude or commit immoral acts in the area. For instance, the existence of abandoned structures has been observed to promote arson and other crimes, waste dump, and property value decline where they are present (Adedibu and Akindele, 2007). Drawing from Akindele (2013) who pointed out that the main precarious or hot point in Abuja, Nigeria are typically those areas wherever development is not complete, where there are shanty developments and abandoned buildings are the residence of miscreants.

One of the clear effects of project abandonment is the waste of resources. According to Olapade and Anthony (2012), the misuse of resources here are in the form of capital, material and human authority. Olapade and Anthony (2012) further opined that apart from that abandonment of a building project tends to encourage prohibited activity which consequently affects the security and comfort of a society. Therefore, when projects are abandoned it becomes a sore eye to glance at damaging the artistic visualization of it. Olapade and Anthony (2012) also explained that there is an effect on the socio-economic owing to abandoned projects, where it is overwhelming looking at the enormous amount of funds and resources lost on the part of the client who has invested on that particular project.

Building projects in societies results to changes in the face look of a society. The true principle of the execution of building projects is to bring about an encouraging change in the society, empowering the populace, economically and socially. When building projects are abandoned, the members of the society are automatically robed of the anticipated changes and thus leave them worst than they were before the project. Consequently when building projects are abandoned, the effect is felt by the individuals in the society, the society and the government (Hanachor, 2012). The common effects of building projects abandonment as identified by Adesina (2010) are disappointment of the populace, lowering of living standard, wastage/underutilization, reduction of employment opportunities, decrease in the tempo of economic activities, decrease in revenue accruing to government and difficulties in attracting foreign loans. Abandoned building projects site have been seen as a place where most criminal and illegal activities are carried out, thereby endangering the life of the populace. Another important effect of abandonment is the declining of the property values and also the declining of the property conditions.

CHAPTER 3

3. RESEARCH METHODOLOGY

This chapter is devoted to describe the methods used in this research to accomplish the aim and objectives. It explains the research design followed by the method of data collection, research tools, population of the study, sample size and method of data analysis used for the research.

3.1 Research Design

This aspect describes the research design and specific methodology to be adopted by this study to evaluate the environmental factors that lead to abandonment of building projects in Abuja. Therefore in accordance with the aim and objectives, the research design was divided into six broad steps as shown in Figure 3.1. Step 1 was on how the topic was selected. Step 2 discussed in detail the review of literature, which guided to the production of the research proposal which lead to Step 3. Step 4 explained how the data for this research was collected while Step 5 discussed how the data collected for this research was analyzed. Step 6 was designed to cover the summary, conclusion and recommendations from the study.

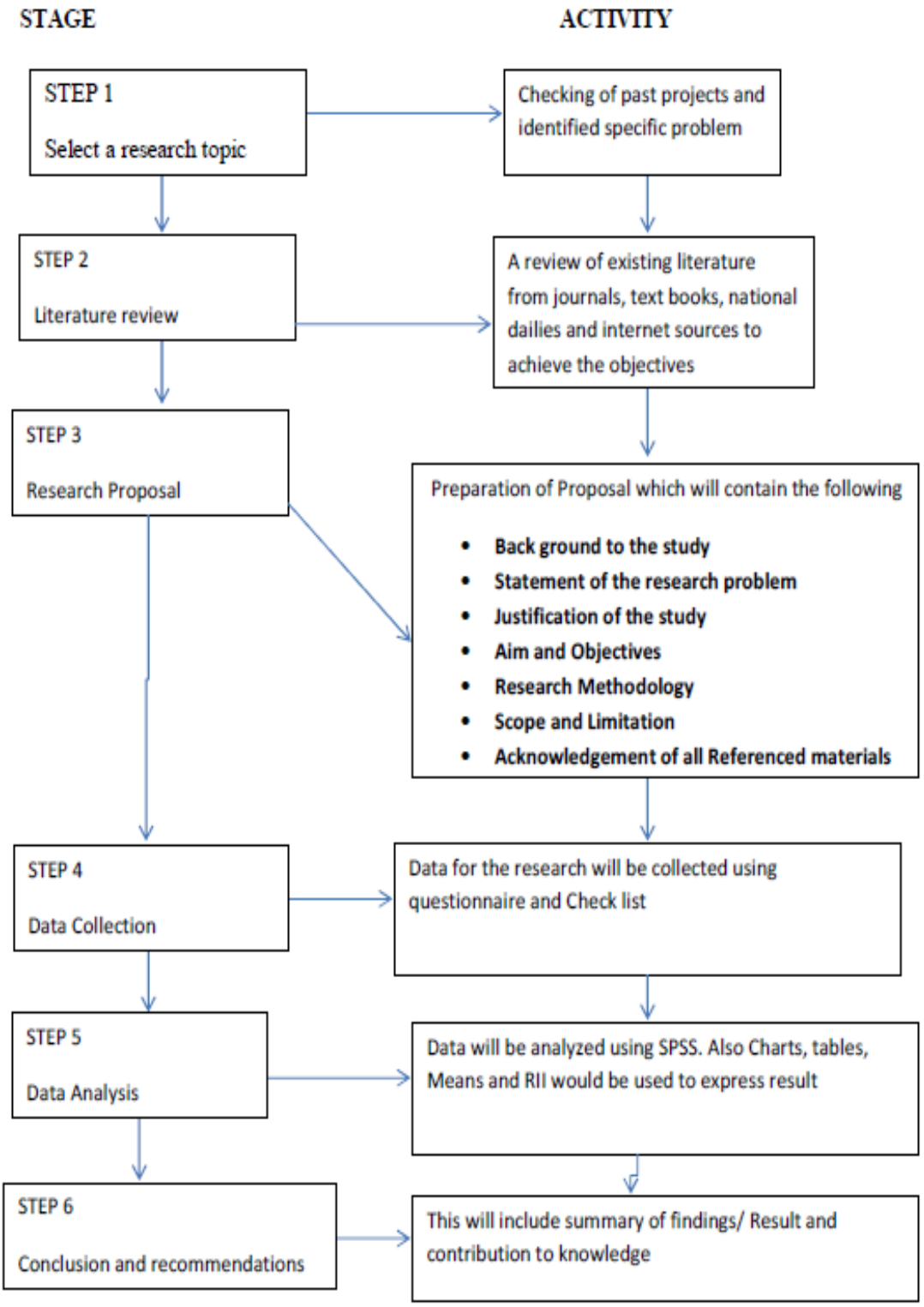


Figure 3.1: Research Design

Source:AbdulAzeez (2012)

3.2 Research Method Adopted for the Study

For the purpose of this study, the quantitative method is adopted because it gives the details and depth of information as well as the ability to generalize the findings of the research to the entire construction industry.

3.3 Population of the Study

The population of the study consists of consultants of the abandoned building projects which are made up of in-house consultants at the Public building department (Federal Capital Development Authority), they includes the Architects, Builders, Quantity surveyors, and Engineers (Mechanical, Electrical and Structural). According to the Federal Capital Development Authority (2015), it was gathered that the total population of the in-house consultants consists of 106 consultants.

3.4 Sampling Techniques

The purpose of sampling according to Fellows and Liu (2008) is to give a practical means of allowing the data collection and processing mechanism of research to be carried out whilst ensuring that the sample provides a good illustration of the population. The two general approaches to sampling adopted in science research are probability and non-probability sampling (Chaturvedi, 2013).

Hence, Fellow and Liu (2007) further identified four types of probability sampling techniques. They are simple random sampling, systematic sampling, stratified sampling and cluster sampling technique whereas the non-probability sampling techniques consist of convenience, purposive and quota sampling (Chaturvedi, 2013).

Purposive sampling which is also identified as deliberate sampling or non-probability sampling was used for this study. Therefore, this sampling method includes purposive or deliberate

collection of particular units of the population for constituting a sample which represents the population (Ibrahim, 2012).

3.5 Sample Size

A sample can be defined as a set of participants chosen from the population, which is few in number (size) but satisfactorily represents the population from which it is drawn so that accurate inferences regarding the population can be made from the outcome obtained (Kadam and Bhalerao, 2010). Therefore, a sample is required to be reliable, adequate, competent and impartial (Fellow and Lui, 2007). According to Agbodjah (2008), the formula states that:

$$n = \frac{M}{1 + \frac{M}{N}} \quad \text{(eq. 1)}$$

Where n = Sample Size

N = Total population

$$M = \frac{S^2}{V^2} \quad \text{(eq.2)}$$

Where V is the standard error of the sampling distribution and

S is the maximum standard deviation of the population element

$$S^2 = P \times (1 - P) \quad \text{(eq. 3)}$$

P is the proportion of population elements belonging to the defined class.

Using a total error of 0.1 at 95% confidence interval,

V is 0.05 and P is 0.5;

$S^2 = 0.5 \text{ X } (1 - 0.5) = 0.25$

$M = \frac{0.25}{}$

$$(0.05)^2$$

Hence M = 100

$$n = \frac{M}{1 + \frac{M}{N}}$$

$$N = \frac{100}{1 + \frac{100}{106}}$$

$$N = \frac{100}{1.94} = 51$$

Adding 10% of 51 for non-responsiveness

= 51 X 1.1 = 56

3.6 Data Collection Instrument

A review of existing literature was carried out to achieve the objectives of this research work from professional journals, text books, published and unpublished thesis, national dailies and internet sources were used to collect secondary data. Checklist was used to obtain the inventory of the characteristics of abandoned building projects.

Also, Primary data were collected using a structured questionnaire. The questionnaire, as shown in the appendix consisted of sections A, B and C. The questionnaire was grouped in to three sections, Section A was used to ask questions on the profile of the consultants, Section B was used to rank the environmental factors that lead to building projects abandonment and Section C comprised ranking of the effects of the building projects abandonment on the environment.

3.7 Administration of Data Collection Instruments

Checklist was used to obtain the inventory of the abandoned building projects by visiting the public building department of the Federal Capital Development Authority (F.C.D.A) while the questionnaires were administered to the consultants of the abandoned public building projects.

3.8 Method of Analysis

Data analysis was achieved using descriptive analysis. The data collected was analyzed using Statistical Package for Social Sciences (SPSS) and Microsoft Excel. Charts, Tables, Means, Percentages and Relative Importance Index (RII) were used to express the statistical results to achieve the objectives of this research.

3.8.1 Relative Importance Index (RII)

Relative Importance Index was used in this study to rank the environmental factors that lead to abandonment of building projects.

$$\textbf{Relative Importance Index (RII)} = \frac{\sum fx}{\sum f} \times \frac{1}{k} \text{---------- ----------} \textbf{3.1}$$

Where,

∑fx = is the total weight given to each attributes by the respondents.

∑f = is the total number or respondents in the sample.

K = is the highest weight on the likert scale.

Ranking of the items under consideration was based on their RII values. The item with the highest RII value is ranked first (1) the next (2) and so on.

The rating of all the factors for degree of significance was based on the value of their respective relative importance index (RII). The guide for the rating is given in Table 3.1 below:

Table 3.1 Guide to Degree of Significance

Degree of significance	Rating
Very significant	0.76 above
Significant	0.67-0.75
Fairly significant	0.45-0.66
Not significant	0.44 below

Source: Vanduhe (2012)

CHAPTER 4

4. DATA PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS

The aim of this research work was to evaluate the environmental factors that lead to abandonment of public building projects in the Federal Capital Territory, Abuja. This aim translated in to three objectives as stated in chapter one. The presentation, analysis and discussion of results will be done in this chapter. Objective one would be presented on a table, while objective two and three would be discussed also in this chapter. The data obtained for the research work is presented and analyzed, showing percentages, mean, relative importance index and their rank.

4.1 Breakdown of Administered Questionnaires

Not all the questionnaires administered were returned, forty two (42) questionnaires directed to the in-house consultants of the F.C.D.A were returned making a percentage of seventy five (75%). This is represented in Table 4.1.

Table 4.1 Breakdown of Administered Questionnaires

No. distributed	56
No. properly filled and returned	42
Percentage response	75%

Source: Field survey 2015

From Table 4.1, the percentage of the returned questionnaires can be considered appropriate and adequate for analysis.

4.2 Respondents Profile

This section deals with the data presentation, analysis and discussion of results of the in-house consultants of the F.C.D.A. It is divided into sections based on the questionnaire design, and the fulfillment of the research objectives.

4.2.1 Profession of the Respondents

From Figure 4.1 below Architects and Quantity surveyors have the highest percentage with equal percentage of 31 (%) followed by the Engineers with a percentage of 21 (%) while builders has the lowest percentage of 17 (%). Therefore, it can be inferred that most of the respondents are Architects and Quantity Surveyors thereby allowing accurate and unbiased data to be collected from the professionals within the construction industry.

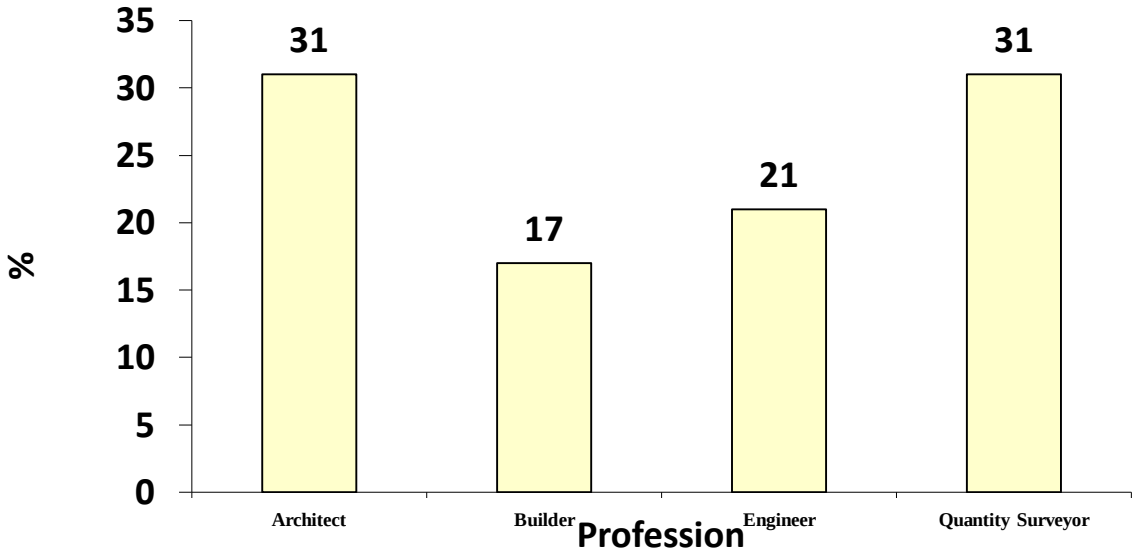


Figure 4.1: Profession
Source: Field Survey, 2015

4.2.2 Years of Experience of Respondent

From figure 4.2 majorities of the respondents has experience of more than 15 years with a percentage of 28.6 (%), followed by 0-5 years with a percentage of 26.2 (%), while 11-15 and 6-10 years of experience have 23.8 (%) and 21.4 (%) respectively. Therefore, the respondents can be said to have adequate knowledge and experience.

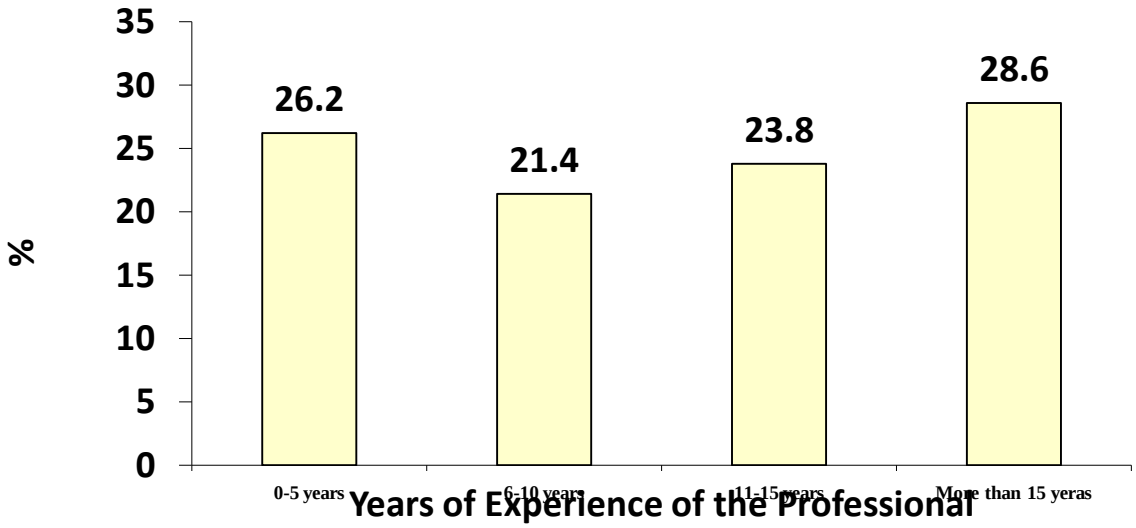


Figure 4.2: Years of Experience of the Professional
Source: Field Survey, 2015

4.2.3 Level of Qualification of Respondent

The academic qualifications of the respondents are shown in Figure 4.3 out of which Master's degree holders have the highest percentage of 28.6 (%). The other categories of academic qualifications are; HND 26.2 (%), First degree 23.8 (%), OND 21.4 (%) and none of the respondent have Doctorate degree. This further supports the fact that the respondents are knowledgeable and capable of providing the much desired professional and judgemental opinion required for achieving the aim of this research.

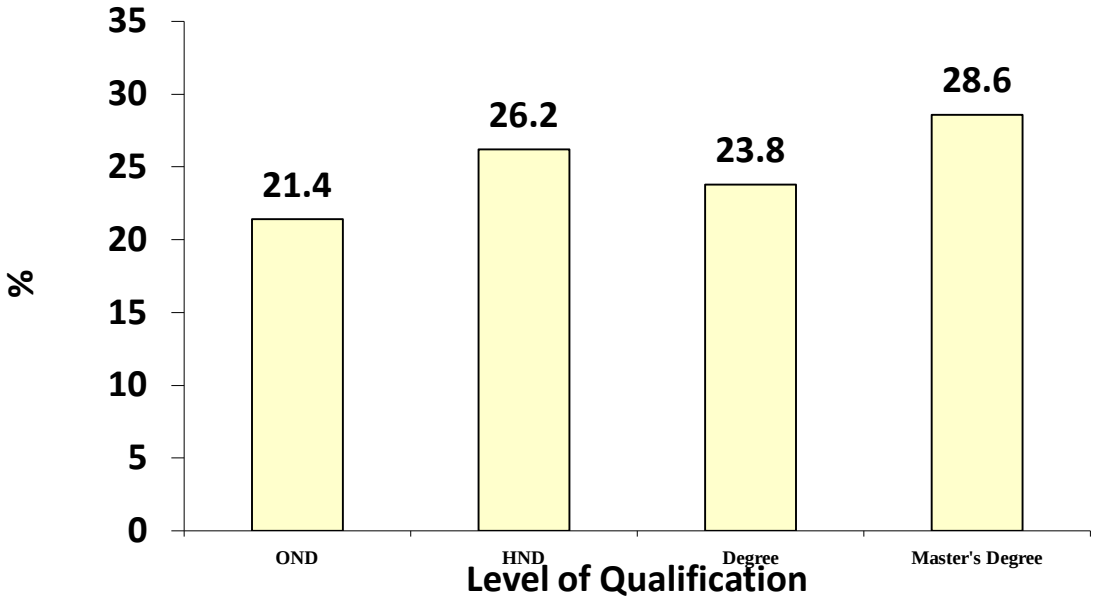


Figure 4.3: Level of Qualification

Source: Field Survey, 2015

4.3 Characteristics of Abandoned Public Building Projects in Abuja

Table 4.2 shows the inventory of the characteristics of abandoned public building projects in Abuja obtained from the checklist in which a total of nine projects are identified. From Table 4.2, it was observed that Projects B, C, D, E, F and I are abandoned after the contract period while Projects A, G and H are abandoned within the contract period. Also, lack of funds constitutes about 50% of the factors affecting completion of the building projects. Table 4.2 also indicated that none of the abandoned public building projects achieve 50% completion.

It can be inferred that most of the building projects are abandoned after the expiration of the contract duration. Lack of funds contributed greatly as the factors affecting completion. Also, none of the abandoned public building projects are half completed. Therefore for successful execution of building projects, proper attention must be given to the preparation of programme of works as well as regular provision of funds.

Table 4.2: Inventory of the Characteristics of Abandoned Public Building Projects in Abuja

Project Title	Year of Commencement	Contract Period	Contract Sum(#)	Status (% Completion)	Year Abandoned	Factors Affecting Completion
Project A	2009	20 Months	7,065,665,742.40	35%	_____	Paucity of funds increase in scope Of works which Necessitated for Variation of Contract
Project B	2005	108 Months	69,345,925,124.00	40%	2015	Paucity of funds due to non-Budgetary Appropriation
Project C	2010	13 Months	924,701,193.16	38%	2013	Changing in use now to house aides To Mr. Speaker
Project D	2010	36 Months	473,427,294.51	32%	2014	Non-budgetary and appropriation Of the project in The years budgets.
Project E	2008	15 Months	800,000,000.00	25%	2013	Due to economic constraints
Project F	2006	18 Months	5,324,125,743.20	43%	2009	Due to construction/ Financial problems
Project G	2001	80 Months	738,000,000.00	35%	2007	As a result of political unrest
Project H	2004	75 Months	44,125,528.60	28%	2010	_____
Project I	2007	24 Months	500,228,142.53	33%	2011	Due to financial crisis

Source: Public Building Department (F.C.D.A), 2015

4.4 Environmental Factors Leading to Public Building Projects Abandonment

4.4.1 Economic and Financial Factors Leading to Public Building Projects Abandonment

Table 4.3 shows the ranking of the economic and financial factors which contain five variables. Inadequate working capital (RII = 0.87) ranked first, Access to capital (RII = 0.77) ranked second and are both considered as very significant variables while unexpected price rises for labor (RII = 0.68) ranked the least and considered significant variable.

It can be inferred that inadequate working capital is the most vital variable among the economic and financial factor variables that contributed to abandonment of public building projects followed by limited access to capital, therefore for successful execution of public building projects there should be regular provision of funds by the government.

Table 4.3 Ranking of Economic and Financial Factors Leading to Public Building Projects Abandonment

S/N	Factors	Frequency of response					∑f	∑fx	Mean	RII	Position
		1	2	3	4	5					
1.	Inadequate working capital	0	0	8	11	23	42	183	4.36	0.87	1st
2.	Inflation rate	0	7	9	18	8	42	153	3.64	0.73	3rd
3.	Unexpected price rises for labor	0	13	8	13	8	42	142	3.38	0.68	5th
4.	Unexpected price rises for materials	0	8	8	18	8	42	152	3.62	0.72	4th
5.	Access to capital	0	8	7	11	16	42	161	3.83	0.77	2nd

(1 = Strongly- Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly-Agree)
Source: Field Survey, (2015)

4.4.2 Construction Technology Factors Leading to Public Building Projects Abandonment

Table 4.4 shows the ranking of the construction technology factors which contain five variables. It was observed Importation of materials (RII = 0.70) ranked first and considered as significant variable while late delivery of materials (RII = 0.64), shortage of plant (RII = 0.61), strike by labor force (RII = 0.61) and shortage of labor (RII = 0.56) ranked second, third and fifth respectively and are considered as fairly significant variables.

It can be inferred that importation of materials and equipment is the most significant variable followed by late delivery of materials and equipment that can contribute to abandonment of public building projects, as a result of the difficulties and delay encountered in the importation of materials and equipment. Therefore, the materials and equipment should be made available even before embarking on any construction projects.

Table 4.4 Ranking of Construction Technology Factors Leading to Public Building Projects Abandonment

S/N	Factors	Frequency of response					∑f	∑fx	Mean	RII	Position
		1	2	3	4	5					
1.	Shortage of labor	8	13	7	9	5	42	116	2.76	0.56	5th
2.	Shortage of plant/scarcity of equipment parts	7	9	7	13	6	42	128	3.05	0.61	3rd
3.	Importation of materials and equipment	0	10	9	14	9	42	148	3.52	0.70	1st
4.	Strike by the labor force	7	8	9	12	6	42	128	3.05	0.61	3rd
5.	Late delivery of materials and equipments	5	8	9	14	6	42	134	3.19	0.64	2nd

(1 = Strongly- Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly-Agree

Source: Field Survey, (2015)

4.4.3 Political Factors Leading to Public Building Projects Abandonment

Table 4.5 shows the ranking of the political factors which contain five variables. Instability in governance (RII = 0.79) ranked first and considered as very significant variable. Political agitation (RII = 0.73), Political instability (RII = 0.70) ranked second and third and considered as significant variables while election (RII = 0.63) ranked the least and considered as fairly significant variable.

It can be inferred that instability in governance contributed greatly among the political factor variables to abandonment of public building projects whenever there is a change in government in most developing countries, therefore for abandonment of public building projects to be reduce to the minimum, new government should finish the old projects undertaken by their predecessors before embarking on new projects.

Table 4.5 Ranking of Political Factors Leading to Public Building Projects Abandonment

S/N	Factors	Frequency of response									
		1	**2**	**3**	**4**	**5**	**∑f**	**∑fx**	**Mean**	**RII**	**Position**
1.	Instability in Governance	0	7	6	12	17	42	165	3.93	0.79	1st
2.	Political agitation	5	5	6	10	16	42	153	3.64	0.73	2nd
3.	Political instability	5	5	6	15	11	42	148	3.52	0.70	3rd
4.	Legislation	6	7	7	15	7	42	136	3.24	0.65	4th
5.	Election	6	8	9	12	7	42	132	3.14	0.63	5th

1 = Strongly- Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly-Agree)
Source: Field Survey, (2015)

4.4.4 Legal Factors Leading to Public Building Projects Abandonment

Table 4.6 shows the ranking of legal factor which contain three variables. It was observed that Types of contract (RII = 0.82) ranked the first and considered as very significant variable while planning regulation (RII = 0.75) and Attitude to judiciary (RII = 0.70) ranked second and third and considered as significant variables.

It can be inferred that the type of contract has the highest RII values of 0.82 when compared with other environmental variables, it can be inferred that the wrong type of contract when use in building projects contribute greatly and immensely to the abandonment of public building projects, therefore for efficient implementation of building projects due process should be followed by the government officials before considering the type of public contract to be used in awarding the contract of public building projects.

Table 4.6 Ranking of Legal Factors Leading to Public Building Projects Abandonment

S/N	Factors	Frequency of response					∑f	∑fx	Mean	RII	Position
		1	2	3	4	5					
1.	Planning regulation	0	7	8	15	12	42	158	3.76	0.75	2nd
2.	Types of contract	0	0	8	22	12	42	172	4.10	0.82	1st
3.	Attitude of judiciary	0	8	12	15	7	42	147	3.50	0.70	3rd

(1 = Strongly- Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly-Agree)

Source: Field Survey, (2015)

4.4.5 Social and Cultural Factors Leading to Public Building Projects Abandonment

Table 4.7 shows the ranking of social and cultural factors which also contain five variables. It was observed that civil conflicts (RII = 0.74), hidden obstruction (RII = 0.70), literacy level (RII = 0.70) and beliefs/customs (RII = 0.69) ranked first, second and fourth and are considered as significant variables while access to social amenities (RII = 0.66) ranked the least and considered as fairly significant variables.

It can be inferred that civil conflicts contribute in no small measure among the social and cultural variables to abandonment of public building projects. This might result to youth restiveness, kidnapping of expatriate or construction professionals and militancy in the area where the building projects is located. Therefore, government should ensure the project should be accepted by the host communities before embarking on any white elegant projects in the area as well as educate them on the benefits of the proposed project.

Table 4.7 Ranking of Social and Cultural Factors Leading to Public Building Projects Abandonment

S/N	Factors	Frequency of response					∑f	∑fx	Mean	RII	Position
		1	2	3	4	5					
1.	Civil conflicts or disturbance (e.g. youth restiveness)	0	7	10	13	12	42	156	3.71	0.74	1st
2.	Beliefs/customs	0	7	16	12	7	42	145	3.45	0.69	4th
3.	Hidden obstruction	0	8	12	16	6	42	146	3.48	0.70	2nd
4.	Access to social amenities (e.g. med-care)	0	10	16	9	7	42	139	3.31	0.66	5th
5.	Literacy level	0	10	9	15	8	42	147	3.50	0.70	2nd

(1 = Strongly- Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly-Agree)
Source: Field Survey, (2015)

4.4.6 Physical Factors Leading to Public Building Projects Abandonment

Table 4.8 shows the ranking of physical factors which contain six variables. It was observed that unfavorable geological condition (RII = 0.75), unfavorable site conditions (RII = 0.73), fire and landslide (RII = 0.70), High water table (RII = 0.69) and climatic conditions (RII = 0.67) ranked first, second, third, fourth and fifth and are considered as significant variables while natural disaster (RII = 0.65) ranked the least and considered as fairly significant variables.

It can be inferred that unexpected geological condition and unfavorable site conditions can cause project to be abandoned before the commencement of the project and this can lead to unbearable consequences especially after the completion of the project. Therefore, proper attention must be given to the nature of topography of the area where the building project is located by thorough site inspections and site investigations before embarking on any project by the government.

Table 4.8 Ranking of Physical Factors Leading to Public Building Projects Abandonment

S/N	Factors	Frequency of response					∑f	∑fx	Mean	RII	Position
		1	2	3	4	5					
1.	Climatic conditions/weather	4	11	5	11	11	42	140	3.33	0.67	5th
2.	Natural disaster (e.g. storms)	5	8	8	14	7	42	136	3.24	0.65	6th
3.	Fire and Land slide	0	10	9	14	9	42	148	3.52	0.70	3rd
4.	Unfavourable site conditions	0	9	6	17	10	42	154	3.67	0.73	2nd
5.	Unexpected geological condition	0	6	7	20	9	42	158	3.76	0.75	1st
6.	High water table	0	10	10	15	7	42	145	3.45	0.69	4th

(1 = Strongly- Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly-Agree)
Source: Field Survey, (2015)

4.5Assessment of the Effects of Public Building Projects Abandonment on the Environment

Table 4.9 shows the ranking of the effects of building projects abandonment. Cost overruns (RII = 0.81) and Reduction of employment opportunities (RII = 0.77) ranked first, second and are considered very significant effects. Decrease in the tempo of economic activities (RII = 0.74), Resource overruns (RII = 0.74), Lowering of living standard (RII = 0.72), Wastage/underutilization (RII = 0.72), Schedule overruns (RII = 0.72), Declining of the property values (RII = 0.71), Decrease in revenue accruing to government (RII = 0.70), Structural failure (collapse of building) (RII = 0.70), Menace to the beauty of the environment (RII = 0.70), Declining of the property condition (RII = 0.68) and Criminal hideout (RII = 0.68) ranked third, fifth, eighth, ninth and twelfth and are all considered significant effects. Disappointment of the populace (RII = 0.64), Difficulties in attracting foreign loans (RII = 0.64), Discourage investment (RII = 0.63), Pollution of the environment (RII = 0.54), Migration and Health problems (RII = 0.51 ranked fourteenth, sixteenth, seventh and eighteenth and are all considered fairly significant effects.

With the results obtained, it can be inferred that Cost overruns is the most significant effect of building projects abandonment followed by Reduction of employment opportunities and the other effects identified in the table below in the order of their respective significance. Therefore, the government will end up re-awarding the contract at even a more value than the initial cost of the project thereby causing wastage of public funds involved in initiating such projects.

Table 4.9 Ranking of the Effects of Public Building Projects Abandonment on the Environment

S/N	Effects	Frequency of response					∑f	∑fx	Mean	RII	Position
		1	2	3	4	5					
1.	Disappointment of the populace	4	9	11	10	8	42	135	3.21	0.64	14th
2.	Lowering of living standard	4	4	7	16	11	42	152	3.62	0.72	5th
3.	Wastage/under utilization	6	6	0	17	13	42	151	3.60	0.72	5th
4.	Reduction of employment opportunities	0	6	8	14	14	42	162	3.86	0.77	2nd
5.	Decrease in the tempo of economic activities	0	7	11	12	12	42	155	3.69	0.74	3rd
6.	Decrease in revenue accruing to government	0	11	8	14	9	42	147	3.50	0.70	9th
7.	Difficulties in attracting foreign loans	5	9	9	11	8	42	134	3.19	0.64	14th
8.	Resource overruns	0	6	10	16	10	42	156	3.71	0.74	3rd
9.	Schedule overruns	3	4	9	17	9	42	151	3.60	0.72	5th
10.	Cost overruns	0	0	12	15	15	42	171	4.07	0.81	1st
11.	Structural failure (collapse of building)	4	5	9	15	9	42	146	3.48	0.70	9th
12.	Declining of the property values	2	8	8	12	12	42	150	3.57	0.71	8th
13.	Declining of the property condition	8	4	4	16	10	42	142	3.38	0.68	12th
14.	Criminal hideout	8	7	0	14	13	42	143	3.40	0.68	12th
15.	Menace to the beauty of the environment	4	8	5	14	11	42	146	3.48	0.70	9th
16.	Discourage investment	7	6	8	16	5	42	132	3.14	0.63	16th
17.	Migration	9	10	14	9	0	42	107	2.55	0.51	18th
18.	Pollution of the environment	9	8	11	14	0	42	114	2.71	0.54	17th
19.	Health problems	7	14	11	10	0	42	108	2.57	0.51	18th

(1 = Strongly- Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly-Agree)

Source: Field Survey, (2015)

CHAPTER 5

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Findings

The followings are summarized as the major findings of the research:

1. Six (67%) of the public building projects are abandoned after the contract period while three (33%) of the public building projects are abandoned within the contract period.
2. Lack of funds constitutes 50% of the factors affecting the completion of building projects.
3. None of the abandoned public building projects achieve 50% completion.
4. Inadequate working capital (RII = 0.87), Access to capital (RII = 0.77) and Inflation rate (RII = 0.73) were found to be the most economic and financial vital variables.
5. Importation of materials and equipment (RII = 0.70), late delivery of materials and equipments (RII = 0.64) and strike by labor force (0.61) are the technology factors that contribute immensely to public building projects abandonment.
6. The study also found that Instability in governance (RII = 0.79), Political agitation (RII = 0.73) and Political instability (RII = 0.70) are the important political factors that contribute to public building projects abandonment.
7. The study found that Type of contract (RII = 0.82), Attitude of judiciary (RII = 0.70), Planning regulation (RII = 0.75) contribute largely among the legal factors to public building projects abandonment.

8. Civil conflicts (RII = 0.74), Hidden obstruction (RII = 0.70) and literacy level (RII = 0.70) were found to contribute immensely among the social and cultural factors to public building projects abandonment.
9. Unexpected geological condition (RII = 0.75), unfavorable site conditions (RII = 0.73) and fire and land slide (RII = 0.70) contribute greatly among the political factors to public building projects abandonment.
10. Cost overruns (RII = 0.81), Reduction of employment opportunities (RII = 0.77) and Decrease in the tempo of economic activities (RII = 0.74) were found to be the significant effects of public building projects abandonment.

5.2 Conclusions

1. Based on the characteristics of abandoned building projects, the research concluded that:-

i. Majority of the public building projects are abandoned after the contract period has elapsed as a result of the delay encountered during the execution of construction works on site.

ii. Lack of funds contribute greatly and immensely as one of the factors affecting the completion of public building projects as a result of non-provision of funds by the clients.

iii. The survey also revealed that none of the abandoned public building projects are half completed as at the time the projects are abandoned.

2. Based on the environmental factors leading to public building projects abandonment, the research concluded that:-

i. The economic and financial factors variables indicated that the inadequate working capital is considered to contribute immensely to the abandonment of building projects

as a project cannot be executed successfully without regular provision of funds and this has been proven by so many researchers in their works.

ii. In the survey the importation of materials and equipments is a very important variable among the construction technology variables. This contributes to abandonment of building projects in case if there is no supply of such materials and equipments from the neighboring countries.

iii. The survey also revealed that instability in governance is also a crucial variable among the political factors variables contributing to most abandonment of public building projects as the new government always abandoned the projects embarked upon by their predecessor but not completed before they leave office.

iv. The survey also considered the types of contract as one of the most significant variable that contribute to abandonment of building projects because the traditional type of contract is still the most commonly used despite the challenges associated with it.

v. The survey revealed that another important variable that contribute greatly to the abandonment of building projects most especially in the host communities is the civil conflicts or disturbance by the youth in the area where the project is located, the youth demand for compensation before the project can commence or kidnapping of some project officials.

vi. The survey considered the unexpected geological condition encountered on the site where the project is located as a critical variable contributing to project abandonment. This may lead to unbearable consequences especially if work has started before they are discovered.

3. On a general note, the survey revealed the adverse effects of abandonment of building projects as it affects the growth of the nation's economy as a whole. From the research findings, Cost overruns ranked the first among the effects of abandonment of building projects as the final cost of the building projects is greater than the initial cost of the project as a result of the non-completion of the building projects at the exact completion date.

5.3 Recommendations

Based on the findings of this study, the following recommendations were made with a view to overcome the environmental factors that could lead to abandonment of public building projects.

1. The research recommends that further studies should focus on preparing a more comprehensive programme of works in order to fast track the completion of public building projects in Abuja.
2. The research also recommends that further studies should focus on improving working capital, timely delivery of materials and equipments, stability in governance, type of contract, prevention of civil conflicts and geological conditions of the site.
3. Finally, the study recommends that further studies should focus on carrying out proper cost analysis of the project to be embarked upon.

5.4 Contribution to Knowledge

1. The research established that lack of funds constitute 50% of the factors affecting building completion and contributes immensely to abandonment of public building projects thereby resulted to non-completion of public building projects by 50% before abandonment.

2. This research established that inadequate working capital (RII = 0.87),Importation of materials and equipment (RII = 0.70), Instability in governance (RII = 0.79), Type of contract (RII = 0.82),Civil conflicts (RII = 0.74) and Unexpected geological condition (RII = 0.75) are the significant environmental factors that contribute immensely to abandonment of public building projects and are considered as key hinderances to the smooth execution of building projects.
3. Finally, the research established that Cost overruns (RII = 0.81) as well as Reduction of employment opportunities (RII = 0.77) are the significant effects of public building projects abandonment on human and the environment.

5.5 Recommendation for Further Research

Further research should be conducted to examine other environmental factors that could contribute immensely to the abandonment of public building projects, which were not included in the scope of this research such as institutional, religion, gross domestic product (G.D.P), budgetary allocations, government rules and regulations, demographics and other macro factors.

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APPENDIX

APPENDIX I

INTRODUCTORY LETTER FROM THE DEPARTMENT TO THE DIRECTOR (F.C.D.A)

AHMADU BELLO UNIVERSITY, ZARIA
DEPARTMENT OF BUILDING
FACULTY OF ENVIRONMENTAL DESIGN

Vice Chancellor: *Prof. Abdullahi Mustapha B.Sc. (Hons) Pharm (A.B.U, Ph.D (London). FPSN*
Head of Department: *Dr. Dikko Kado BSc(Hons), MSc, PhD(A.B.U) MNIOB*

BLD/4

21th January, 2015

FED. CAP. DEV. AUTHURITY
RECEIVED
12 FEB 2015
Dept. of Public Buildings Abuja

The Director,
Building Department,
Federal Capital Development Authority,
Abuja.

Dear Sir,

LETTER OF INTRODUCTON: DADA SOLOMON ADEDEJI . (P13EVBD8102)

The above named is a student of this Department. He has requested for an introductory letter to Federal Capital Development Authority to enable him carry out a research based on his topic: "AN EVALUATION OF THE FACTORS THAT LEAD TO ABANDONMENT OF BUILDING PROJECTS IN THE FEDERAL CAPITAL TERRITORY", in order to gather information for project assignment.

Kindly assist him accordingly.

Thank you.

Yours faithfully,

21/1/2015

Dr. D. Kado
Head of Department.

APPENDIX II

CHECKLIST TO IDENTIFY THE CHARACTERISTICS OF ABANDONED PUBLIC BUILDING PROJECTS IN ABUJA

(1) Questionnaire No.:_____

(2) Title of Project:_____

(3) Location of site:_____

(4) Contract Sum: _____

(5) Year Of Commencement:_____

(6) Status (% Completion):_____

(7) Year abandoned:_____

(8) Year of completion:_____

(9) Contract Period:_____

(10)Factors affecting completion:_____

APPENDIX III **Questionnaire No.: _____**

AN EVALUATION OF THE ENVIRONMENTAL FACTORS THAT LEAD TO ABANDONMENT OF PUBLIC BUILDING PROJECTS IN THE FEDERAL CAPITAL TERRITORY, ABUJA.

QUESTIONNAIRE

This is a research work carried out in the Department of Building, Ahmadu Bello University Zaria as part of the requirements for the award of M.Sc Construction Management. The information required here is purely for academic purposes respondents are assured that all information shall be treated as confidential.

SECTION A: Profile of Respondents

1. Name of Organization:

_____

2. Office and Address:

_____

3. Profession
   a. Architect[ ] b. Builder [ ] c. Engineer [ ] d. Quantity surveyor [ ]
   e. Others (Specify) _____
4. Years of experience of the professional
   a. 0-5 Years [ ] b. 5-10 Years [ ] c. 10-15 Years [ ] d. More than 15 Years [ ]
5. Level of qualification
   a. Ordinary National Diploma [ ] b. Higher National Diploma [ ] c. Degree [ ].
   d. Master's Degree [ ] e. Doctorate Degree [ ] f. Others (please specify)_____
   _

SECTION B (Environmental Factors Leading to Public Building Projects Abandonment)

Abandonment of public building projects can be attributed to a number of environmental factors, please tick some of the factors that you feel are responsible

1. Economic and Financial Factors Leading to Abandonment of Public Building Projects

1 = Strongly-Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly-Agree

S/No	Factors	1	2	3	4	5
1.	Inadequate working capital					
2.	Inflation rate					
3.	Unexpected prices raises for labor					
4.	Unexpected prices raises for materials					
5.	Access to capital					

2. Construction Technology Factors Leading to Abandonment of Public Building Projects

1 = Strongly-Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly-Agree

S/No	Factors	1	2	3	4	5
1.	Shortage of labor					
2.	Shortage of plant/scarcity of equipment parts					
3.	Importation of materials and equipment					
4.	Strike by the labor force					
5.	Late delivery of materials and equipments					

3. Political Factors Leading to Abandonment of Public Building Projects

1 = Strongly-Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly-Agree

S/No	Factors	1	2	3	4	5
1.	Instability in Governance					
2.	Political agitation					
3.	Political instability					
4.	Legislation					
5.	Election					

4. Legal Factors Leading to Abandonment of Public Building Projects

1 = Strongly-Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly-Agree

S/No	Factors	1	2	3	4	5
1.	Planning regulation					
2.	Types of contract					
3.	Attitude of judiciary					

5. Social and Cultural Factors Leading to Abandonment of Public Building Projects

1 = Strongly-Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly-Agree

S/No	Factors	1	2	3	4	5
1.	Civil conflicts or disturbance (e.g. youth restiveness)					
2.	Beliefs/customs					
3.	Hidden obstruction					
4.	Access to social amenities(e.g. med-care)					
5.	Literacy level					

6. Physical Factors Leading to Abandonment of Public Building Projects

1 = Strongly-Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly-Agree

S/No	Factors	1	2	3	4	5
1.	Climatic conditions/weather					
2.	Natural disaster(e.g. storms)					
3.	Fire and Land slide					
4.	Unfavourable site conditions					
5.	Unexpected geological condition					
6.	High water table					

SECTION C (Assessment of the Effects of Public Building Projects Abandonment on the Environment)
Please kindly rank the following effects of building projects abandonment
1 = Strongly-Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly-Agree

S/No	Effects	1	2	3	4	5
1.	Disappointment of the populace					
2.	Lowering of living standard					
3.	Wastage/under utilization					
4.	Reduction of employment opportunities					
5.	Decrease in the tempo of economic activities					
6.	Decrease in revenue accruing to government					
7.	Difficulties in attracting foreign loans					
8.	Resource overruns					
9.	Schedule overruns					
10.	Cost overruns					
11.	Structural failure (collapse of building)					
12.	Declining of the property values					
13.	Declining of the property condition					
14.	Criminal hideout					
15.	Menace to the beauty of the environment					
16.	Discourage investment					
17.	Migration					
18.	Pollution of the environment					
19.	Health problems					

APPENDIX IV

SITE PICTURES OF THE ABANDONED PUBLIC BUILDING PROJECTS IN ABUJA



Plate I:Design and Construction of Vice President Lodge of the Federal of Government of Nigeria



Plate II:Construction of Cultural and Millennium Towers



Plate III:Design and Construction of NASS Presiding Officers Residence - Speaker



Plate IV:Construction of Fire Station in FCT – Mbora District



Plate V:Grand Towers Mall, Abuja



Plate VI: Abuja Mall



Plate VII: World Trade Center, Abuja



Plate VIII: National Library, Abuja



Plate IX: Nigeria Cultural Center, Abuja