ASSESSMENT OF CLIENTS' COMPLIANCE WITH REGULATORY BOARDS DURING PROJECT CONSTRUCTION STAGE IN TANZANIA

(Case of: Double Storey Private Residential Buildings in Dar es Salaam)

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M.Sc. (Construction Economics and Management) Dissertation

Ardhi University

November, 2022

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By

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A Dissertation Submitted in Partial Fulfillment of the requirements for the award of Masters of Science in Construction Economics and Management of Ardhi University

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the Ardhi University a dissertation entitled "***Assessment of Clients' Compliance with Regulatory Boards during Project Construction Stage, in Tanzania***" in partial fulfillment of the requirements for degree of MSc. in Construction Economics and Management, Ardhi University.

Dr. Kimata N. Malekela

(Dissertation Supervisor)

Date.....

DECLARATION AND COPYRIGHT

I, **Salim H. Ali** hereby declare that the contents of this dissertation are the result of my own study and findings, and to the best of my knowledge, they have never been presented elsewhere for a Diploma, Degree or any professional awards in any Institution of higher Learning.

Signature……..……

ACKNOWLEDGEMENT

I would like to express my sincere gratitude and appreciation to all my lecturers and the evaluation panel for their valuable contribution and opinions during the presentations. I also wish to thank my fellow classmates for assisting me with various information that was required for this dissertation.

Special thanks goes to my supervisor, Dr. Kimata N. Malekela for his invaluable time, constructive comments, commitment and encouragement which enabled me to accomplish this dissertation. Thank you so much.

My wholehearted sincere gratitude goes to my wife Karima A. Ahmed for courage and support that proved the success of this study. Last, but not least, I wish to express my appreciation to my employer, Architects and Quantity Surveyors Registration Board (AQRB) for supporting me morally and granting time to accomplish my studies successfully.
May Almighty God bless you all abundantly.

DEDICATION

I would like to dedicate this dissertation to my beloved parents, Mr. and Mrs. Hamad A. Juma who have constantly been the fountain of inspiration to my life and for their endless support. This dissertation is lastly dedicated to my beloved sons, Nabil and Ahnaf for their endless love and support. May the Almighty God bless them.

ABSTRACT

Basing on previous literatures relating to regulatory compliance in Tanzania, it was revealed that there is lack of awareness and coordination among the stakeholders and society as a whole regarding the essential of regulatory compliance in building construction. Nevertheless, absence of clear frameworks, rules, approaches or strategies for managing factors hindering regulatory compliance leads to clients unsatisfactory of final product, litigation, poor workmanship, loss of certification, lawsuits, fines and civil or criminal enforcement actions. This dissertation aims at developing a framework that help clients in complying with the Regulatory Boards during project construction stage (execution) in Tanzania.

Interview guides were the main tool used to gather data relating to this dissertation henceforth 56 clients located in Kinondoni Municipality in the Dar es Salaam region were interviewed. Forty-six (46) developers responded positively which representing 82% of the total number targeted. Other tools used were documentary review and observation methods. All data collected through interview, documentary review and observation were then analyzed using Excels software. In assessing Level of compliance by clients during project construction stage, the study involved assessment of project registration with Regulatory Boards, project registration after default notices, site inspection (supervision) by consultants, erection of sign boards and pinning of stickers on the sign board.

Moreover, the findings revealed that among the major factors hindering clients to comply during execution stage are lack of awareness of benefits of compliance, consequence of non-compliance, lack of coordination between regulatory boards and local authority, cost of compliance, and prolonged compliance process. Thus, the implementation of framework developed is intended to act as an effective approach to improve clients' compliance during project construction stage in Tanzania.

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LIST OF ABBREVIATIONS

AQRB	Architects and Quantity Surveyors Registration Board
BCA	Building Consent Authorities
BR	Building Regulations
CRB	Contractors Registration Board
CMT	Construction Management Tips
CWMF	Capital Works Management Framework
ERB	Engineering Registration Board
LGA	Local Government Authority
MTEF	Medium-term Expenditure Framework
NZBC	New Zealand building code
OSH	Occupational Safety and Health Management Systems
PFMA	Public Finance Management Act
QS	Quantity Surveyor
TCI	Tanzania Construction Industry
UK	United Kingdom
HSE	Health, Safety and Environment
ILO	International Labour Organization
CIOB	Chartered Institute of Building
OECD	Organization for Economic Co-operation and Development
RIBA	Royal Institute of British Architects

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

From the experience it is recommended for any project the compliance to be incorporated from the initiation of the project and required to be tracked up to the completion. In various studies, it is also argued that all members within the association are responsible of compliance and the management is liable to monitor its implementation (Schwierking and Anantatmula, 2015). In Tanzania, regulations are governing the daily practices of all consultants, clients, regulatory boards, municipalities and advisory bodies as construction industry experts and controllers. In order to ensure safety and health of the building users, building regulations are obliged to establish standards principles that need to be followed in the design stage and during project construction stage as well. This is normally reached through preparation of bylaws parallel with framed building regulations at different periods in most countries (Bertaud and Malpezzi, 2001).

It is so important to have official frameworks, regulatory controls and standards to manage the design, construction and operation; but also various areas as structural stability, fire safety, heating, lighting, ventilation, plumbing, sanitary facilities, indoor air quality and sustainability. This will lead range of buildings play a significant role in environmental health, human wellbeing and economic stability (Watermeyer and Milford, 2004; and Circo, 2008). Besides, according to Munuo (2013) regulations have more related benefits to the relevant countries and construction industry as a whole. For instance, in Tanzania this is provided under regulation 3(1) of The Local Government Regulations, 2008 which states that ‘regulations play a big role in promoting and enhancing social welfare, economic development; also to protect and enhance the environment, public utilities, infrastructures and social services. Moreover, they ensure safety to human settlements in terms of building stability, fire safety and sanitary.

In construction, most of the projects are categorized to fall under either professional, local, and/or regulatory agency; that’s to say the safety or security of its stakeholders depends on the enactment, final product or service involved. That is to say, it is easier to fail to meet the basic requirements of the projects, even lawsuit by stakeholders and enforcement actions if one fail to plan for or meet projects regulatory requirements (Schwierking and Anantatmula, 2015).

Frits and Henk (2004) states that 'For the building to be safe and health for consumers and guests, building regulations have a big role to play/assure and is unavoidable'. In some nations other things to be guaranteed are as accessibility, comfort, energy efficiency and sustainability. Furthermore, Schwierking and Anantatmula (2015), indicated that it is hard task to maintain regulatory compliance and it is easier for institution to overlook it. Though, in order to accomplish regulatory compliance and avoid the risk related with non-compliance, there are effective means in which institution can adopt. Those means are of very important in obtaining successful final product, since, when you fail to meet regulatory requirements can lead to fines, litigation, early projects termination, and even imprisonment.

1.2 Knowledge Gap

Previous studies such as Karwima (2009), Munuo (2013), Moshi (2015) and Gwimile (2017), show that there is a contextual gape exist in terms of population. Nevertheless, the contextual gapes (in terms of Location and population) also exist in the study of Windapo and Cattell (2010), Windapo and Oladapo **(**2012), Darko and Mazibuk (2015) compared to this study as explained in the paragraphs below. In contrast to the previous studies; this research aims at developing a framework for improving clients to comply with regulatory boards during project construction stage.

Karwima (2009) conducted a study on property maintenance in which it was found that ad-hoc system of maintenance being used and that maintenance regulations were inadequate and lacked enforcement. This study examined the efficiency of Regulatory Framework for property maintenance in Tanzania. It focused on the existing buildings only and no concern on the compliance for new construction, so the contextual gape in terms of population existed.

Munuo (2013) did on Collapse of Buildings in which it was observed that the main causes of building collapse are: poor inspection of building works by consultants and Municipal council, poor quality of materials and poor workmanship. This reach evaluated the Contributing roles of stakeholders in the collapse of buildings Tanzania. The study focused on the causes of building collapse only and no emphasis was put on proposing new framework so as to overcome and minimize the problem. In that regard this leaves a contextual gape.

Moshi (2015) did on Regulatory Governance of Building Control in which it was noted that existing legislations in building control framework are the source of defaulting in construction. Then research assessed on the efficiency of the Regulatory Governance of

Building Control in Tanzania. This study concentrated on the existing legislations in building control and no proposal for improving the same was suggested, so the contextual gape in terms of population existed.

Gwimile (2017) investigated on Regulations Enforcement and compliance in construction process in TZ. This research evaluated the extent of Regulations Enforcement and compliance in construction process with Local Government Authority. The study focused on Local Government Authority only while leaving other regulatory boards such as AQRB, CRB and ERB which have the impact of compliance and enforcement in construction process. This leaves contextual gape in terms of population.

Windapo and Cattell (2010) studied on building contractors' compliance with National Building Regulations in Cape Town. This study examined the level of awareness and the degree of compliance with building regulations among the contractors, and was observed that the majority of site managers polled lacked any professional training, and bigger registered contractors tended to adhere to the rules more than unregistered small companies. The research mainly concentrated on the determining the contractor's compliance and neglected other stakeholders like clients, hence, leaves contextual gapes in terms of location and population.

Windapo and Oladapo **(**2012) studied the factors influencing South African construction firms' adherence to health and safety laws. The main causes of non-compliance with health and safety regulations, according to this study, are lower management's, subcontractors', and site workers' ignorance of the regulations' requirements. The study looked at the levels of compliance by construction firms with the OHSA regulatory requirements. The study focused on the reasons of non-compliance with OHSA regulatory, and was silent on proposing framework for the purpose of improving construction firm's compliance. So there are contextual gapes (in terms of location and population) that existed.

Darko and Mazibuk (2015) conducted a study on compliance and enforcement challenges with National building regulation processes in South Africa. The study explored how commercial operations have compelled building control officials at Local Authorities everywhere to adhere to building safety in which it was noted a crucial need existed for the assessment of business processes and a change in approach that advances objectivity and has advantages for compliance, visibility, and understanding of the regulatory process. This study

concentrated on the challenges by local authority only, in which no emphasize made on regulatory boards. In that regard this leaves a contextual gape in terms of location and population.

Below is a table that summarizes the contents of these prior studies. Mostly, the researchers neglected the development of frameworks as means of improving clients' compliance. In contrast to the previous studies; this research aims at developing a framework for improving clients to comply with regulatory boards during projects construction stage. Table 1.1 presents the summary of previous studies relating to assessment of clients' compliance during construction stage.

Table 1.1 Summary of Previous Studies Relating to Projects Construction Compliance

Title	Author	Key issues researched	Findings	Remarks
Challenges facing professional registration boards in regulating professional practice in TZ.	Denis, 2008	Assessed the challenges faced by professional registration boards in regulating professional practice in Tanzania.	There was a serious challenges facing boards endeavor to regulate professional practice. The findings point to shortcomings with the ineffective laws, limited resources, limited public awareness among others.	No framework was suggested for the purpose of improving good professional practice in TZ.
Effectiveness of Regulatory Framework for Property maintenance in Tanzania	Karwima, 2009	Study the effectiveness of Regulatory Framework for property maintenance in TZ.	Ad-hoc system of maintenance was used and that maintenance regulations were inadequate and lacked enforcement.	Focused on the building maintenance, no consideration on the regulatory compliance for new construction.
Collapse of Buildings; An Assessment of Contributory Roles of Stakeholder TZ.	Munuo, 2013	Assessed the Contributing Roles of Stakeholders in the Collapse of Buildings Tanzania	Cause of building collapse: poor inspection of building works by consultants and Municipal council, poor quality of materials and workmanship.	No emphasis on the clients' contributory roles on compliance in construction stage
Regulatory Governance of Building Control in Tanzania	Moshi, 2015	Study on efficiency of the Regulatory Governance of Building Control in Tanzania	Construction defaults are caused by current laws in the building control system.	Mainly focused on the existing legislations in building control and no proposal for improving the same was suggested
A study on Regulations Enforcement and compliance in construction process in TZ	Gwimile, 2017	Assessed the extent of Regulations Enforcement and compliance in construction process in TZ	There is an average level of enforcement and compliance to the regulations in many areas and high level in few areas	No emphasis on the level of clients' compliance in construction stage

A Study of Building Contractors' Compliance with National Building Regulations in Cape Town	Windapo and Cattell, 2010	Investigated the level of awareness amongst Cape Town contractors of building regulations; the degree of compliance by contractors with building regulations	A significant number of the site managers surveyed held no formal qualification and that the larger registered contractors tended to comply more with the regulations than the unregistered small- firms.	Mainly concentrated on the determining the contractor's compliance and neglected assessing clients' compliance in construction stage
Determinants of construction firms' compliance with health and safety regulations in South Africa	Windapo and Oladapo**,** 2012	This study examined the levels of compliance by construction firms with the OHSA regulatory requirements.	The main reasons for non-compliance with health and safety are the lack of knowledge of health and safety legislation by lower management, sub-contractors and site operatives.	No framework was suggested for the purpose of improving construction firm's compliance
Compliance and enforcement challenges: (A case of the national building regulation processes in south Africa)	Darko and Mazibuk, 2015	Investigated how the business processes have enforced Building Control Officers at the Local Authorities nationwide to comply with the safety of buildings.	There was a critical need for business process review and strategy shifts that advance objectivity and benefits to compliance, visibility and awareness of regulatory process.	Researcher focused only on compliance and enforcement challenges by local authority, no emphasize on the factors hindering clients to comply
Project Management and Regulatory Compliance, in USA	Schwierking and Anantatmula, 2015	Identify common shortfalls in regulatory compliance preparedness in project planning	Regulatory compliance in general, seems to provide insight as to a project's likely performance in meeting regulatory requirements.	More emphasize were put on project planning compliance, and avoiding issue of compliance in construction stage

1.3 Statement of Problem

Existing legislations in building control framework are the source of defaulting in construction. These legislations are not well known by stakeholders and sometimes possess some weakness (Moshi, 2015). According to Anyanwu (2013) it is unfortunate that in most cases, during project construction stage, the project executions are carried out by unqualified personnel who are neither craftsmen nor knowledge of the project construction procedure.

Booysen, (2010) informed that the buildings built by developers were noted to be damp and moldy and likely to overflow during wintertime. This led the residents to complaint against the Community Housing Company's (CTCHC) who is the developer of the building, for poor

workmanship. Moreover, Schwierking and Anantatmula, (2015) found that “for a project, failure to comply or meet regulatory requirements can result in a failure to meet the core requirements of the project; even litigation by stakeholders and enforcement actions’.

Furthermore, Nwadike (2020) point out lack of capacity building among the stakeholder, lack of training, periodic reform of building code, lack of awareness and building code complications, are some of the factors hindering compliance with building code.

With respect to the research studies illustrated in Table 1.1 indicates that there is inadequate stakeholders’ compliance in construction stage in which most of them focused on contractors’ and consultants’ compliance. Thus, basing on those literatures, this study intends to conduct a study on the assessment of clients’ compliance with regulatory boards, during project construction stage in Tanzania. Furthermore, despites the presence of numerous studies such as, Gwimile (2017), Karwima (2009) and Dennis (2008) have managed to study on regulations and enforcement activities in Tanzania construction industry in general; issues such as the level of compliance by clients and the factors hindering clients to comply during project construction stage are still not heartened. If that is not the case, most of the authors have also failed to provide a detailed approach or framework that can be followed by the developers so as to improve compliance. Thus, the author was encouraged to develop a framework that will be clear, precise, simple and practical in improving clients to comply.

1.4 Objectives

1.4.1 Main Objective

To assess clients’ compliance with regulatory boards during project construction stage, in Tanzania.

1.4.2 Specific Objectives

a) To examine the level of compliance by clients during project construction stage
b) To assess the factors hindering clients to comply during project construction stage
c) To propose a framework for improving clients to comply during construction stage

1.5 Research Questions

a) What is the level of clients’ compliance during project construction stage?
b) What are the factors hindering clients to comply during project construction stage?
c) In what ways can a framework be developed for improving clients to comply during project construction stage?

1.6 Scope and Limitation

The research to put emphasize on double storey private residential buildings; since the experience shows that the compliance of public buildings is of reasonable level. The study bases on ongoing projects and recent completed projects in year 2019 and 2020, in Kinondoni Municipality, Dar es Salaam. This study aims at assessing clients' compliance with AQRB, CRB and ERB regulations during project construction stage. The area to be covered are Sections of "The Contractors Registration Act, 1997", "The Contractors Registration (Amendment) Act, 2008 and The Architects and Quantity Surveyors (Registration) Act, 2010. Also, Clauses of the Engineers Registration Regulations, 2010 and The Architects and Quantity Surveyors By-laws, 2015. The focus will be on those Sections and Clauses that concern with the obligations of client in engagement of architect, QS, engineer and contractor, erection of sign board, pinning of stickers, supervision of works and project registration with respective board. The selected area is Kinondoni District, in Dar es Salaam region.

1.7 Significance of the Study

Significantly, this research has substantial contribution to the general knowledge of application of frameworks as a means of improving clients' compliance. This knowledge of developing a compliance framework can be adopted by not only clients but also other stakeholders in the building projects involved within the construction industry such as consultants and contractor, so as to improve compliance during project execution. Moreover, the compliance framework developed has a practical contribution in which it provides a simpler practical approach that can be well understood and followed by other sectors in the construction industry such as road projects, water projects, etc.

1.8 Conceptual Framework

A conceptual framework is described as an image or written part that "explains, either graphically or in narrative form, the major item to be examined, the key aspects, concepts, or variables, and the hypothesized relationships among them." (Silverman, 2001). Conceptual framework entails of independent and dependent variables. McLeod (2019) defines the independent variables as whatever variables the experimenter modifies or manipulates will directly affect the dependent variable. As an illustration, assigning individuals to placebo or medication conditions (an independent variable) and measuring any changes in the level of their anxiety (dependent variable).

In this case, the independent variables are level of compliance by clients during project construction stage. On implementation these bring effectiveness of clients' compliance in project construction stage. Thus, the objective of assessing the level of clients' compliance in construction stage and factors hindering clients to comply so as to come up with the suitable frameworks for improving clients to comply during project construction stage is so significant. In other words, the conceptual framework recognized for this research is anticipated to assist the researcher to develop framework for improving clients to comply with regulatory boards during project construction stage.

Moreover, in an experiment, the variable being tested and measured is known as the dependent variable since it depends on the independent variable. Depression symptoms are an illustration of a dependent variable because they are dependent on the independent variable (McLeod, 2019). In this study, the dependent variables in measuring compliance for this research is; new framework for improving clients to comply.

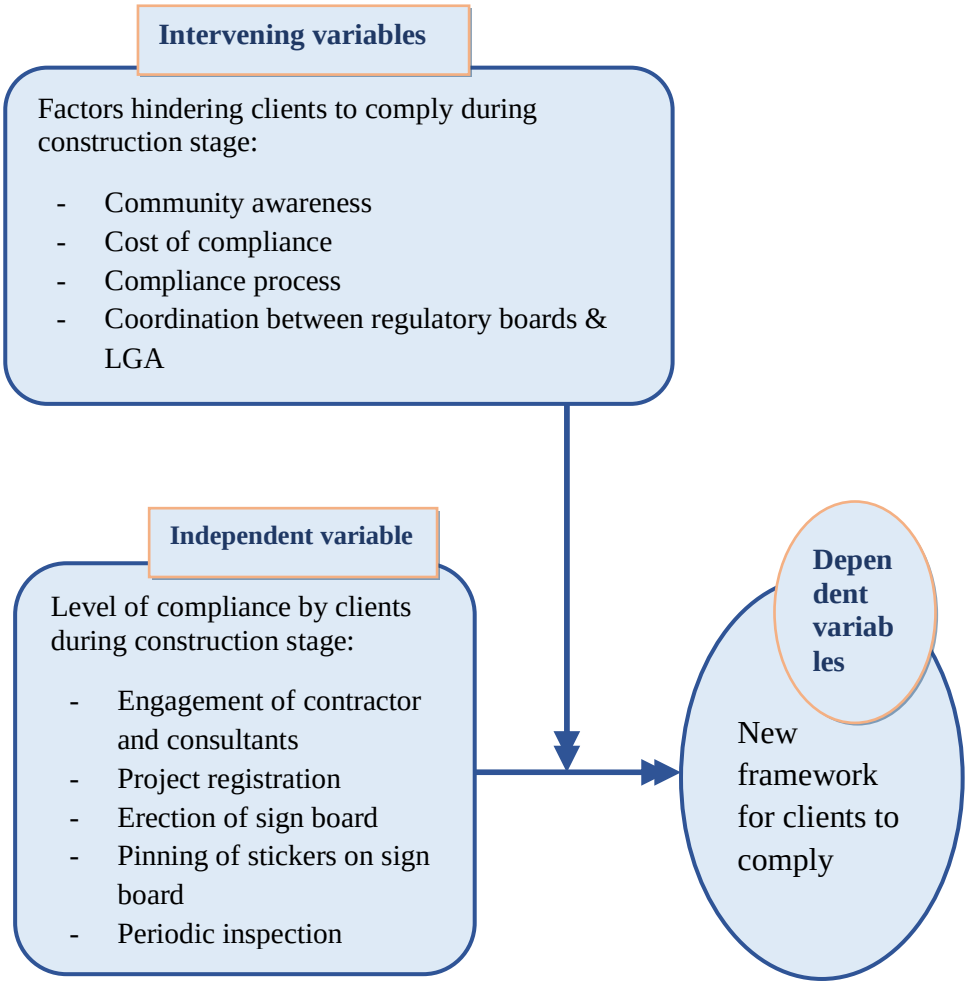

Figure 1.2: Conceptual Framework

Figure 3.2 above represents the relationship between the independent variables and dependent variables. The successful compliance by clients with the regulatory boards during project construction stage depends on the level of compliance by clients in the areas of engagement of contractor and consultants, project registration, erection of sign board, pinning of stickers on sign board, periodic inspection by consultants. Nevertheless, those are not the only reason for the clients' compliance performance; there are other reasons like community awareness, cost of compliance, compliance process, coordination between regulatory boards and LGA, and so on. These reasons are what called intervening variables.

1.9 Organization of the Dissertation

The first chapter imparts the background of the research work, and set forward the issue to be researched. The statement of the problem, the main and specific objectives, significance and scope of this study are also enlightened in this chapter.

The second chapter starts by giving meaning of compliance, history of regulatory compliance, compliance with the Building Code in various countries. Furthermore, it explained the compliance as a key to successful projects, ways to improve regulatory compliance, factors hindering building regulatory compliance, cost and benefit of Regulatory compliance, cost of Non-Compliance and compliance with regard to regulatory boards. Finally, existing frameworks for assessing compliance during project construction are then discussed.

The third chapter represents introduction to research methodology, research design, target population and sample size, unit of analysis and sampling Techniques. Furthermore, it explained the data collection methods and data analysis of the collected data.

The fourth chapter shows the presentation, interpretation and illustration of the data analysis of the questionnaires. At the end of the chapter; the development of the framework for improving clients to comply during project construction stage using the information obtained from the analysis was also done.

The fifth chapter gives the conclusions and the recommendations which are mainly derived from the results of the research work; and also recommends areas for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

According to Bolderston (2008), a literature review can provide an insightful, perceptive, and helpful summary of a specific subject. It can highlight areas of contention, point out what is known (and unknown) about the topic, and assist in formulating research-related questions.

A literature review is providing a brief examination and discussion of evidence in a particular area. In this case, when looking for a quick overview of this topic, published review articles can be used to cover a wide range of subject matter. The main purpose of this chapter is to review existing writings on clients' compliance and stakeholders' compliance as a whole.

2.2 Definition of Key Terms

i. **Client:** According to CIOB (2010), a client is described as the organization, person, or entity that commissions and finances the project, whether directly or indirectly.

ii. **Compliance:** This means abiding to requirements, policy, standards or regulations. Regulatory compliance is the means in which institutions make sure they comply with the applicable laws and regulations. Institutions keep on using associated and coordinated compliance controls due to transparency needs and the growing of various building code regulations (Bousmaha *et al.*, 2006). According to OECD (2014), in order to build a functioning public and government faith, compliance with rules and building regulations is a key factor and unavoidable. It ensures health and safety, good environment, stable income and lead to achieve public goals.

iii. **Construction Stage:** According to CMT book, it is defined as the stage of implementation where all of the planning will be put to use. Your construction manager and contractor will operate as the project's central point of contact when work begins. Construction Administration is the name of the professional team's function throughout this stage (CA). In order to perform quality control inspections, respond to Requests for Information (RFIs), review and approve technical submittals, and generally make sure that the project is delivered by the contractor as designed, your architect, all engineers, and consultants should be hired for full CA services.

iv. **Building**: The Local Government (Urban Authorities) (Development Control) Regulations, 2008 define building as any structure of whatsoever material constructed and includes billboards and telecommunication towers. According to Tauheed (2007) a building is a house that provides shelter for people and their activities in a space.

v. **Project:** The client typically has the initial idea for the project. The dream starts here, along with the investigation of the ideal site and the guidelines/standards to be followed. The conception phase may change depending on the project. Depending on how soon the job must be finished, it may take just a few days or it may take a few months or longer (Koutsoqiannis, 2020).

vi. **Building Regulations:** According to BR book, building regulations establish requirements for building design and construction to protect people's health and safety inside and around those structures. They also stipulate that facilities must be provided for people, especially those with impairments, to move around inside buildings while preserving energy.

2.3 Origin and History of Compliance

Generally speaking, compliance is adhering to a set of laws, rules, policies, best practices, or service-level agreements. The term "compliance governance" refers to the collection of policies, practices, and tools that a business uses to implement, oversee, and manage compliance. Compliance governance is a significant, expensive, and difficult issue to solve (Silveira, 2012). In construction industry, it is essential to comply, since, there is growing of regulatory requirements on the firms to attain range of rules and regulations. High economic failure (bankruptcy) cases like that of Parmalat, Enron and WorldCom crisis or disasters of the earthquake in Italy (April, 2009) led to severer frameworks and approval process for buildings and construction firms. Like that scenarios and others are what influencing the increases of regulatory requirements and pressure. Likewise, Litigations, penalties, loss of accreditation, and civil or criminal enforcement actions are the outcomes of failure to comply with regulatory needs (Trent, 2008).

2.4 Compliance Responsibility

Gaining conformity with construction laws requires both strict enforcement in general and frequent inspections in particular. The amount of effort building departments put forth for enforcement is the key to obtaining compliance (surveillance, plan checking, field inspection and technical assistance) (Burb *et al*., 2000). From the experience it is recommended for any project the compliance to be incorporated from the initiation of the project and required to be tracked up to the completion. In various studies, it is also argued that all members within the association are responsible of compliance and the management is liable to monitor its implementation (Schwierking and Anantatmula, 2015). Moreover, according to Fisher (2004) the responsibility of compliance for ensuring compliance with the requirements of the code lies with the designer and the public agency responsible for its administration.

According to current RIBA guidance, an architect must take independent care to design in compliance with the Building Regulations themselves, regardless of any acquired Building Control permission. Unless other methods for complying with the regulations are carefully investigated in cooperation with the relevant public authorities, this will typically necessitate careful adherence with the requirements set forth in the Building Regulations. Trying to "get things past" Building Control will not give the employer or the architect any protection (Wevill, 2013).

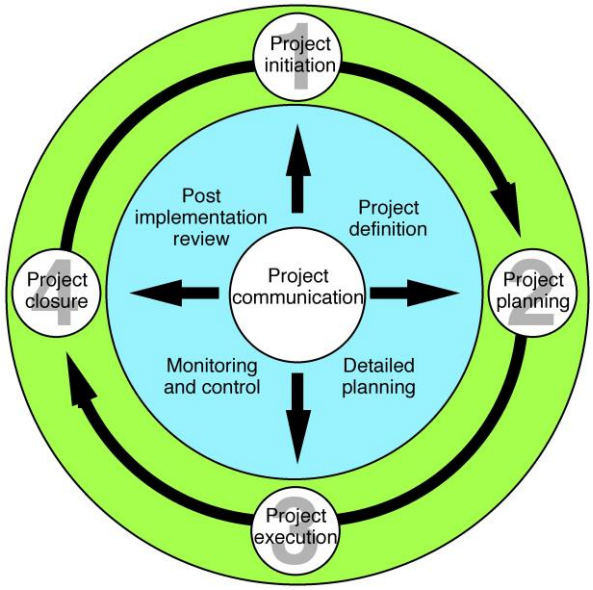

Figure 2.1: Four phase the project life cycle (Westland, 2006).

Furthermore, according to Westland, (2006) always the project manager and other team members in any project have one common goal to attain; to carry out the construction works in order to achieve successful final product as per clients' requirements. Usually, very project has four main phases; initiation, planning, implementation, and an end in which in the whole process the target is to get to the successfully completion. When all of these are done and taken together in a sequential manner (from the initiation to an end), is normally known as the project life cycle (see figure 2.1).

In construction, regulatory compliance is designed and essential to be implemented during both stages of construction. It should start from project initiation, project planning, execution up to project closure as illustrated in figure 2.1. Thus, all project team are required to comply with building regulations in both stages, including project execution stage. For this study, apart from contractor, consultants and any other member of the team, client is also obliged to comply with the regulation during execution of work on site. By so doing, this will help to minimize problems that may be encountered due to non-compliance during the whole project's lifecycle.

2.5 Cases for Compliance with Building Code

There are so several cases concerning with the building code compliance. For the case of this study, two cases have been selected; New Zealand Building Code and UK local Government Guidance.

The choice of New Zealand Building Code is preferred as compared to others due to some features and process of building compliance required to be in one way or another alike as those of Tanzania. This gives best experience and add value to this study at large. For instance, New Zealand Building Code outlines the clients' responsibility prior construction stage as to; prepare plans and specifications, applying for building permit, paying all required fee for the building to be erected, executing the work as per building permit issued, conduct periodic inspections, etc. Furthermore, the choice of UK local Government Guidance is preferred due to the seriousness of its Regulations on the existence of measures that might be taken against defaulters, if one found not complied. This gives best practice and add value to this study, in which it demonstrates formal enforcement powers when one fails to comply with the regulations. This automatically improve stakeholders' regulatory compliance.

2.5.1 Compliance with the Building Code in New Zealand

In New Zealand compliance with the building Code is essential to all building works. This is necessary and include even to those works that do not require a building consent to erect. By so doing, safety, healthy and durability of buildings are guaranteed to the users. During the scrutiny process, building consent authority (BCAs) are assessing all submitted drawings and other relevant documents in order to make sure the proposed building work are complying with the building regulations. The building permit is then issued to the developer for the work to proceed when BCA is satisfied. Lastly, a compliance certificate is given when the work is built according to the building permit issued and met all building regulation requirements.

According to New Zealand Building Code, (2014) the following are principal parties responsible for ensuring that buildings are safe and healthy in line with the Building Act; -

(i) **Territorial Authorities**

Territorial authorities are responsible for enforcing the Building Act, Regulations and the Building Code in their areas of jurisdiction. They are responsible for:

a) Registering for official identification as a building consent authority
b) Executing all the roles of a building consent authority
c) Release all project information memoranda
d) Prepare and release certificates of acceptance and certificates for public use
e) Assessing the level of building compliance requirement with the building code, to if they are changed, or not.

(ii) **Building Consent Authorities**

Building consent authorities are responsible for:

a) Prepare and issuing building approvals (consent)
b) Inspecting on-going construction works that were granted with the building permit
c) Prepare and issuing building code compliance certificates
d) Prepare compliance plans and issuing amendment requirements when some identified structures are affected.

(iii) **Building Owners**

Building owners are responsible for:

a) Providing detailed drawings, including plans and specifications.

b) Application of building consent from the Local Authority. This will be done together with seeking for relevant information related to intended development.
c) Executing the works by erecting the building as per the issued building permit and approved plans and specifications from the local authority.
d) Plan for regular inspection to be conducted in every construction stage. This will be done by consultants and inspectors from the Local Authorities depends on the complexity of the project.
e) Applying for occupational certificate for them to use the building once it is completed.
f) Paying all required fees as required by the Building Authority and other Institutions.

The compliance in New Zealand seemed to be unavoidable route for every stakeholder in the construction industry; this is due to the fact that their building code did not leave any void for someone to escape from being compliant with the regulations before/during and after construction process. This is to say, in order to ensure buildings are safe, healthy, durable, good workmanship, no fines, and to avoid conflicts between regulatory boards and the developers, this study finds the importance of developing framework so as to improve building regulatory compliance. In this case, every stakeholder especially clients will be aware of the respective rules and compliance requirements during project execution.

2.5.2 Compliance with Regard to UK Local Government Guidance

In UK, construction is one of the industries which is more regulated due to the great possibility of risk by labors and number of recorded injuries each year. Among the benefits of compliance requirements are to insure; labors are safe, avoiding conflicts due to enforcement action, avoiding penalties, obtaining compliance certificate from the building authority, and successful final product (Styles, 2020).

Moreover, Styles (2020) recalls the UK local Government Guidance which states that ‘if one fails to comply with the regulations the local authority has two formal enforcement powers which may use in applicable cases’;-

(i) The local authority may sue and send to the court any person who found to have been carrying out the construction works without complying with the building regulations, in which the fine may also be levied to. This is not for ongoing works only but it is applicable up two years after completion of the respective work. This measure will normally be taken against a builder, installer or main contractor.

(ii) Alternatively, or in addition, according to section 36 of the 1984 Act, when the local authority finds any work contravenes the building regulations, then the same may issue default or an enforcement notice to the developer instructing for modification or demolition. If happens the developer fails to obey/observe with the notice, this section gives power to the local authority of doing the work itself and recover the cost incurred from the developer.

As it was provided under UK local Government guidance, the local authority has the formal enforcement powers if one fails to comply with the regulations during the whole project life cycle. Those include the issuance of an enforcement notice or send to court any person being noted to be non-compliant. In Tanzania, there are also respective building regulatory rules which specifically governs the reasonable measure against developers who found to have not complied in the cause of construction process. Thus, this study finds the need to develop a framework for improving clients' compliance during project construction stage, since, this will avoid unnecessary enforcement actions and even action of taking defaulters to court.

2.6 Compliance with Regard to Tanzania Regulatory Boards

Compliance is a broad phenomenon in which this study will base on the clients' compliance during project construction stage with regard to regulatory boards. Among the important aspects that require client to comply with the regulatory boards is the essence of making sure a building project, during construction stage, is supervised by registered consultants and contractor, each from respective board. Gwimile (2018), states that 'Referring to the Local Government Development Control, 2008 as in each Building Permit being issued by the Authority in item no.5 as - Your attention is invited to the following regulations and By-laws stipulates the above roles be undertaken by Regulatory Boards which are the Architects and Quantity Surveyors Registration Board (AQRB) and Engineers Registration Board (ERB).

2.6.1 CRB Regulations

The current regulation used by the Board is "The Contractors Registration Act, 1997" which was passed in the National Assembly on the 11th April, 1997. It was then amended on 28th October, 2008.

Some of the functions of the board are as provided under Section 4(1)(e), 4(1)(f) and 4(1)(s) of The Contractors Registration (Amendment) Act, 2008 respectively;

(i) Inspect any site for construction works, for the purpose of verifying and ensuring that the works are being undertaken by registered contractors; and that the works comply with all governing regulations and laws of the country including requirements for safety, erection of a signboard which shows the names and address of the project, client consultant and contractors of the project, project registration sticker; and to take legal action against defaulters thereof.

(ii) Take legal action against a firm, company, organization, partnership or individual person who undertakes construction works without being registered under this Act.

(iii) Register construction project for the purpose of regulation.

Also compliance requirements with regard to CRB are as provided under sections 10(A), and 35(A)(1) of The Contractors Registration (Amendment) Act, 2008 respectively;

(i) No person, or firm shall undertake or cause to carry out and complete any construction works unless such person or firm is registered by the Board.

(ii) Where the Board finds that construction works are being undertaken or carried out by a firm or individual who is not registered with the Board or there is an omission or commission which contravenes the provisions of this Act, the Board shall by notice in the prescribed form require such person to stop construction works or otherwise rectify the omissions or commission, as the case may be.

From this literature, we find that among other things, client is obliged to comply with the Contractors Registration (Amendment) Act, 2008 on the engagement of registered contractor to carry out construction works, registering the project to acquire respective sticker and erecting sign board. For the scope of this study, by so doing the client shall be termed to be complied with the CRB regulatory requirements during project construction stage.

2.6.2 ERB Regulations

The current regulation used by the Board is “the Engineers Registration Regulations, 2010” which was passed in the National Assembly on the 2010. Some of the functions of the board are as provided under Clause 51(1) and 61 of the Engineers Registration Regulations, 2010 respectively:

(i) The Board or any other person appointed by the Board shall at any time enter into a site or premise, for a purpose of inspecting and auditing the engineering works or services without prior notification.

(ii) Stop order shall be issued to on-going engineering works if the Board is satisfied that such works endanger or threaten life, property, environment or other public interests, or as may be determined by the Board.

Also compliance requirements with regard to ERB are as provided under Clause 54(1), 57(1), 58(2) and 65(1), of the Engineers Registration Regulations, 2010 respectively;

(i) It shall be the responsibility of the client, financier, promoter, and developer, of any engineering work or service to provide evidence of having engaging the services of a professional or engineering consulting firm.

(ii) Engineering consulting firms intending to supervise construction projects shall apply for Board's sticker and site instruction book by filling relevant prescribed forms for building projects and engineering projects.

(iii) Engineering consulting firms shall paste Board's stickers on signboards of respective projects in each discipline they supervise.

(iv) Every engineering works shall have standard signboards placed at conspicuous locations for easy visibility and readability to the public.

From this particular reading of the clauses above, we find that client is obliged to comply with the Engineers Registration Regulations, 2010 on the engagement of registered engineering firm prior project commencement, making sure the project is fully supervised by the professional engineer who shall conduct periodic inspections during the whole period of project execution, registering the project to acquire sticker and erecting sign board. By so doing the client shall be termed to be complied with the ERB regulatory requirements during project construction stage.

2.6.3 AQRB Regulations

The current regulation used by the Board is "the Architects and Quantity Surveyors (Registration) Act, 2010" which was passed in the National Assembly on the 1st February, 2010 and "the Architects and Quantity Surveyors By-laws, 2015. Some of the functions of the board are as provided in Sections 5(1)(d), 20, and 37(1) of the Architects and Quantity Surveyors (Registration) Act, 2010 respectively;

(i) Enter construction sites and inspect buildings or construction projects with the intention of confirming and confirming that the works are being undertaken by a registered architectural and quantity surveying firms and that the works comply with all governing regulations and laws of the country, including the requirement for safety, the erection of a signboard, which shows the title of the project, names, addresses, phone numbers, and emails of the client, architect, quantity surveyor, and protect the registration sticker and pursue legal action against anyone who violates it.

(ii) A client or developer who undertakes design, building or construction works shall ensure that an architectural or quantity surveying firm, is registered prior to the execution of the design, building or construction works.

(iii) For the purpose of regulating the standards and monitoring activities undertaken by registered person, the Board shall ensure that every person, client, developer, financier or firm which undertakes building or construction works engages the services of an architectural or quantity surveying firm

Also compliance requirements with regard to AQRB are as provided under Clause 93(2), 94(5), 99(1), 106(1), 117(1) and 117(2) of the Architects and Quantity Surveyors By-laws, 2015 respectively; -

(i) It shall be the duty of the client to ensure that he engages architectural firm and quantity surveying firm in both design stage and construction stage.

(ii) The architect shall be responsible for the direction and general co-ordination and integration of the design and periodic supervision and inspection as may be necessary to ensure that the architectural work is executed in accordance with the building standards and codes**.**

(iii) All signboards shall have a sticker positioned on the left side of the name of architectural and quantity surveying firm involved in the construction project.

(iv) A lead consultant who is an architect or quantity surveyor in a building or construction works shall ensure that, before the commencement of the construction works, a signboard is erected and fixed at conspicuous location for easy visibility and readability as part of the preliminary or preparation of the construction works.

(v) A registered person shall not carry out fronting, rubber stamping or unauthorized out sourcing practices when delivering professional services.

(vi) For the purpose of sub bylaw 117(1), a registered person shall be deemed to carry out fronting, rubber stamping or unauthorized out sourcing practices if he signs and stamps a professional document which he did not prepare and had no control and decision over such professional document or a construction or building project.

Furthermore, from the above reading, it is clear that, among other things, client is obliged to comply with the Architects and Quantity Surveyors (Registration) Act, 2010 and the Architects and Quantity Surveyors By-laws, 2015 on the engagement of registered architectural firm and quantity surveying firm prior commencement of construction works. Also, the client is required to register the project to acquire respective stickers and affix them on sign board, erecting sign board and make sure the project is fully supervised by the respective registered architect and quantity surveyor who shall conduct periodic inspections during the whole period of project execution. By so doing the client shall be titled to be complied with the AQRB regulatory requirements during project construction stage.

Provided the above literatures providing the compliance requirements for the stakeholders in the Construction Industry, we find that this study should not just ending on assessment of clients' compliance only; but in order to get the resolution of the issues stated, the study has to go far by looking on the factors hindering clients to comply and proposing framework for improving clients to comply during project construction stage.

2.7 Compliance as a Key to Successful Construction Projects

Projects are become bigger, more complicated, and more collaborative than ever before due to the demands of modern construction. That benefits contractors' bottom lines because bigger, meatier projects entail more effort and income (Holtmann, 2018). Moreover, according to Holtmann (2018), for the successful construction projects, regulatory compliance is unavoidable task; -

a) As it is well known that there are a lot of benefits of regulatory compliance in which among them is the successful construction projects. By so doing, once the client gets into the contractual agreements with the contractor and subcontractors, the respective building companies are required to think on building regulations requirements, insurance cover, workforce, safety regulatory requirements, income privilege, etc.

b) There are a lot of things need to be accommodated in order to guarantee successful final product. Everyone in construction team including client, architect, engineer and contractor have the significant role on regulatory compliance, since, it has a significant role in preventing risk associated like penalties, litigations, enforcement actions by the regulators and even unsatisfactory final product.

Furthermore, Holtmann (2018) added that, whether it comes down to back-office staff or project managers in the field, it is critical to have peoples on team dedicated to compliance issues and documentation. To be effective, these professionals need to:

a) Liaise with every person in the project team on the compliance requirements.
b) Make sure all compliance documents are often assembled, stocked and followed up.
c) Liaise with all parties once there is decease and loss of documents, and when a portion of job requires to be stopped.

Previous studies revealed that compliance is a key to Successful Construction Projects. However, some of them focused on the compliance arrangement within the organization so as to make sure they accomplish the building project successfully. In this study, the focus is specifically on the level of clients' compliance with regulatory boards, on several areas, such as; engagement of contractor and consultants, project registration, erection of sign board, fixing of stickers and consultants' supervision during project construction stage. This will provide good quality of final product, clients' satisfactory, avoid from conflicts and fines which together shall lead to Successful Construction Projects.

2.8 Cost and Benefit of Regulatory Compliance

In project management, compliance always insures good governance, reduce risk and creating credibility with the regulating authority. Other advantages of compliance are to safeguard from litigation, fines associated with non-compliance and any other related problem during the whole project period. Trust and credibility are the basis of working relationship among regulators, institutions and other stakeholders related to. When trust and credibility are attained, then no conflicts are expected to occur, hence, smooth relationship between regulators and institutions are experienced (Barefoot et al., 2011; Bleidt, 2001). Other benefit of compliance is the presence of regulatory boards, these are responsible for assuring and protecting citizen's health and safety from the unsatisfactorily risky products and distorted product (Bleidt, 2001). That protection gives satisfaction and security of consumers from the

products and minimize risk from unknown harm. Though, nothing has cost implications, thus, the intended security will lead to an excessive cost for sponsor to withstand. Apart from that, even during project planning, by accommodating regulatory compliance means the cost implication in which the same will extend project period automatically (Kuzma et al, 2011). Conclusively, however, building regulatory compliance has the "cost implications" to adopt it but its' benefits to the construction project and stakeholders as a whole are of large great thing to accomplish in construction industry.

2.9 Cost of Non-Compliance

In construction industry, it is essential to comply, since, there is growing of regulatory requirements on the firms to attain range of rules and regulations. High economic failure (bankruptcy) cases like that of Parmalat, Enron and WorldCom crisis or disasters of the earthquake in Italy (April, 2009) led to severer frameworks and approval process for buildings and construction firms. Like that scenarios and others are what influencing the increases of regulatory requirements and pressure. Likewise, Litigations, penalties, loss of accreditation, and civil or criminal enforcement actions are the outcomes of failure to comply with regulatory needs (Trent, 2008). Furthermore, Gosling et al (2013) and Othman (2012), states that among other things, if the project found to be not complied, there is a possibility of the same to be affected by regulatory agencies actions. In this case, failure to meet regulatory needs, a product may be taken below standard by the regulators and require either part or the whole work to be repeated accordingly.

If you do not follow the building control procedures set out for handling your building work or you carry out building work which does not comply with the requirements contained in the building regulations, you will have contravened the regulations. According to Schwierking and Anantatmula, (2015) some of the consequences that might face the project due to non-compliance are as follows; -

(i) **Cost and Schedule Overrun**

Experience shows that the regulatory compliance should be the obligation of all project team members, and this will avoid the project facing any possible compliance risk. Failure of any member or both may lead to lawsuits, penalties and even the prolonged project completion period. Thus, for the betterment of the project, it is recommended for the compliance matters to be scheduled during project preparation.

(ii) **Reputation and Litigation Risks**

Project regulatory compliance always assures good relationship between project team (including client) and government regulators. And if one fails, this may lead to litigation between them and even poor relationship among the project team members. Moreover, failure to comply with regulatory compliance officers could lead to break of trust and reputation by the project team.

(iii)**Regulatory Enforcement Wrath**

Regulatory authorities, among its duties of regulating professionals and building projects compliance as a whole, also have the authority to stop non-compliant construction and issue penalties. Non-compliance of regulatory requirements by any firm or organization may lead to regulatory enforcement wrath such as penalties or loss of certification.

Most of the studies conducted regarding building regulatory compliance revealed that if one fails to comply, there is huge implication associated with non-compliance; which is normally called cost or consequences of non-compliance. Some of the identified areas are as discussed above; cost and schedule overrun litigation risks and enforcement. For that case, this study finds the needs and importance to develop a framework for improving clients to comply during project construction stage so as to avoid those costs. In addition, this will guarantee good quality of final product and clients' satisfactory.

2.10 Challenges Facing Building Regulatory Compliance

Despite being written and adopted into law to ensure building performance, research demonstrates that many building code users do not adhere to the standards. Moreover, Non-compliance with building codes is an international problem that may have received little or no attention, and in some cases, it is either unrecorded or unreliable documentation. (Windapo and Cattell, 2010).

Furthermore, implementation of building code compliance has encountered various challenges, particularly when regulatory authorities lack the necessary technical expertise and training to evaluate the compliance requirements. In most cases, building code flaws may occasionally have made compliance with the regulations more difficult. (Burby and May, 2000; Nwadike and Wilkinson, 2020). Hence, defects in adhering to the criteria of the building code must therefore be taken into account because their effects could result in unanticipated loss to the built environment.

According to Darko and Mazibuko (2015), the challenges facing the national building regulations' compliance and enforcement in South Africa are as; -

a) Inadequate awareness of the regulatory objective of performing building regulations of the Country or State.
b) The presence of local authorities' irregularities on enforcing building regulations.
c) The interview results revealed that there is a need for the regulators to have time to time evaluation of the stakeholder's awareness on the enactment of building regulations.

According to (Nwadike, 2020), some of the challenges facing compliance with building code in New Zealand are; building code complexity, lack of stakeholder capacity building, lack of training, inconsistent building code updates, and a lack of awareness among the society. Moreover, implementation of building code compliance has encountered various challenges, particularly when regulatory authorities lack the necessary technical expertise and training to evaluate the compliance requirements (Nwadike and Wilkinson, 2020; Spence, 2004).

Furthermore, Nwadike (2020), outlined the below other factors that hindering compliance;

a) Lack of awareness of the advantages/profits to meet building code requirements.
b) Insufficient enforcement activities (man power) to administer building regulations.
c) Inadequate appropriate stakeholder's appointment during the building regulations improvement might also lead to unsatisfactory building regulation compliance.
d) Total cost of compliance; non-compliance has been increased due to associated cost required for complying with the building regulations.
e) The absence of stakeholder's cooperation among them might also impede building code compliance.
f) No encouragement for those complied with the building code requirements. This might also be a reason of non-compliance.

Most of the previous studies conducted in various countries regarding the challenges facing building regulatory compliance revealed that there are still many challenges that hindering stockholders to comply with the regulations. Thus, there is a need to work on those challenges by developing framework so as to improve building regulatory compliance.

2.11 Various Frameworks in Construction Industry

A framework is a report or rule which governs a sequence of any action. A framework targets to simplify and make particular processes to be accomplished in a good and proper manner. Frameworks may be issued by and used by any organization/institute/body to make the actions of its employees or divisions more predictable, and acceptable.

For this study, framework is expected to be more useful and suitable in assuring clients are complying with the Regulatory Boards during project construction stage. Further below is a brief discussion of the various organization that put on using the idea of frameworks in their daily administrative practices.

2.11.1 Framework to Improve Building Code Amendment in New Zealand

The framework described in this section presents five critical features, such as regulation and administration, enforcement, compliance, and amendment process. The framework criteria are used to measure and assess the action priorities. The action priorities features are discussed in detail in the following sub-sections.

(i) **Building regulation and administration:** Building regulation is a significant aspect of the building control framework, made in accordance with the New Zealand Building Act. Accordingly, the building regulation provides user-friendly requirements, efficient services and timely delivery through legislative policy measures. Seeking the opinion of the relevant stakeholders to improve the building regulations becomes necessary.

(ii) **Design and implementation:** Building code to some extent, Centre's on the design and implementation of code requirements, which provides an insightful, practical application of building requirements. The implementation of building code requirements is often neglected as a result of the complexity surrounding code requirements (Coburn & Spence, 2003). Hence, effective implementation and design of building regulations depend on how the measured criteria are improved, as stipulated in figure 2.2.

(iii)**Enforcement:** The implementation of building code requirements is often neglected as a result of the complexity surrounding code requirements (Coburn & Spence, 2003). It involves the participation of all relevant stakeholders to achieve a purposeful building code implementation through continuous training to ensure competency, technical assistance by experienced technical experts and regular active monitoring.

(iv) **Compliance:** It is crucial for relevant stakeholders to consider building code compliance in an attempt to improve building code. Furthermore, compliance with the building code requires an enabling environment supported with a legislative policy that is inclusive and allows for the participation of all stakeholders with encouraging incentives while empowering the regulators to publish violators and reward compliance culture.

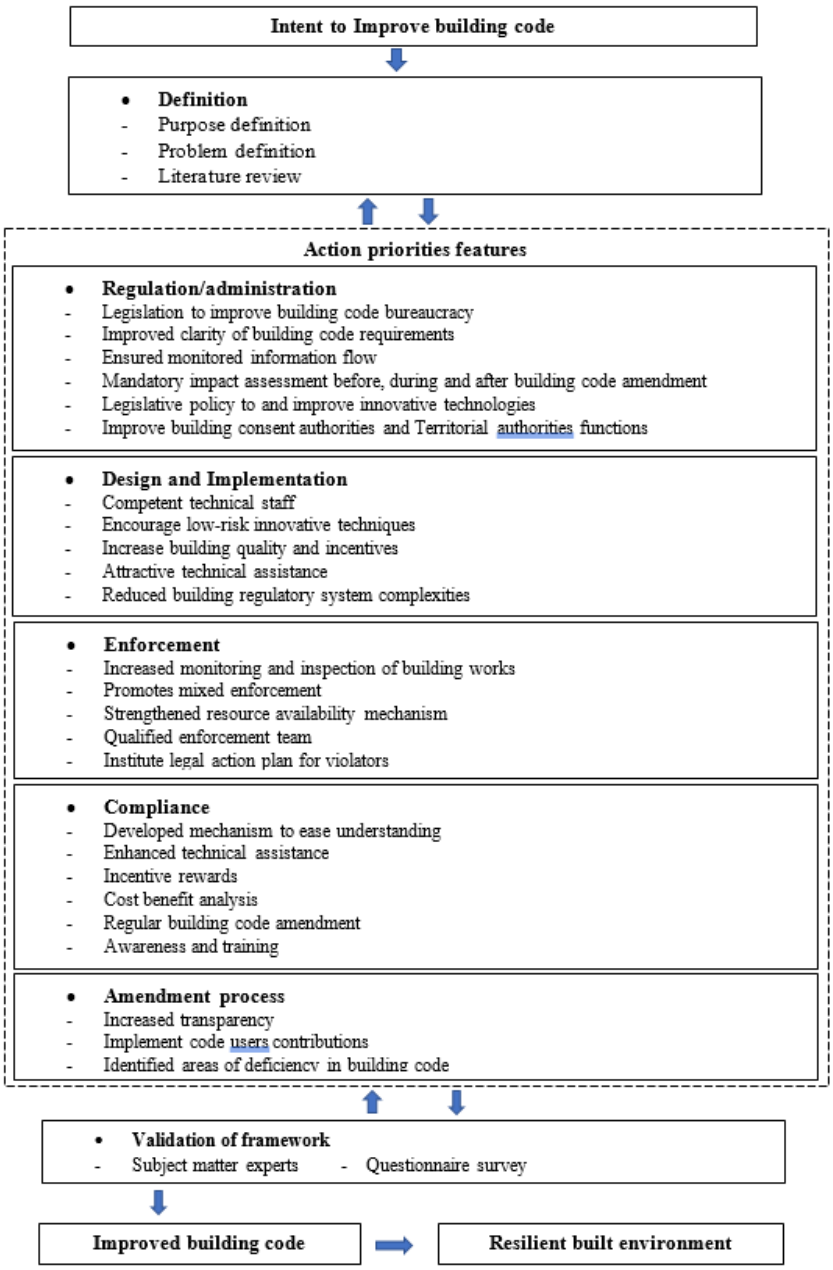

Figure 2.2: Evidence-Based Framework Design Logic (Nwadike and Wilkinson, 2020).

(v) **Amendment process:** The building code amendment process is also considered towards improving building code requirements. New Zealand building code (NZBC) has passed through several amendment processes (Nwadike & Wilkinson, 2020); however, improving the amendment process becomes necessary as the regulatory system sees several techniques, new construction methods and technologies emerge over time.

The proposed evidence-based design logic framework is characterized with action priority features such as regulation, design and implementation, enforcement, compliance and amendment process, as shown in Figure 2.2. The primary aim of the proposed framework design is to aid in improving the New Zealand building code and secure a safe built environment and regulatory compliance as a whole.

This framework has the significant contribution in developing the proposed framework of this study in a way that it helps the researcher to propose and adopt main features (design and implementation, enforcement, compliance and framework validation) to be incorporated in this study which aims at improving clients' compliance during project construction stage.

2.11.2 Process for Achieving Compliance with Regulatory Requirements

The following three-step procedure (as shown in Figure 2.3) should be used by departments/sections in accordance with CWMF policy requirements to make sure that their buildings are compliant with legal requirements:

(i) **Legislative Compliance Strategy**

Early on in the planning stages of a government building project, departments must specifically address the needs of state and local planning instruments. Prior to creating the legislative compliance strategy, it is ideal to speak with stakeholders about how planning instruments will affect them because the results of that consultation will affect the options that are available for compliance.

The following should be part of a strategy for legislative compliance:

a) Size of the project
b) Background information about the project, including proof of land title or tenure and assurance that the site will have all necessary services (e.g. water, electricity).
c) Applicable rules established by the regulatory framework for buildings.

d) Results of dialogue with government stakeholders evaluating the impact of planning tools used by the state and municipal governments.

e) Options for compliance include delegating responsibilities for conducting the compliance process and specifying the qualifications needed to do so.

f) Preferred compliance option (and justification for same).

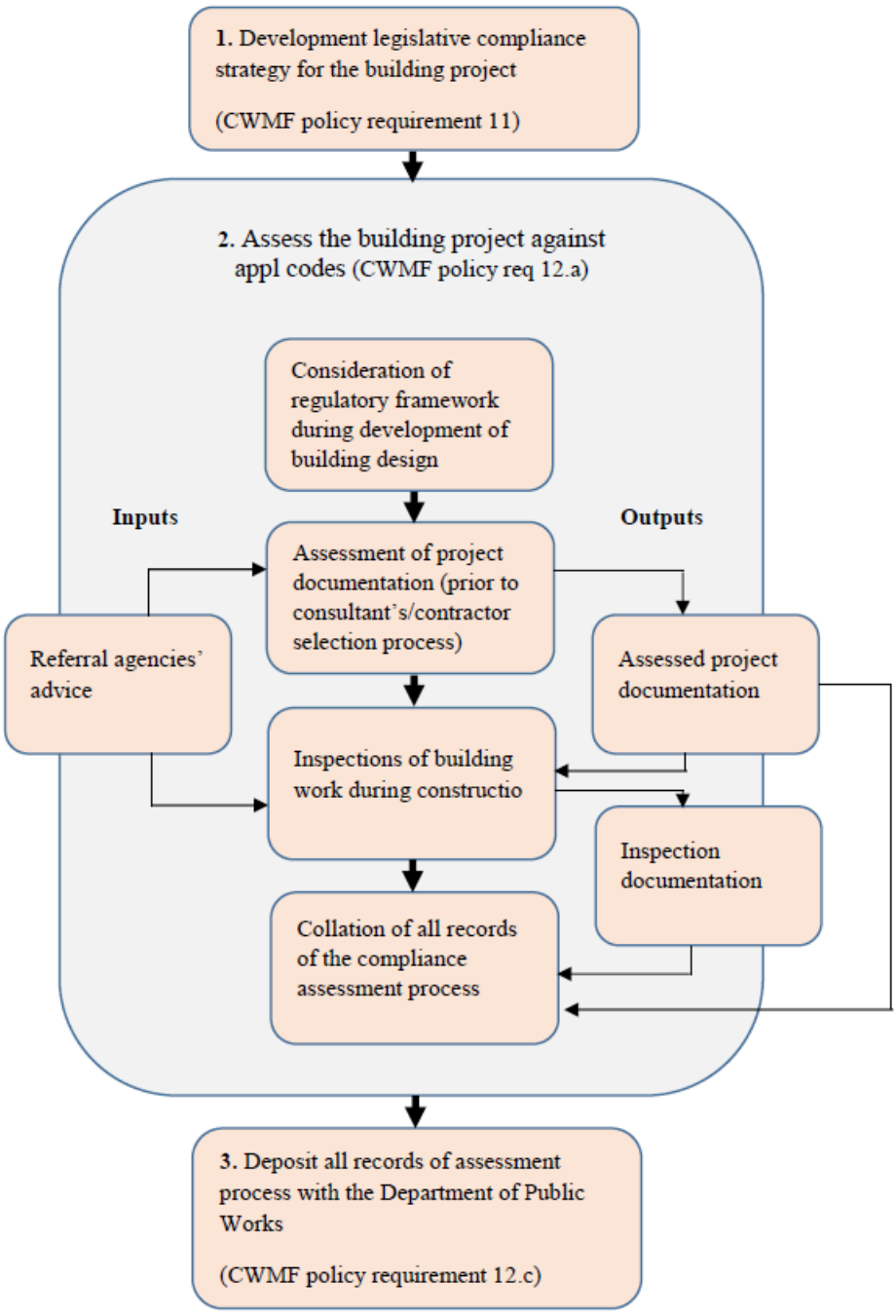

Figure 2.3: Guideline for achieving compliance with regulatory requirement (CWMF, 2010).

(ii) **Assessment Against Relevant Codes**

Building work will be evaluated in relation to relevant codes in the following ways:

a) Taking into account the requirements of local government planning tools as well as the framework for building regulations while creating the building design
b) Gathering or gathering proof that the building design complies with all applicable codes (e.g. design certificates, drawings, specifications).
c) Check any project paperwork submitted for a tender against the requirements of any applicable codes.
d) Building work is continuously inspected in compliance with the Building Regulation 2006 throughout construction.
e) Gathering/assembling all inspection records.
f) Evidence of appropriateness' of the materials used during construction is gathered.
g) Written documentation proving the construction complies with all relevant regulation.

(iii) **Matters Taken into Account when Evaluating Project Documentation**

According to the BCA and QDC guidelines, the following issues should be discussed and taken into account while evaluating project documentation:

a) Regulatory and administrative requirements of applicable codes: Project paperwork must comply with requirements of applicable codes governing building classification/use, water supply, plumbing and drainage, health restrictions, etc.
b) Fire resistance: given its size, purpose, and location, the building must use the proper fire-resistant materials and be structurally sound.
c) Access and egress: The structure must offer people with disabilities safe, equitable access and sufficient provisions for exit in the event of a fire or other emergency.
d) Services for fighting and controlling fires that are appropriate for the building's size, usage, and location must be provided.
e) Health and safety: Structures intended for use as workplaces must be constructed in accordance with applicable workplace health and safety requirement outlined in QDC.

(iv) **Inspections of Building Work During Construction**

Inspections must be undertaken by an appropriately qualified building surveyor, or his/her nominee. Inspection records and any other evidence of the suitability of the building work

should be provided by the building industry contractor. Inspections must be conducted within the following parameters:

a) The building industry contractor is required to inform the department's designated officer that the work is ready for inspection upon completion of each.
b) The stage must be examined by a certified professional at a time set by the contractor, as determined by the department's designated officer.
c) The contractor is required to deliver all inspection records and "proof of suitability" to the department's designated officer upon completion of the building work.

Any guidelines that may be issued by the Director-General of the Department of Infrastructure and Planning must be followed when conducting inspections.

(v) **Deposit of all Records of the Assessment Procedure Kept by the Department of Public Works and Housing**

The State's record of the compliance assessment process serves as verification of compliance with applicable codes for government construction projects. The Department of Housing and Public Works shall receive all paperwork pertaining to the compliance evaluation of government construction projects for storage as a public record. The deposit of all assessment process documents guarantees that this data is accessible for use in the building's continuous management in addition to serving as proof of the State's compliance with relevant codes. Historical documents are frequently significant because they help with the planning and evaluation of the compliance of any subsequent works.

Process for Achieving Compliance with Regulatory Requirements sited out four-step process for ensuring that their buildings adhere to regulatory standards, including legislative compliance strategy, assessment against applicable codes, factors taken into account during project documentation assessment, and inspections of building work throughout construction. This has been shown in Figure 2.3.

The primary aim of this framework was to insure compliance of the building with regulatory requirements. This framework has the significant contribution in developing the proposed framework of this study in a way that it has similar objectives with this study, in which one of the identified features (inspections of building work during construction) was adopted in development of the proposed framework of this study.

2.11.3 New Regulatory Framework for Construction

In accordance with Zile and Sulmanis (2014) the following five areas (process) are to be considered for improving compliance of the buildings prior and during construction execution with regulatory requirements:

(i) **Procedure for Issuance and Challenging of Construction Permit**

The fact that protection of public rights of third parties during construction was only possible after receiving the construction permit, despite the fact that the legal acts had been broken during the early stages of the construction process, was one of the most significant issues with the previous regulatory framework. In improving regulatory framework, the Construction Board must grant the construction permit within one month of receiving the building application and concept design at the start of the construction process.

The following procedure has been set forth for contesting the construction permit:

a) The municipality posts a notice about the issuing of the permit on its homepage, and the notice includes the construction permit's effective date.
b) The customer must notify the owners of the properties that surround the land plot to which the permission applies by posting a signboard on the property.
c) After the effective date, a construction permit may be contested within one month.
d) The law prohibits third parties from contesting the construction permission after the one-month deadline if all societal information rules have been followed.

In light of this, the client may be confident that after the time for contesting the construction permit has passed and all prerequisites have been satisfied, it will be feasible to begin the construction works without any objection.

(ii) **Changes in the Procedure of Public Discussion**

Public discussion will only be permitted under the new regulatory framework in the following circumstances:

a) During the environmental impact assessment.
b) During the process of territorial planning (development of a detailed plan).
c) If such building is started next to a home or public site that can have a significant impact but is not subject to the environmental impact review, as is a special circumstance expressly provided in the Construction Law.

(iii) **Office of State Control for Construction**

The Construction State Control Office is created by the new Construction Law, and it will oversee the following structures:

a) Public structures designed to hold at least 100 people.
b) Structures that must go through the environmental impact evaluation process.
c) Buildings selected by the municipality with a contract value greater than 1.5M euros.

The Office will also be responsible for organizing the legal knowledge of construction projects, reviewing applications, and investigating complaints of serious legal violations that occurred throughout the construction process.

(iv) **Supervision of the Operational Structures**

The legislation establishes the basic rule that any building that is placed into service must only be used for the purpose for which it was intended. The Construction Board may decide to do the following based on the building inspector's assessment:

a) To enquire for a technical inspection of the building, a component of it, or the building's building materials.
b) Should alert the municipality and request the elimination of the identified hazard.
c) If a structure is deemed dangerous, its use will be restricted until the danger has been eliminated.
d) If the structures are not being used for the intended purpose, operation of the structures must be prohibited, and the buildings must be returned to its prior state.

According to the Construction Regulations for Buildings, which were adopted in accordance with the new Construction Law, the owner of a public building must do a technical inspection of the structure at least once every ten years.

(v) **Construction Process Liability**

The Construction Law outlines how parties in the construction process are responsible:

a) If a building is being built on private property, the landowner is responsible for starting the project without a permit and for selecting the project's designer, contractor, and supervisor in line with the law.
b) The project designer is responsible for ensuring that the construction project's scope and content adhere to all legal criteria.

c) The contractor is responsible for the building's compliance with all applicable laws and for the construction site's compliance.

d) The supervisor is responsible for overseeing the entire construction process and controlling each stage on the job site as specified by the Construction Law and other legal acts;

The current approach, in which the designers themselves ordered the assessment of their projects, is altered by the new legal framework.

As discussed in the previous framework, the new regulatory framework for construction sited out five areas (process) which are to be considered for improving compliance of the buildings prior and during construction execution with regulatory requirements, which are include; process for obtaining a construction permit and contesting it, modifications to the public comment process, the construction state control office, oversight of the finished constructions, and liabilities during the construction process.

The main objective of this framework was to improve compliance of the buildings prior and during construction execution with regulatory requirements. This framework has the significant contribution in developing the proposed framework of this study in a way that it has many similar objectives with this study, in which two of the identified features were adopted in development of the proposed framework of this study. Those features are; supervision of the buildings and construction process obligation.

2.11.4 Development of an Innovative Framework for Clients' Requirements Information Management in Construction Projects.

A defined and controlled requirements management process that registers client requirements from the program document stage through design and construction and the whole life of the facility is offered by the Innovative Framework (eRIM). The project manager is able to manage change effectively through a defined and controlled change management process because it guarantees that client requirements are available in full at all times, provides a history of previous changes to requirements, and ensures that details of those changes are always available. To manage requirements, change orders and the authorization process, the eRIM system's foundational components include a requirements repository and a change management system that is focused on business process management, as shown in Figure 2.4.

(i) **Repository of Requirements**

Client needs should be kept in the repository under a unique requirements library module created for each project phase, as stated during that phase. To provide the traceability between requirements required for change effect analysis, dependent requirements should be mapped between modules. Any of the listed media can be used to add new needs to the repository (online form, telephone, email, paper form, verbal instructions through face-to-face or at meetings). As an alternative, requirements data can be entered into an external document and then imported straight into the repository. Such external documents must be specifically organized and prepared in accordance with the data schema of the repository's respective modules.

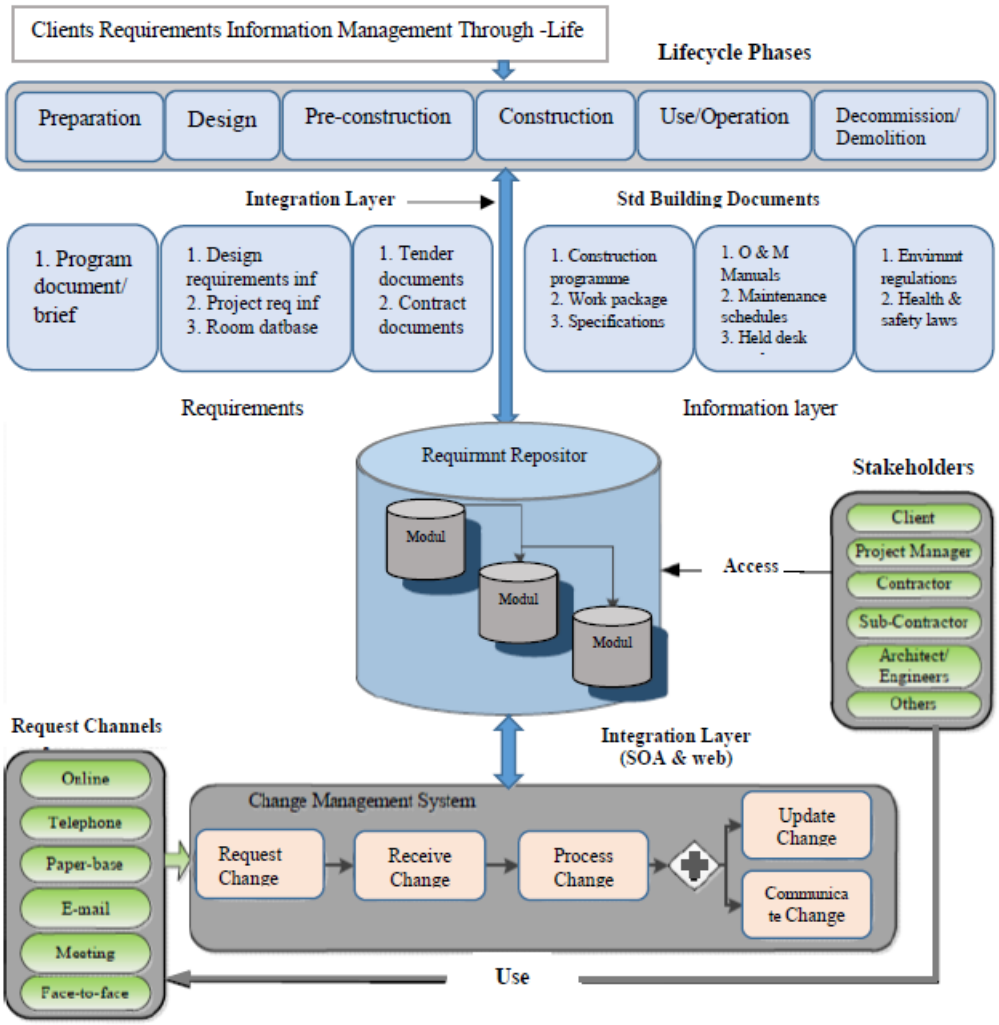

Figure 2.4: Architecture of enterprise Requirements Information Management Framework (eRIM) (Jallow et al., 2019).

(ii) **System for Requirements Change Management**

Change management is an integral and essential component of the framework. Requirement changes should be executed under a coordinated approach to streamline the change process and assist in real-time capture of the change information. Different construction organizations may have different change management procedures or protocols in terms of execution. eRIM accommodates for these differences. Change may be requested through different channels: Face-to-face (individually), meetings, telephone, email, paper-based Requests for Information (RFIs) and on-line forms. eRIM recognizes all these types and are factored within the framework.

(iii) **Phases of the Project and Facility Lifecycle**

The case studies illustrated how client needs evolve in specificity as the design is developed. These standards are typically contained in a variety of publications. Therefore, different levels of detail must be used to convey client needs at each project step. Early on, requirements could be outlined in a program document by stating the project's business case and client demands in straightforward business terms. In the following phases, the material and portrayal are more in-depth. The eRIM system meets this demand by taking into account the phases of project and facility life cycles and the sorts of documents that are generated at each stage. It is necessary to identify and describe the relationship between the required data of the various phases.

On the layer below, information on client requirements will be taken out of the standard documents and put in the repository. This necessitates the subsequent actions:

a) Information about client requirements is identified at each phase.
b) Choosing the properties that will serve as a "mapper" to the program document.
c) Information storage within the repository, which is crucial for maintaining the consistency, accuracy, and comprehensiveness of needs data.
d) Integrate the repository using service-oriented technologies and web services with other systems utilized at various project phases.

The study found that individuals from a variety of functional areas are currently in charge of gathering and managing the client needs inside a building project. The management of the customer's requirements involves the client, architect, consultants, project manager (PM), quantity surveyors (QS), and cost consultants (CC). Because they concentrate on transforming

client demands, expectations, and restrictions into design solutions and supporting them throughout the building process, the designer and contractor play a significant role.

An advanced framework for clients' needs demonstrates the role of all stakeholders within construction project at insuring clients' satisfaction of final product, thus it has a significant contribution in developing the proposed framework of this study in a way that it helps to observe how building stakeholders are significant to be well involved in building compliance. Here is where this study adapts some features of involving architect, quantity surveyors, engineers and contractors as features in developing the proposed framework.

2.11.5 Enforcement and Compliance Activities: A Case of the South African National Building Regulations Process.

In this study, the South African National Building Regulations' compliance and enforcement procedures are covered in this paper. In accordance with the National Building Regulations and Building Standards Act 103 of 1977, the National Regulator for Compulsory Specifications (NRCS) is responsible for managing these procedures (The Act).

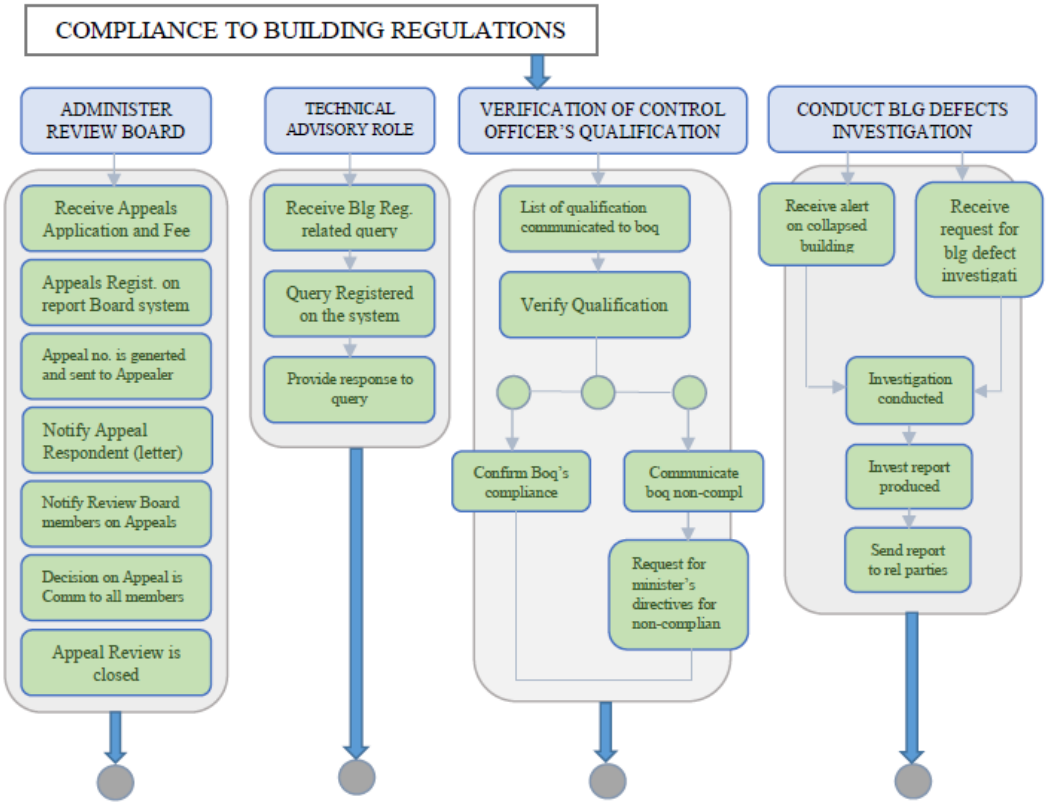

Figure 2.5 Re-Designed NRCS – NBR Business Unit's Regulatory Business Processes (Darko and Mazibuk, 2015)

The objective was to study at how the NRCS's business procedures had required Building Control Officers at Local Authorities around the country to abide by building occupants' or end users' safety. The significant number of injuries, fatalities, and/or human lives affected and documented as a result of collapsing and substandard structures served as a major driving force behind the inquiry.

Furthermore, one of the main goals of this study was to suggest revamping the National Building Regulations of South Africa's key business processes in order to ensure effective compliance and enforcement of laws within the built environment as outlined below in figure 2.5. The NRCS-NBR Business Unit has implemented revised business procedures, which has improved the efficacy and efficiency of building environment regulation and increased building safety. Instances of noncompliance should be corrected with alternatives to ensure that occupants are safeguarded from subpar structures, as the goal of the regulatory processes is to ensure that the built environment is effectively and efficiently regulated.

The National Construction Regulations and building standards within the built environment, in general, confront significant challenges and obstacles, according to the respondents at all stakeholder levels in the current study. The empirical results demonstrated the urgent need for business process reviews and strategic changes that promote objectivity and advantages for compliance, visibility, and awareness of regulatory procedure. The result is a suggested redesign of the NRCS business procedures that can successfully enforce adherence to the South African building codes. The following essential elements, which are important for the future of safe, healthy, ecologically friendly buildings of sound quality for human occupancy, were seen as the overall lessons learnt from the analysis undertaken as part of the study:

a) Stakeholder input is sought while developing and/or rebuilding the key regulatory business processes to comply with applicable building regulations.
b) Including stakeholder knowledge in the core regulatory business process for all parties involved, regardless of level.
c) Uniformity in the comprehension, application, and interpretation of the building codes and its primary regulatory procedures.
d) Responsiveness and understanding of the regulatory guideline, and
e) Adequate support measures and monitoring instruments, which will encourage the regulators and act enforcers to commit to the efficient implementation of the Regulations.

As discussed above, the objective of this framework was to examine at how the NRCS's business practices have driven Building Control Officers at Local Authorities around the country to comply with building occupants' or end users' safety. Apart from some of the features included in this framework to be quite different to this study, but this has contributed on how to propose features of the proposed framework by considering the investigation of awareness from the society or specific group. In that regard, the results of objective no.2 of this study (which is to assess the factors that hindering clients to comply) was also used as base of proposing the features of the proposed framework.

2.12 Frameworks Modified for this Study

By going through various frameworks based on construction industry in particular (as illustrated in section 2.11), it is revealed that the compliance frameworks underlined may not fully accommodate compliance connected with regulatory boards in the nations such as Tanzania where cultural and political influences may at largely differ from each other. Hence, a well-developed framework to improve clients' compliance is proposed to be the foremost step towards compliance process with regulatory boards during project construction stage in Tanzania. In this case, frameworks of section 2.11.2 'Process for achieving compliance with regulatory requirements' and section 2.11.3 'New Regulatory Framework for Construction' have been adopted in developing a new proposed framework.

2.13 Chapter Summary

This section started with a brief description of regulatory compliance. The chapter also reviewed existing literature relevant to construction regulatory compliance. It was noted that various studies have been undertaken regarding the regulatory compliance in the construction industry; such as; compliance with health and safety by contractors, compliance with the building code, compliance with the Local Government Guidance, etc.

The literature reviewed demonstrated wide range and key features of compliance in the construction industry. In this case, the literature went through the study on the compliance Lifecycle as a key to successful construction projects, ways to improve regulatory compliance, factors hindering building regulatory compliance, cost and benefit of Regulatory compliance, cost of Non-Compliance and compliance with regard to regulatory.

Furthermore, it presented various studies on the existing frameworks in construction industry and the frameworks for regulatory compliance in the construction industry, in particular.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes how the study has been carried out. It converses on research design, target population, Sample size, Unit of analysis, Sampling Techniques, Data collection methods, Document Review, Interviews, Data analysis, and Ethical Consideration. Furthermore, it examines the level of the clients' compliance, factors hindering clients to comply and development of frameworks for improving clients to comply during project construction stage, with regard to regulatory boards.

3.2 Research Approach

Kothari (2006) and Bowen (2009), defines research methodology as an organized way of resolving the research issues with the provision of evidences. In this study, the qualitative research approach has been adopted, since, according to Bowen (2009), it is appropriate in analyzing non-numerical data during data collection and analysis. Furthermore, discussion of methodology starts with the choice of Research design, Population, Sample size, Data collection methods and Data analysis.

3.3 Research Design

Orodho (2003) defines research design as a scheme, outline or plan that is used to produce answers to research problems. Research design is the advance planning of the methods to be opted for collecting the relevant data and techniques to be used in analysis, keeping in view the objective of the research and availability of resources (Orordho, 2003 and Kothari, 2004).

In this study, descriptive research design shall be employed. Descriptive research design aims at expressing the state of affairs as it exists. Also, describing the characteristics of a particular individual, or a group (Kothari, 2004). Thus, this descriptive research design describes the level of clients' compliance, factors hindering clients to comply and the appropriate frameworks for improving clients to comply during project construction stage, with regard to regulatory boards in Tanzania.

The Steps Followed During Development of this Research Include:

a) Stating with the problem was the first duty to be undertaken for this dissertation so as to understand the problem relating to this study. By understanding the problem; it was easily to formulate the main and specific objectives of the dissertation. Thereafter; research questions were able to be formulated using those specific objectives.

b) Secondly, literature review was carried out by go through previous articles, journals and books that relate to regulatory compliance, factors hindering regulatory compliance and various frameworks as the base point for conducting the dissertation.

c) Thirdly, with the help of knowledge obtained from previous literatures the researcher was able to formulate interview guides that was used in collecting the data from double storey private residential building. In addition, documentary review and observation method were also used. The data were then analyzed for the purpose of interpretation, presentation, and drawing conclusion.

d) The data from the documentary review were collected as well as from interview method conducted with clients which contained the data necessary for the success of this dissertation in addressing the objectives set before the commencement of the dissertation.

e) The data analysis phase was then followed by which the collected data were analyzed for the purpose of interpretation, presentation, and drawing conclusion.

f) Finally, the researcher using the analyzed data was capable to provide conclusion together with recommendation as per the conclusions made. Moreover; the areas for further studies were then suggested by the researcher.

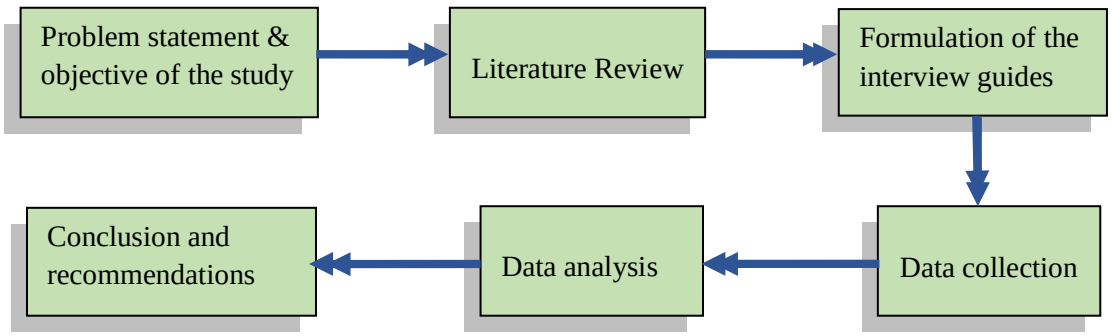

Figure 3.1: Research Design for the Dissertation

3.4 Target Population

Kumar (2011), defines population as a collection of entities that will be the base for the researcher to obtain suitable data during review. It is further described as assembly of items with alike features. The population is what makes the research to be conducted and succeed.

The target population for this study is 506. This is the number of double storey private residential developers who have been granted with building permits from Kinondoni LGA in year 2019 and 2020. The Kinondoni District was selected to get all that information due to the fact that there is a rapid growth of construction of private projects, in recent years.

3.5 Sample Size

Sample size is normally developed from a series of topics that can be researched as collection of items that demonstrating a population (Kombo and Tromp, 2009). Moreover, according to Kothari, (2004) the sample size can be slightly few items representing the population during the research, for the purpose of obtaining data and portrays decisions of the study.

3.5.1 Sampling of the study

The sample size of the study is "56" as calculated using the information given from Kinondoni local Authority, which indicating that "246" and "260" building permits were issued to double storey private residential developers in year 2019 and 2020 respectively. The sample size of this study is calculated using the formula below (equation 3.1): -

$$n = \left(\frac{z^2pqN}{e^2(N - 1) + Z^2pq} \right) \quad (3.1)$$

Where: -

- n stands for the sample size
- *N* stands for the total number of populations
- *Z* stands for the confidence level,
- *e* stands for the margin/sampling error
- *p* stands for degree variability, which is 2%
- q Stands for 1-p.

For year 2019, when population 'N = 246, then;

$$n = \frac{1.96^2 \text{ X } 0.02 \text{ X } 0.98 \text{ X } 246}{0.05^2(246 - 1) + 1.96^2 \text{ X } 0.02 \text{ X } 0.98} = 27 \quad (3.2)$$

For year 2020, when population ‘N = 260, then;

$$n = \frac{1.96^2 \text{ X } 0.02 \text{ X } 0.98 \text{ X } 260}{0.05^2(260 - 1) + 1.96^2 \text{ X } 0.02 \text{ X } 0.98} = 29 \quad (3.3)$$

The total number of sample size = (27 + 29) **= 56**

3.5.2 Sampling for Framework Validation

A total number of sample size for framework validation is eleven (11), which is the respondents who met the defined criteria. Purposive sampling was used to obtain the right survey respondents for validation of framework. Moreover, this sampling approach has been considered appropriate and widely adopted by other researchers, such as; Zhang, 2005 and Liu and Wilkinson, 2011.

A three-stage sampling approach was adapted to obtain potential respondents for validation. First, it was necessary to identify participants who qualify to validate the framework prior to selection. Second, pre-defined criteria were used to identify initial potential respondent. Finally, the identified respondents were communicated to confirm their willingness to participate in the validation process. This method of sampling during validation was also used by Kavishe (2018) and Luvara (2020).

According to O’Leary’s (1991), there are various types of validators that could be used in validating a system or framework, which includes; the use of the same respondent who participated in data collection, different experts, end-users, knowledge users, sponsors of the project, or independent validators. Based on the nature of this study and type of framework developed, the second and third categories are considered the most appropriate ones for its validation.

3.6 Sampling Techniques

This is defined as a method used to determine number of observations to be used in a study from a target population (Kothari, 2004). Likewise, according to Naoum (2003), sampling means picking objects of population for research. It is a method of picking a few items from the target population for the purpose of forecasting the result of the study.

There are two main types of sampling techniques; probability sampling and non-probability sampling (Taherdoost, 2017). The Figure 3.3 demonstrates types of sampling techniques;

Probability sampling technique is the one in which there is an equal chance among the elements of the population of being selected to represent population. Probability sampling includes; simple random, systematic sampling, stratified random, cluster, multistage and multiple sampling (Taherdoost, 2017). In this study, the systematic sampling technique was adopted due to the heterogeneous characteristics of the population.

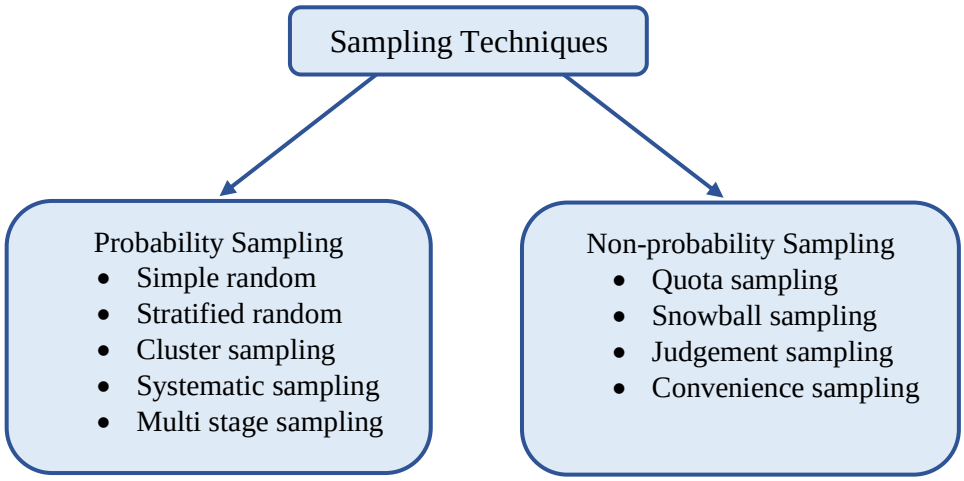

Figure 3.2: Sampling Techniques (Taherdoost, 2017).

Systematic sampling is the method in which the total number of target population is divided by the number of sample size to give a sampling interval which will give an equal fair selection among the population. For example, if you are required to select 15 samples from a total population of 135, then you divide 135 by 15, and the result will become 9 which will be a sampling interval for selection. Systematic sampling is mostly used when the elements of population have the identical features (Mukherjee, 2019).

For this study, the project samples were selected basing on the criteria of double storey residential buildings, located in Kinondoni District, Dar es Salaam. The selection of the projects was done using the list of projects issued with the building permits by Kinondoni LGA. Nevertheless, the selection of the projects was further held using the systematic sampling technique in which the total number of target population of 506 is divided by sample size of 56 developers to give a sampling interval of 9 which gives an equal fair selection among the projects.

The sampling interval was calculated using the formula below;

$$s = N/n$$

Where;

- s stands for the sampling interval
- N stands for total number of population, and
- n stands for the sample size

Thus, $s = 506/56 = 9$

Since, the sampling interval is 9, then the selection was done by counting the projects and picking every 9^{th} item from a total of 506 projects (population, as obtained from Kinondoni Municipal Council). All the 9^{th} items (clients) are those going to be interviewed for gathering required information during the data collection.

3.7 Unit of Analysis

The first step in deciding how you will analyze the data is to define a unit of analysis (Trochim, 2006). It is the entity that frames what is being analyzed in a study, is the entity being studied as a whole, with which most factors of causality and change exist. The Unit of analysis for this research is Double Storey Private Residential building developers, in Kinondoni Municipality, Dar Es Salaam.

3.8 Data Collection Methods

Data collection method is defined as the technique recommended to be used during data collection, depends on the kind of research and the nature of data required to be collected (Marobhe, 2019).

There are basically two types of data which are primary data and secondary data. For the case of this study, three methods were employed for collecting the data, namely; document review, interview guides and observation schedule.

3.9 Documentary Review

Documentary review is the examination of historical data from several documents, either soft or hard, which are often addressing the issue researched by establishing the evidence concerning the particular study (Li et al, 2006). This is the process whereby each party to a case sorts through and analyzes the documents and data they possess to determine which are

sensitive or otherwise relevant to the case. Furthermore, like other analytical methods in qualitative research, document analysis requires that data be examined and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge (Corbin & Strauss, 2008).

Therefore, in this study, documentary review will be done by reviewing the information from the regulatory boards regarding site inspections records and projects registration records for Kinondoni District only. The review aimed at obtaining the secondary data information concerned with the engagement of contractor, engagement of architect and quantity surveyor, engagement of structural engineer, projects registration with regulatory boards, erection of sign board at site, pinning of stickers on sign board and conduction of periodic inspection by consultants during project construction stage. Nevertheless, regarding the assessment of clients' compliance on the projects registration with the regulatory boards, the analysis will be conducted by viewing the number of registered projects from each of the board and compared to the number of building permit issued to the developers (total number of population) in Kinondoni Municipality.

For all cases, the review will only cover the information of recent years 2019 and 2020 and will be done by the use of the documentary review protocol shown in Figure 3.4 and 3.5. Moreover, as previously discussed, the required information will be acquired from reliable documents from the Architects and Quantity Surveyors Registration Board (AQRB), Contractors Registration Board (CRB) and Engineers Registration Board (ERB), as illustrated in Appendix II, the Sources of Evidence Used in Documentary Review.

3.9.1 Protocol for Document Review

According to Quartararo (2019) a document review protocol should outline the scope of the review. How many documents are to be reviewed? What is the timeline? What documents are we looking for? What does a relevant document look like? What is not relevant? This means identifying subjects and document types that pertain to the issues in the case. Moreover, this methodology approach has been considered appropriate by Malekela, (2018). For this study, protocol for documentary review was done so as to provide procedures for collecting the data for each aspect of compliance level by clients as shown in figure 3.4. This protocol is supported by framework which shows the significant sources used to establish the level of clients' compliance during project construction stage as shown in figure 3.5. Nevertheless, the protocol addresses on how the data for each aspect was identified from the project inspection

and registration documents towards establishment of the level of clients' compliance. Furthermore, the interviews with clients were done so as to have clear evidence on the substantial sources/factors of the identified level of clients' compliance from the project inspection and registration documents (sources/factors are listed in figure 3.5).

Therefore, the protocol for documentary review and framework presented in figure 3.4 and 3.5 respectively, gives the base for the formation of input parameters for developing a framework for this study, as discussed later in Section 4.4.

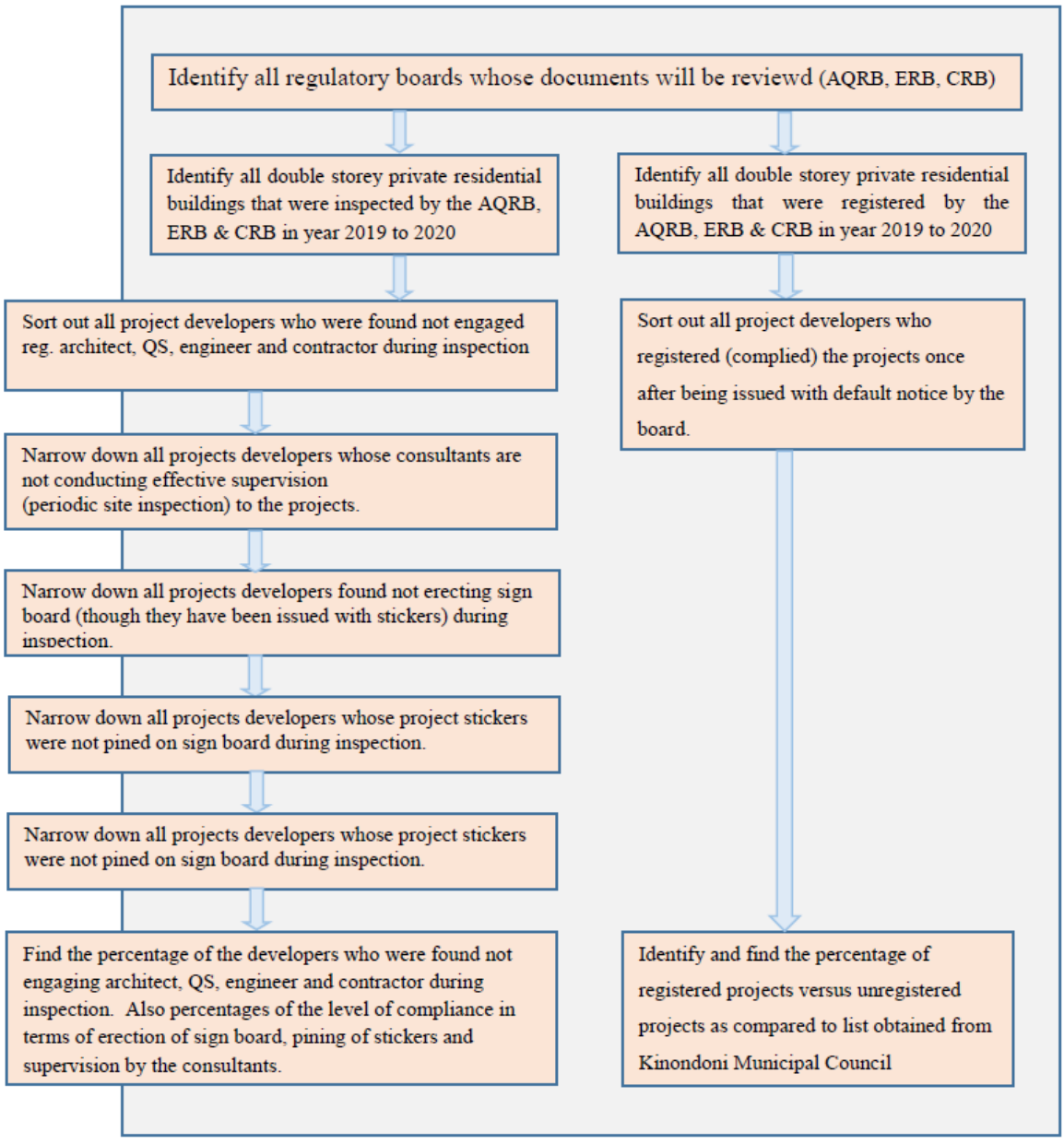

Figure 3.3: Protocol for Documentary Review

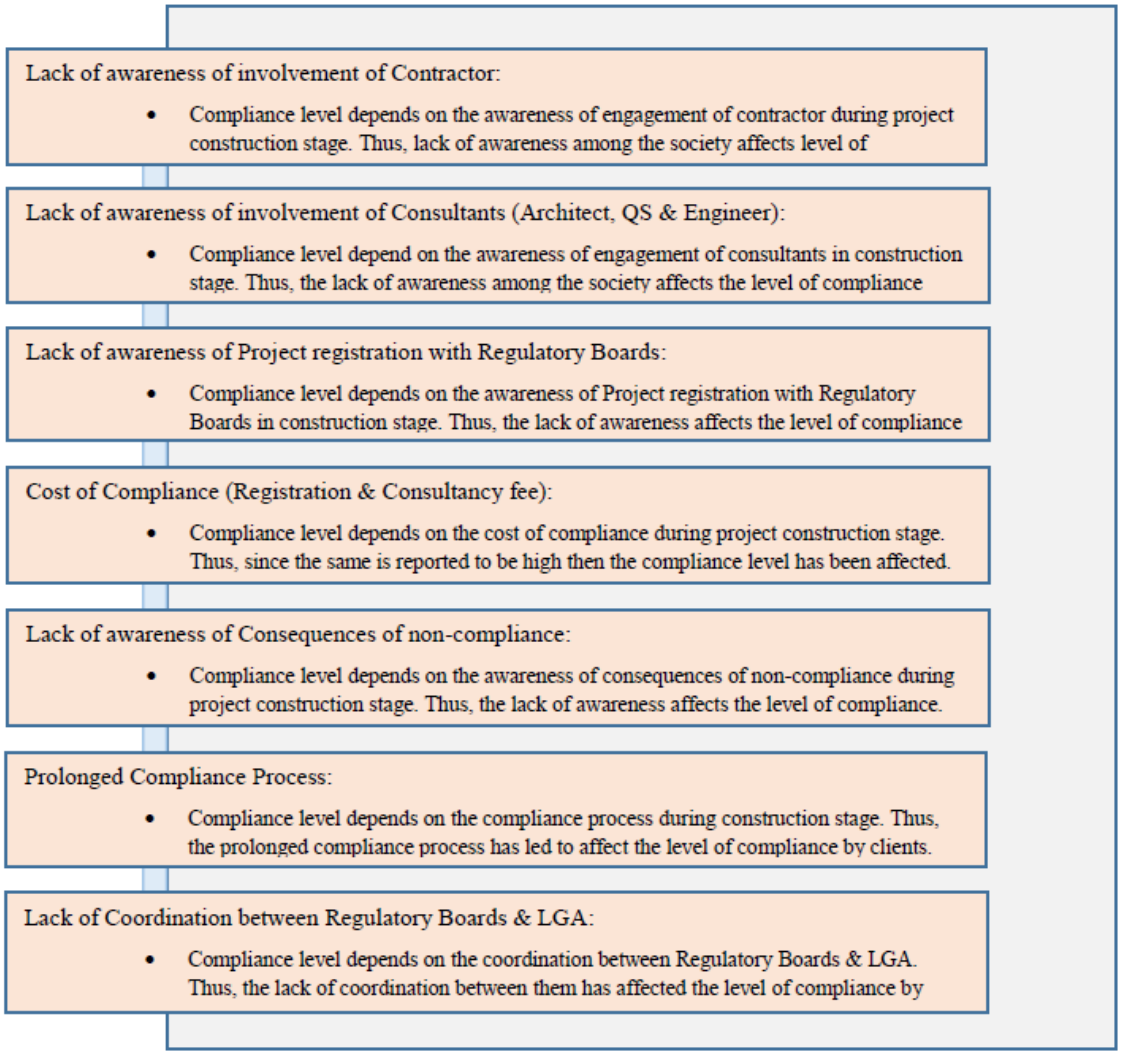

Figure 3.4: Sources/factors used in assessing the level of clients' compliance during project construction stage through documentary Review

3.9.2 Interview Method

An interview is basically either a structured or unstructured dialogue which comprises of two parts, one providing questions and the other part gives replies. In this study, the semi-structured interview was conducted with 56 developers (clients) who were granted with building permits from Kinondoni local Authority in year 2019 and 2020, so as to obtain required information. The interview guides are as attached in appendix 1.

The interview was aimed at collecting data that addressing the specific objective number one of this study which is; "to examine the level of compliance by clients during project construction stage". The data to be collected are those concerned with the engagement of

contractor, architect and quantity surveyor, engagement of structural engineer, project registration with regulatory boards, erection of sign board at site, pinning of stickers on sign board and conduction of periodic inspection by consultants. Furthermore, the interview was aimed at assessing the factors hindering clients to comply during project construction stage.

3.9.3 Observation Schedule

Observation was another method preferred for the research study. According to Kawulich (2012), observation is used in the social sciences as a method for collecting data about people, processes, and cultures. Observation, particularly participant observation, has been the hallmark of much of the research conducted in anthropological and sociological studies and is a typical methodological approach of ethnography. It is also a tool used regularly to collect data by teacher researchers in their classrooms, by social workers in community settings, and by psychologists recording human behavior.

The study adopted the systematic observation technique. This is the Structured observation method in which it is used where data are collected as per a pre-defined schedule. The specific variable is used in this method for data collection. This method aimed at collecting data that addressing the specific objective number one of this study which is; "to examine the level of compliance by clients during project construction stage". The observation was made by researcher in order to observe the physical features of the construction sites, in which the data to be collected are as pre-defined schedule prepared (see table 3.1).

Table 3.1: Summary of the Physical Features of the Construction Sites Observed

S/N	Features to be observed during the data collection	Action taken
1	Erection of sign board	Taking of photos
2	Registration of project with AQRB	Taking of photos
3	Pining of architects' sticker on sign board	Taking of photos
4	Pining of quantity surveyors' sticker on sign board	Taking of photos
5	Registration of project with CRB	Taking of photos
6	Pining of contractors' sticker on sign board	Taking of photos
7	Registration of project with ERB	Taking of photos
8	Pining of engineers' sticker on sign board	Taking of photos

3.10 Development of Framework

The study also aims at developing a framework for improving clients to comply during project construction stage. Basing on the results from the documentary review and interview on the level of clients' compliance (specific objective no.1) and the factors hindering clients to comply during project construction stage (specific objective no.2), the researcher was capable to develop a framework for improving client's compliance. In this case, the developed framework was then validated so as to check its applicability.

Basing on various frameworks in construction industry (section 2.12), some of the features were adapted in developing the framework of this study. The proposed features are; projects registration with regulatory boards, project supervision, involvement of architects, QS, engineers and contractor, erection of sign board at site and pining of stickers on sign board.

3.10.1 Assumptions of the Framework

The developed framework is suitable for traditional method projects, which include; -

a) Single and multistory public buildings
b) Multistory private buildings

3.10.2 Framework Validation

The next stage of the developed framework during this study is validation of the framework so as to attain the last objective of this study. This is very significant to check if the developed framework is practicable and has the intended quality. The selected respondents were designated as deliberated in chapter 4 subsection 4.6.1 in order to obtain reliable person in validating the framework developed in chapter 4 of this study. Likewise, it was significant to develop the interview guides (Appendix 111) for validation of framework so as to evaluate the key elements of the developed framework.

3.11 Data Analysis

Data analysis is the computation among the measures with the search of patterns and relationship existing among the information (Kothari, 2004). Data analysis as Merriam (1991) addresses entails the process of making sense out of the data collected. Kombo and Tromp (2006) define data analysis as a process of examining what has been collected in survey or experiments and making deductions and inferences. This involves uncovering underlying structures, extracting important variables, detecting any anomalies and testing any underplaying assumptions. This is also a process of cleaning, transforming, and modeling data

to discover useful information for decision making. For this study, Microsoft Excel Software 2016 and Qualitative Contents Analysis were used for processing and analyzing of data.

Qualitative data were analyzed using a standard qualitative technique which is qualitative content analysis. This method is commonly used to analyze qualitative data (Elo et al, 2014). Also, Parveen and Showkat (2017) define content analysis as analysis of what is being said, written, or recorded. Meriam (2009) stated that all qualitative data analysis is content analysis because what is being analyzed is the content of the interview, observation, or documents.

3.12 Ethical Consideration

In order to get access of the data, an introduction letter from Ardhi University was essential prior to data collection. This was purposely done in order to obtain a list of Private projects' developers (clients), who were granted with building permits in year 2020 and 2021, from Kinondoni local Authority (of recent completed projects or ongoing projects). After obtaining the list, a researcher sorted out and contacted sampled developers to seek for their participation in the study. Prior to answer research guides, all respondents were assured confidentiality in the information given, and that the use of these data are for academic purpose only. For the smooth success of documentary review and interviewing session, the use of offensive and discriminatory language was avoided.

3.13 Chapter Summary

This chapter explains on methodologies used for the purpose of conducting this research project. It is essential to describe the methodologies used throughout this research to ensure all the data and information gathered is reliable and to show that it is systematically collected and analyzed. Moreover, this section outlines the research design, sampling methods, information collection and tools to be used to complete this research. Data management and analysis were outlined demonstrating the significant reasons for the chosen strategy.

On the tools used during data collection, this section made detailed explanation on the documentary review, interview and observation method. For the case of interview 56 clients were interviewed for gathering required information. Moreover, on the side of observation, photos were picked showing physical features of the construction sites in addressing the issue.

Nevertheless, this part has indicated the procedures of conducting documentary review from all reliable sources so as to make sure the data collected are addressing the respective specific objective as aimed by the study.

CHAPTER FOUR
DATA COLLECTION AND ANALYSIS

4.1 Introduction

This Chapter analyses the data collected from the field. It presents response rate to interviews, level of compliance by clients during project construction stage, factors hindering clients to comply during project construction stage, and frameworks for improving clients to comply during project construction stage.

4.2 Response Rate

This study aimed at assessing clients' compliance with regulatory boards during project construction stage, in Tanzania. A total number of fifty-six (56) Double Storey Private Residential buildings developers who were granted with building permits from Kinondoni local Authority, in year 2019 and 2020, which is a sample size of the study were contacted for interview. Forty-six (46) developers responded positively which is 82% of the total number targeted. Table 4.1 shows the number of developers contacted for interview versus respondents interviewed.

Table 4.1: Response Rate

Category	Targeted Interviewees	Responded Interviewees	Response rate
Private developers	56	46	82%

4.3 Level of Compliance by Clients During Project Construction Stage

In examining the level of compliance by clients during project construction stage, this study was conducted using three data collection methods; interview method, documentary review and observation method.

(i) Project Registration with Regulatory Boards

For the case of documentary review; this was held with three Regulatory Boards as indicated in the research methods in section 3.10. This data collection tool aimed at assessing clients' compliance with regulatory boards during project construction stage, by extracting all the information from each of the board concerning the number of registered projects as compared to the number of building permit issued from Kinondoni Local Government Authority, in year 2019 and 2020. The results are indicated in Table 4.2.

Table 4.2: Summary of Registered Projects with Regulatory Boards as Compared to Projects Issued with the Building Permits from Kinondoni LGA.

S/N	LGA	Projects issued with building permit in 2019	Projects issued with building permit in 2020	Total Projects issued with building permit		
1	Kinondoni	246	260	506		
S/N	Regulatory Boards	No. of Projects Reg. in 2019	No. of Projects Reg. 2020	Total No. of Reg. Projects	Total ratio of Reg. projects with blg permit	Compliance level in %
1	AQRB	37	64	101	101/506	20%
2	CRB	40	55	95	95/506	19%
3	ERB	32	30	62	62/506	12%

Table 4.2 presents the Registered Projects with Regulatory Boards and its Compliance level in year 2019 and 2020. The results indicated that among 506 (section 3.5 of target population) double storey private residential developers who were issued with building permits in year 2019 and 2020, only 101 developers which is 20% were noted to have registered their projects to AQRB, 95 developers which is 19% were noted to have registered their projects to CRB and 62 developers which is 12% were noted to have registered their projects to ERB. The results indicate that there is a low level of compliance by clients in the area of project registration during execution; in which Regulatory Boards have to put emphasis on the enforcement activities on the matter. In addition to that, the results above indicate that there is small difference on compliance level by the developers from one Regulatory Board to another, as it falls from AQRB to CRB and lastly to ERB.

Table 4.3: Summary of Projects Compliance from the Inspected Projects.

S/N	Regulatory Boards	Inspected Projects in Year 2019	Inspected Projects in Year 2020	Total No. of Projects Inspected.		
1	AQRB	35	117	152		
2	CRB	47	60	107		
3	ERB	60	65	125		
S/N	Regulatory Boards	No. of Projects Reg. in 2019	No. of Projects Reg. 2020	Total No. of Reg. Projects	Registered Projects to Inspected Projects	Compliance level in %
1	AQRB	14	24	38	38/152	25%
2	CRB	10	13	23	23/107	21%
3	ERB	13	16	29	29/125	23%

Adding to that, the documentary review was also done by extracting all the information from AQRB, CRB and ERB project site inspection reports of year 2019 and 2020, regarding the number of developers who were noted to have complied by engaging consultants and contractors. The results are indicated in Table 4.3 above.

Table 4.3 presents summary of projects compliance regarding the number of developers who were noted to have complied by engaging Architects, Quantity Surveyors, Contractors and Engineers from the inspected projects in year 2019 and 2020. The results indicated that among 152 projects inspected by AQRB only 38 projects developers which is 25% were noted to have engaged Architect and Quantity Surveyor. Moreover, among 107 projects inspected by CRB only 23 projects developers which is 21% were noted to have engaged contractors. While for the case of ERB, 125 projects were inspected and found that only 29 projects developers which is 23% were noted to have engaged engineers during project construction stage. This is also indicating that there is a low level of compliance in the area of project registration during execution with regulatory boards.

From the interview side, conducted with double storey private residential developers, it was revealed the likely results in which among forty-six (46) developers which were interviewed thirty-six (35) developers which is 76% were noted to have not registered their projects to any of the regulatory board.

Figure 4.1: Construction of Double Storey Residential House at Block Work Stage; the Developer did not Register the Project to any Regulatory Board.

Figure 4.2: Construction of Double Storey Residential House at Finishing Stage; the Developer did not Register the Project to any Regulatory Board

Figure 4.3: Project Registered to AQRB and ERB Boards only.

Figure 4.4: Project Registered to AQRB Board only**.**

Figure 4.5: Project Registered to ERB only

The findings are also supported by site observation in which some of the projects under construction were observed to have not been registered to any regulatory board, as revealed in figure 4.1 and 4.2 above. However, few developers were noted to have registered the respective projects to both AQRB and ERB, some to AQRB only and the

remaining to ERB only as observed in figure 4.3, figure 4.4 and figure 4.5 respectively. In addressing this issue, one of the developers made the following remarks by saying that:

> *What are the regulatory boards? I never heard about it. What are they concerning with? I have a building permit from the Local Authority, then should I still register the project with regulatory boards! Frankly speaking I did not register my project to any regulatory board. But, since you have told me that it is compulsory, I will do it letter once I get money*.

This implies that there is a low level of clients' compliance in this area, in which regulatory boards have to put more emphasis so as to make sure developers are complying as required. The findings are in the same as those found by Darko and Mazibuko (2015) on compliance and enforcement challenges that "a high level of non-responses was noted where stakeholders at various levels repeatedly stated that they were not aware of various regulatory and business processes. This highlights the importance of the need to sensitize all citizens of the critical nature of the legislation, and how it impacts on all citizens' day-to-day lives as all citizens are automatically occupants to one form of building or another.

(ii) Project Registration with Regulatory Boards After Default Notices.

The documentary review was also done by extracting project site inspection reports of year 2019 and 2020 from the regulatory boards, to observe the number of developers who were noted to have complied by after being issued with default notices. The results are indicated in Table 4.4.

Table 4.4: Summary of Projects compliance after default notice.

S/N	Regulatory Boards	No. of Projects Reg. in 2019	No. of Projects Reg. 2020	Total No. of Reg. Projects		
1	AQRB	14	24	38		
2	CRB	10	13	23		
3	ERB	13	16	29		
S/N	Regulatory Boards	Projects Reg. after default notice in 2019	Projects Reg. after default notice in 2020	Total No. of Reg. Projects after default notice	Registered Projects after default notice to Total No. of Reg. Projects	Compliance level in %
1	AQRB	0	8	8	8/38	21%
2	CRB	2	1	3	3/23	13%
3	ERB	1	4	5	5/29	17%

Table 4.4 present the response from the documentary review regarding project registration with Regulatory Boards after default notices. The results indicate that among thirty-eight (38) projects developers who were inspected by AQRB and noted to have engaged Architect and Quantity Surveyor during project construction stage, in year 2019 and 2020, eight (8) developers which is 21% were reported to comply after being issued with default notice, which implies 79% complied prior to commencement of project execution. For the case of CRB, among twenty-three (23) projects developers who engaged contractors, only three (3) developers which is 13% were reported to comply after being issued with default notice, which implies that 87% were engaged prior to commencement of the project execution. Nevertheless, on ERB side, among twenty-nine (29) projects developers who engaged structural engineers, only five (5) developers which is 17% were reported to comply after being issued with default notice, which implies that 83% were engaged prior to commencement of project execution as required by the regulation. This result indicates the level of compliance in this area seems to be satisfactorily, since most of the developers were noted to comply prior to project commencement; though regulatory boards have to take effort and make sure compliance is raised up to 100% for the same.

From the interview side, conducted with double storey private residential developers, it was revealed the quite different results in which among eleven (11) developers which were noted to have registered the projects to regulatory boards eight (8) developers which is 73% were reported to have registered respective projects once after being issued with default notices by regulatory board and the remaining three (3) developers which is 27% did prior to commencement of the project execution. In addressing this issue, one of the developer made the following remarks by saying that:

> *Prior to commencement of the project, I did not find the need to engage either contractor or consultants to supervise my project, since it is of small scope. But once I was issued with default notice I then decided to comply so as to avoid further measures that could be taken by the board against me*.

This implies that there is still a low level of compliance by clients in this area, in which regulatory boards have to put more emphasis so as to make sure developers are complying prior to commencement of project execution as required. The findings are contrary to obligatory practices as provided in Sections 20 of the Architects and Quantity Surveyors (Registration) Act, 2010 which states that “A client or developer who undertakes design,

building or construction works shall ensure that an architectural or quantity surveying firm, is registered prior to the execution of the design, building or construction works".

(iii) Periodic Inspection (Supervision) by Consultants

Also, the documentary review was done by extracting project site inspection reports of year 2019 and 2020 from the regulatory boards, to observe the number of developers who were noted to have complied in the area of periodic inspection by consultants. The results are indicated in Table 4.5.

Table 4.5: Summary of Projects Compliance Regarding Periodic Inspections

S/N	Regulatory Boards	No. of Projects Reg. in 2019	No. of Projects Reg. 2020	Total No. of Reg. Projects		
1	AQRB	14	24	38		
3	ERB	13	16	29		
S/N	Regulatory Boards	Projects Inspected Periodically by Consultant in 2019	Projects Inspected Periodically by Consultant in 2020	Total No. of Projects Inspected periodically by Consultant	Projects Inspected Periodically by Consultant to Total No. of Registered Projects	Compliance level in %
1	AQRB	0	4	4	4/38	11%
3	ERB	2	3	5	5/29	17%

Table 4.5 present the response from the documentary review regarding project compliance with Regulatory Boards in the area of periodic inspection by consultants. The results indicate that among 38 projects developers who were noted to have engaged Architect and Quantity Surveyor during project construction stage, only four (4) developers which is 11% were reported that the respective consultants were conducting periodic site inspection to the project as required. Moreover, for the case of ERB, among 29 developers who were noted to have engaged Engineer, only 5 developers which is 17% were reported that the respective engineers inspect the site periodically. This indicates that there is low level of compliance by clients in the area of periodic inspection (supervision) by consultants, in which regulatory boards have to put emphasis on the enforcement activities so that the developers engaging full consultant's services including supervision works.

Consequently, from the interview side, the results reveal the same as those observed from the documentary review; in which among eleven (11) developers which were noted to have registered the projects to regulatory boards seven (7) developers which is 64% were observed that their respective consultants never conducted site inspection during the

project execution and the remaining four (4) which is 36% did regular site inspection on weekly or monthly basis. This implies that there is low level of compliance in the area of consultants' supervision during construction stage. Most of the clients are partially engaging consultants (frontal practice) during project registration just for the purpose of obtaining stickers and sign board only; and ignoring the importance of works to be supervised. In emphasizing this matter, one of the interviewees stated that:

> *It is very expensive to engage consultants for full supervision services including conduction of periodic inspections. Thus why I have only bought the consultants' services for providing respective stickers and sign board, then I proceed using local labourers to execute the work*.

For better final product, developers are supposed to exercise full consultant's engagement services in which the same consultants who providing stickers and sign board are obliged to conduct periodic site inspection to the work as required. Nevertheless, regulatory boards have to put more effort on those identified challenges and emphasize on the enforcement activities so as to improve compliance.

The findings are in the same as those found out by Anyanwu (2013) who stated that "In majority of cases, unqualified persons, who are artisans, craftsmen and technicians or people without any technological knowledge of the construction process, are carrying out the production process. This has also concurred with the study of Munuo (2013) in which 43% of the respondent strongly agree that poor inspection of works by consultants contribute to collapse of buildings in Tanzania. It is therefore evident from the study that inspection by professionals is imperative, and that if it is not properly addressed may contribute to collapse of buildings.

(iv) Erection of Sign Boards.

Moreover, the documentary review was also done by extracting project site inspection reports of year 2019 and 2020 from regulatory boards, to observe the developers who were noted to have complied in the area of erection of sign board. The results are indicated in Table 4.6.

Table 4.6: Summary of Projects Compliance in Erection of Sign Boards

S/N	Regulatory Boards	No. of Projects Reg. in 2019	No. of Projects Reg. 2020	Total No. of Reg. Projects		
1	AQRB	14	24	38		
2	CRB	10	13	23		
3	ERB	13	16	29		
S/N	Regulatory Boards	Projects Erecting Sign board in 2019	Projects Erecting Sign board in 2020	Total No. of Projects Erecting Sign board	Projects Erecting Sign board to Total No. of Reg. Projects	Compliance level in %
1	AQRB	14	23	37	37/38	97%
2	CRB	8	12	20	20/23	86%
3	ERB	12	14	26	26/29	90%

Table 4.6 present the response from the documentary review regarding project compliance with Regulatory Boards in the area of erection of sign boards. The results indicate that among thirty-eight (38) developers who were noted to have engaged Architect and Quantity Surveyor during project construction stage, thirty-seven (37) developers which is 97% were reported to have erected sign boards. Moreover, among twenty-three (23) developers, 20 developers which is 86% comply with CRB, while for the case of ERB among twenty-nine (29) developers, 26 developers which is 90% comply by erecting the sign board as required. This implies that the level of compliance by clients in the area of erection of sign board seemed to be satisfactorily.

On the interview side, conducted with developers who were noted to have registered their projects to regulatory boards, the response reveals different results in which among eleven (11) developers which were noted to have registered the projects to regulatory boards six (6) developers which is 54% were noted to have not erected the sign boards. Moreover, the remaining five (5) interviewees which is 46% did it properly and prior to project execution. For example, one of the interviewee asserted that:

> *I have not yet erected the sign board because I did not know if it is that compulsory. I thought I am only supposed to engage architect, QS, engineer and contractor to execute my work, because in my experience I always see the sign boards in big projects*.

This means there is an average level of compliance by clients in the area of erection of sign boards at site construction works. Thus, regulatory boards have to put emphasis on the

enforcement activities of the same by making sure the sign boards are erected prior to execution of projects. The findings are contrary to obligatory practices as provided under Clause 106(1), of the Architects and Quantity Surveyors By-laws 2015, which states that "A lead consultant who is an architect or quantity surveyor in a building or construction works shall ensure that, before the commencement of the construction works, a signboard is erected and fixed at conspicuous location for easy visibility and readability as part of the preliminary or preparation of the construction works".

(v) Pinning of Stickers on the Sign Board

Also, the documentary review was done by extracting project site inspection reports of year 2019 and 2020 from the regulatory boards, to observe the number of developers who were noted to have complied in the area of pinning of stickers on the sign boards. The results are indicated in Table 4.7.

Table 4.7: Summary of Projects Compliance in Pinning of Stickers on the Sign Boards

S/N	Regulatory Boards	No. of Projects Reg. in 2019	No. of Projects Reg. 2020	Total No. of Reg. Project		
1	AQRB	14	24	38		
2	CRB	10	13	23		
3	ERB	13	16	29		
S/N	Regulatory Boards	Projects pin stickers in 2019	Projects pin stickers in 2020	Total No. of Projects pin stickers	Projects pin stickers to Reg. Project	Compliance level in %
1	AQRB	10	13	23	23/38	61%
2	CRB	8	5	13	13/23	56%
3	ERB	9	12	21	21/29	72%

Table 4.7 presents the response from the documentary review regarding project compliance with Regulatory Boards in pinning of stickers on the sign boards. The results indicate that among thirty-eight (38) developers who were noted to have engaged Architect and Quantity Surveyor during project construction stage, twenty-three (23) developers which is 61% were reported to have pined stickers on the sign boards. Moreover, among twenty-three (23) developers, 13 developers which is 56% comply with CRB, while for the case of ERB among twenty-nine (29) developers, 21 developers which is 72% comply by pining the stickers on the sign board as required. This implies that there is an average level of compliance in the area pinning of stickers on the sign board. Still there is a need for the regulatory boards to put emphasis on the matter so as to improve the intended level of compliance.

Similarly, for the case of interview, the response was revealing the same results as what observed from the documentary review, in which among eleven (11) developers which were noted to have registered the projects to regulatory boards eight (8) developers which is 73% pinned the stickers on the sign board as required. Likewise, the remaining three (3) interviewees which is 27% did not. In the conversation, it was stated that:

> *I have not yet pinned the stickers on the sign board because in the meantime I only able to engage architect and QS. Thus, I cannot put only two stickers on the sign board because I am not at a good financial position to engage structural engineer and contractor so as to obtain the remaining stickers*.

Figure 4.6: All stickers are pinned on the sign board during construction stage

Figure 4.7: Neither stickers are pinned on sign board, though the respective project is registered

From the site observation, figure 4.6 shows an example of one among the sign board erected at site in which all stickers were pinned as required; while figure 4.7 is a sample at which neither of the stickers were attached regardless of been reported that the respective project have already been registered to one among the regulatory board. This means that there is an average level of compliance by clients in the area of pinning the stickers on the sign board. Moreover, regulatory boards have to put emphasis on the enforcement activities on the matter so as to improve the level of compliance. The findings are contrary to best practices as provided under Clause 99(1), of the Architects and Quantity Surveyors By-laws 2015, which states that "All signboards shall have a sticker affixed on the left

hand side of the name of architectural and quantity surveying firm involved in the construction project". Also, the same is differing to Clause 57(1) of the Engineers Registration Regulations, 2010 which states that "Engineering consulting firms intending to supervise construction projects shall apply for Board's sticker and site instruction book by filling relevant prescribed forms for building projects and engineering projects.

4.4 Factors Hindering Clients to Comply During Project Construction Stage

Interview method was also used to assess the factors hindering clients to comply during project construction stage. In this case, Seven (7) questions were directed to interviewees which includes concerns of the awareness of the importance of contractor in project construction stage, awareness of the importance of consultants in construction stage, awareness of project compliance with regard to AQRB, CRB & ERB regulations, project registration fee with AQRB, CRB & ERB, importance of project compliance, cost/consequence of non-compliance, compliance process and the coordination between regulatory boards and LGA. The results are discussed in the following sections:

(i) Awareness of the Importance of Contractor in Project Construction Stage

The interview was conducted with double storey private residential developers regarding the awareness of the importance of contractor during project construction stage. The results revealed among forty-six (46) developers which were interviewed forty-one (41) developers which is 89% are aware of the importance of engaging contractor. In addressing this issue, one of the developer made the following remarks by saying that:

> *What I know is, you cannot erect any building without a contractor. But for the case of my project I have the contractor just to execute the foundation and frame work only, and the remaining works I will use local labourers to finalize, since, it is expensive to hold him for the whole work*.

This means that there is high level of awareness among the clients in the area of importance of engaging contractor during project construction stage, even it is claimed to be an expensive task to comply with. The findings are in the same as those found by Nwadike & Wilkinson (2020) on the study of challenges facing building code compliance in New Zealand, who found that there is an unsatisfactory responsiveness and awareness among the stakeholders on the benefits of building regulatory compliance, which is extremely contributed to non-compliance with the building code.

(ii) Awareness of the Importance of Consultants in Project Construction Stage

Also, the interview was conducted with developers regarding the awareness of the importance of consultants during project construction stage. The results revealed that among forty-six (46) developers which were interviewed thirty (30) developers which is 65% are aware of the importance of engaging consultants. Though, for those who are aware off, most of them understand more on the role of structural engineers and know nothing on the role of architects and quantity surveyors in construction stage. In addressing this issue, one of the interviewee asserted that:

> *I am not aware of that, because even to my project, what I did is to find consultants just to make a design of my house and prepare drawings so that I can use them to acquire permit from the Local Authority. For the case of construction stage, I do not find the essence of engaging them*.

Thus, the awareness among the society in this area is still seemed to be a problem that hinders clients to comply during project construction stage. Nevertheless, the regulatory boards have to keep on providing education and training so as to improve the level of awareness among the society. The findings are consistence to those found by Darko and Mazibuko (2015) on compliance and enforcement challenges, in which the respondents displayed a generally low level of awareness and understanding of the regulatory role of implementation of National Building Regulations. This primarily is projected from the building owners' input not recognizing the government's imperative in ensuring safe buildings, and further to consider the government's imperative as an essential and a basic benefit to citizens at large. If that is not the case, the results are contrary to Clause 93(2) of the Architects and Quantity Surveyors By-laws, 2015 which states that "It shall be the duty of the client to ensure he engages architectural firm and quantity surveying firm in both design stage and construction stage".

(iii) Awareness of Project Compliance with Regard to Regulatory Boards

Additionally, the interview was conducted with double storey private residential developers regarding the awareness of project compliance with regard to regulatory boards during project construction stage. The results revealed that among forty-six (46) developers which were interviewed only seven (7) developers which is 15% are aware of project Compliance with Regard to Regulatory Boards. This means that there is low level

of awareness among the developers in this area. In addressing this issue, one of the developers made the following remarks by saying that:

> *I am not much aware of them, what I know is 'when you need to build a house like this of mine, you are only required to seek for building permit from the Local Government Authority, in which the same I used to comply with.*

Thus, the lack of awareness among the society is seemed to be one among the most factors that hinders clients to comply during project construction stage. Nevertheless, there is a need for regulatory boards to put emphasis by providing education and training among the society so as to improve level of awareness. The findings are in the same as those found out by Darko and Mazibuko (2015) "The respondents displayed a generally low level of awareness and understanding of the regulatory role of implementation of National Building Regulations. Moreover, these results are consistent with the study done by Jones & Vasvani, (2017) who found that "many people lack the understanding that compliance with the building code helps to reduce disaster risk in the built environment".

(iv) Cost of Compliance (Project Registration and Consultancy Fees)

Moreover, the interview was conducted with developers regarding the cost of compliance with regulatory boards during project construction stage. In this case, among forty-six (46) developers which were interviewed forty-three (43) developers which is 94% are arguing that the respective project registration fee and consultancy fees with regulatory boards are not affordable. Nevertheless, two (2) developers which is 4% were not much concerned on the matters by saying it is affordable; while only one (1) which is 2% stated that they have no ideas regarding the same since they never heard about it. In emphasizing this matter, one of the interviewee stated that:

> *To comply with regulatory boards is not an easier task since there are so many associated fees for a developer to comply during project construction stage. For instance, total estimated construction cost of my project is 120 million, but the total compliance fees with regulatory boards (including registration and consultancy fees) are nearly 20 million. With this scenario even we wish to comply but we fail since the cost of compliance has become a barrier to compliance.*

This means that the project registration fees to regulatory boards are seemed to be the barrier to compliance, hence hinder the developers to comply. Thus, regulatory boards have to put emphases on the matter so as to make easier for developers to comply during project construction stage. The results are consistence to the study of May (2004) on compliance motivations: affirmative and negative bases, who found that the cost of compliance with the building regulations and other associated requirements have developed the level of non-compliance and become an obstacle to compliance.

(v) Awareness of the Cost/Consequence of Non-Compliance During Construction Stage

In addition, the interview was conducted with developers regarding the awareness of cost of non-compliance with regard to regulatory boards. The results revealed among forty-six (46) developers which were interviewed twenty-five (25) developers which is 54% are aware of the cost/consequence of non-compliance during construction Stage. This means that there is an average level of awareness of the consequence of non-compliance. In this case, many concerns were on the risk of possibility of cracks to the buildings and poor quality of the final product only but know nothing on the other risks associated with. In addressing this issue, one of the developer commented by saying that:

> *I am aware of it, because when you fail to comply you keep yourself and your building in high risk. For instance, when you build your house without engaging architect, quantity surveyor, structural engineer and/or contractor and using local labouror may lead to poor quality and un-satisfactory final product, and even dispute with regulatory boards*.

Thus, the awareness among the society in this area is seemed to be still a problem that hinders clients to comply during project construction stage. Thus, there is a need for regulatory boards to keep on providing education and training so as to improve the level of awareness among the society.

The findings are in the same as those found out by Anyanwu, (2013) who stated that 'In majority of cases, unqualified persons, who are artisans, craftsmen and technicians or people without any technological knowledge of the construction process, are carrying out the production process. Adding to that, Schwierking and Anantatmula, (2015) found that "for a project, failure to comply or meet regulatory requirements can result in a failure to meet the core requirements of the project; even litigation by stakeholders and enforcement

actions'. Furthermore, other study based on the challenges facing building code compliance in New Zealand, held by Nwadike (2020) revealed that 57.80% believed to some extent that poor awareness of the consequences of non-compliance with the building regulations could become a critical factor in building code compliance.

(vi) Lack of Coordination Between Regulatory Boards and LGA

Similarly, the interview was conducted with developers regarding the coordination between regulatory boards and LGA. The results revealed that among forty-six (46) developers which were interviewed thirty-eight (38) developers which is 83% are arguing that there is lack of coordination between regulatory boards and LGA. However, there were some few, three (3) developers which is 4% who were not much concerned on the matter by saying it is quite moderate. In emphasizing this problem, one of the interviewees stated that:

> *There is no coordination at all. You know since most of us are not aware of the compliance with regulatory boards during project construction stage, it could be suitable for developer to be notified on the need to comply with regulatory boards once you are granted with building permit from Local Government Authority.*

This means that the lack of coordination between regulatory boards and LGA is seemed to be also the factor that hindering clients to comply during project execution. Thus, there is a need for regulatory boards to put emphasis on the matter so as to improve compliance. The results are consistence to the study of Gwimile, (2017) on regulations enforcement and compliance in construction process in Tanzania. The study found that the Relevant Authorities issuing building permit are not share information with Regulatory boards such as AQRB, CRB & ERB. Furthermore, the study held by Nwadike & Wilkinson (2020) based on the challenges facing building code compliance in New Zealand, found that the absence of cooperation among stakeholder is delaying and hindering compliance with the building regulations.

(vii) Prolonged Compliance Process

Furthermore, the interview was conducted with developers regarding the compliance process during project construction stage. The results unveiled that among forty-six (46) developers which were interviewed forty-four (44) developers which is 96% are arguing that compliance process is so prolonged and exhausting. Nevertheless, the remaining two

(2) developers which is 4% said that 'it is appropriate process for those who are willing to comply'. In addressing this issue, one of the developer commented by saying that:

> *First of all, I have to declare that compliance is essential process in the construction industry. The problem is when you think on the huge prolonged compliance process, you can simply leave it. I advise your good office to take a look on it, so that the same cannot become a barrier to developers who wish to comply. For instance, when you want to start a construction, there are a lot of issues require to comply with; including; look for building permit from LGA, contractor, engineer, QS, go to aqrb, crb, erb to get stickers, e.t.c. You see, may be you need to sit down and work on it by shortening the process so as to improve the level of compliance by clients prior to construction process*.

This means that the prolonged compliance process has become an obstacle and hindering developers to comply during project construction stage. Thus, there is a need for regulatory boards to put emphasis on the matter so as to improve compliance.

The results are consistence to the study of Ametepey (2020) on Factors Affecting Implementation of the National Building Regulations in Ghana. It was found that Official procedures was ranked by building owners, building practitioners and local authority staff as the second most important factor with RII equal to 0.937. This factor was very important to the building owners and practitioners probably because they have had personal experiences and observed that the procedure needs to be simplified. According to the respondents, the permit application goes through numerous offices, inspections and signatures which lead to a very cumbersome procedure. The respondents observed that this factor deters the public from obtaining development and building permit before putting up their building.

4.5 Framework for Improving Clients to Comply During Project Construction Stage.

The study also aims at developing frameworks for improving clients to comply during project construction stage. As discussed in section 2.12, the frameworks of section 2.12.2 *'Process for achieving compliance with regulatory requirements'* and section 2.12.3 *'New Regulatory Framework for Construction'* have been considered in developing this framework.

Basing on the results from the documentary review and interview on the level of clients' compliance (specific objective no.1) and the factors hindering clients to comply during project construction stage (specific objective no.2), the researcher was able to develop a framework for improving compliance as illustrated in Figure 4.8. The abbreviation interpretations and steps to be followed when clients comply during project construction stage are demonstrated in Tables 4.9 and 4.10 respectively.

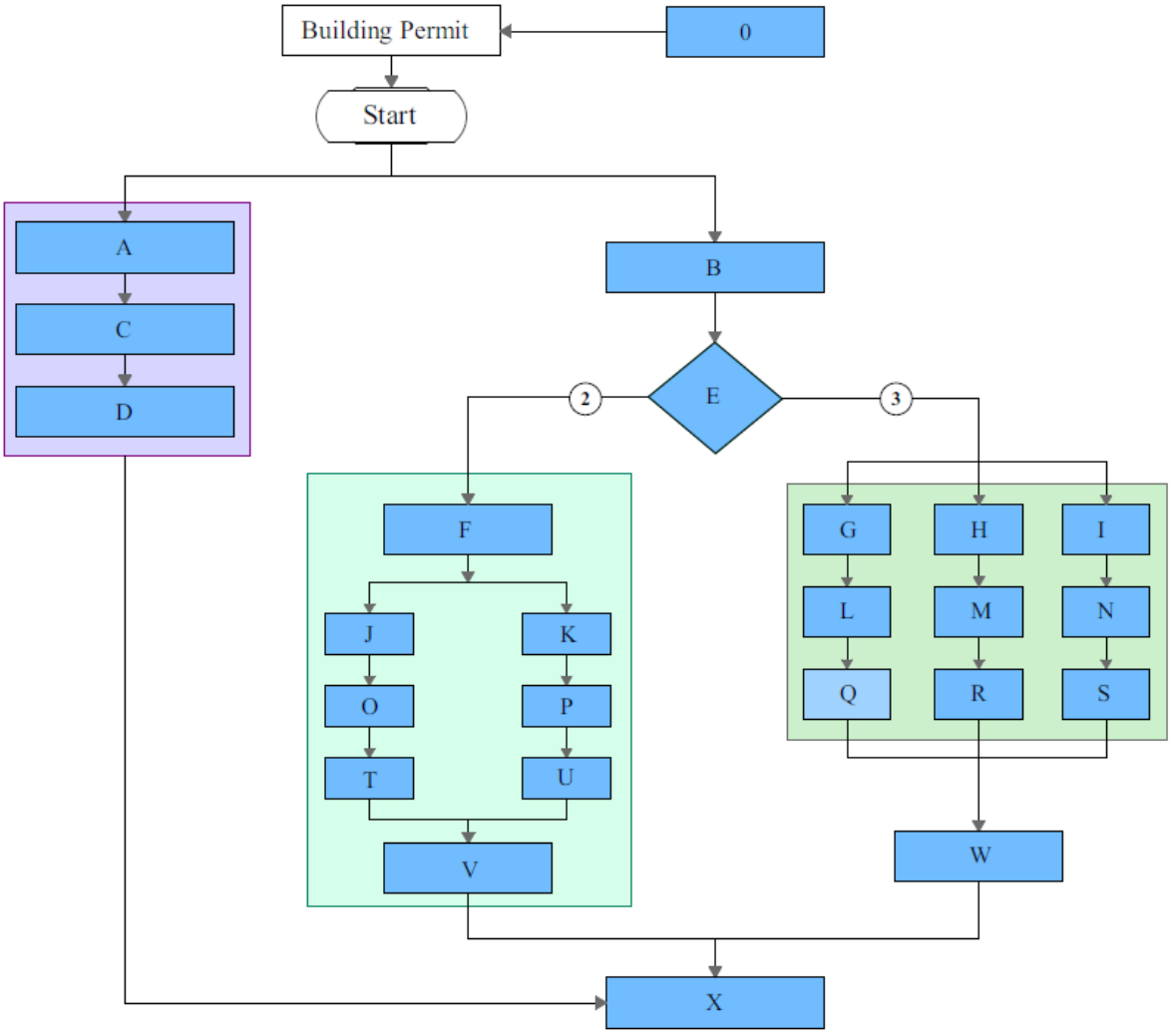

Figure 4.8: Proposed Framework for Improving Clients to Comply During Project Construction Stage (Key: see Table 4.9).

4.6 Validation of a Proposed Framework

This section presents the data findings of the validation process of the framework. This is a final and substantial process aiming to address the last objective of this study regarding the quality and validity of the proposed framework. Consequently, the main objective of the validation process is to determine the correctness and assess the quality of the proposed framework if it meets the intended requirements of the users. In this study, validation was done using the interview guides prepared in which the researcher selected professionals from AQRB, CRB, ERB, LGA organizations and clients located in Kinondoni Disctrict, Dar es Salaam. The development of the validation interview guides and sampling process is well presented in chapter 3, subsection 3.5.2.

4.6.1 Survey Respondents

A total of eleven (11) respondents who met the defined criteria as illustrated in Chapter 3 of this report were communicated. However, only nine (9) which is 82% responded positively and appeared for interview. Table 4.8 shows their demographic information. Sekaran and Bougie (2010) stated that a response rate of not less than 30% is enough survey study.

4.6.2 Respondents' Demographic Information

The demographic information of the respondents is as illustrated in Table 4.8, in which the minimum education level for all respondents is a bachelor degree for professionals from the regulatory boards and LGA, and certificate of secondary education for clients. Moreover, among 9 respondents two (2) which is 22% have masters' degree, four (4) which is 45% have bachelor's degree and three (3) which is 33% have certificate of secondary education.

Table 4.8 Respondents' Demographic Information

S/N	Professional Background	Educational Level	Organization
1	Architect	Bachelor Degree	AQRB
2	Architect	Master Degree	AQRB
3	Quantity Surveyor	Bachelor Degree	AQRB
4	Engineer	Bachelor Degree	CRB
5	Engineer	Bachelor Degree	ERB
6	Engineer	Master Degree	ERB
7	Quantity Surveyor	Bachelor Degree	LGA
8	Driver	Cert of Sec. Education	PRIVATE
9	Businessperson	Cert of Sec. Education	PRIVATE

4.6.3 Validation Results

The validation of framework was conducted basing on specific validation questions which include areas/parts involved in proposed framework, applicability of the proposed framework and recommendations.

(i) **Features in Framework Validation**

a) Engagement of Consultants and Contractor to the project

Interview was conducted with respondents regarding the importance of this part in the proposed framework as means of improving clients' compliance during project construction stage. The results revealed that among nine (9) interviewees, seven (7) which is 78% agreed that it is significant to incorporate this part in the proposed framework, one (1) which is 11% disagreed, while one (1) which is also 11% was neutral. In emphasizing this, one of the interviewees stated that:

> *It is so important to include this part in proposed framework, since, before many developers used to skip this area which led to buildings collapse and unsatisfactory final product.*

This is to say the area of 'engagement of consultant and contractor' was agreed by the respondents, thus, it is significant to be included in the proposed framework.

b) Written Contract Agreement During Engagement

Moreover, interview was conducted with respondents concerning the significance of this feature in the proposed framework. The results revealed that all nine (9) interviewees, which is 100% agreed that it is so significant to incorporate the feature of 'written contract agreement during engagement' in the proposed framework. In emphasizing this, one of the interviewees asserted that:

> *In order to create commitment of the stakeholders to the project, a written contract agreement should be prevailed prior to engagement of consultants and contractor during project construction stage.*

Decisively, the element of 'written contract agreement during engagement of consultants and contractor' was 100% agreed by the respondents, hence, it is a substantial feature to be included in the proposed framework.

c) Project Registration with Regulatory Boards after Obtaining Permit

Also, interview was conducted with respondents concerning the importance of this feature to be included in the proposed framework as means of improving clients' compliance. The results revealed that among nine (9) interviewees, eight (8) which is 88% agreed, and one (1) which is 12% disagreed. In emphasizing this, one of the interviewees said that:

> *Since, it looks to be a cumbersome process for the developer of small scale projects (e.g. double storey residential house) to comply with, thus, it's so great for this feature to be included in the proposed framework.*

Conclusively, the area of 'project registration with regulatory boards' was agreed by the respondents, hence, it is an important feature in the proposed framework.

d) Erection of sign board after Project Registration

Furthermore, interview was conducted with respondents concerning the significance of this feature to appear in the proposed framework as means of improving clients' compliance. The results revealed that all nine (9) interviewees, which is 100% agreed that it is so significant to incorporate the feature of 'erection of sign board after project registration' in the proposed framework. Thus, the presence of the area of 'erection of sign board' was 100% agreed by the respondents, hence, it is significant feature.

e) Pining of stickers on Sign Board

Additionally, interview was conducted with respondents concerning the importance of incorporating this feature in the proposed framework as means of improving clients' compliance during project construction stage. The results revealed that among nine (9) interviewees, eight (8) which is 88% agreed, and two (2) which is 22% were neutral, since, they were not much concerned with this area. In emphasizing this, one of the interviewees asserted that that:

> *This is an important part of this proposed framework. Actually, there is no logic of putting feature of "project registration with regulatory board" then you are asking of the importance of "pining of stickers" to the same framework!*

That is to say the item of 'pining of stickers on the sign board' was agreed by the respondents, hence, it is a considerable part to be included in the proposed framework.

f) Project Supervision during Execution

Besides, concerning the significance of this element to be included in the proposed framework, as means of improving clients' compliance during project construction stage, the results revealed that all nine (9) interviewees, which is 100% agreed that it is so significant to incorporate it. In this case, one of the interviewees asserted that:

> *Project supervision is unavoidable feature. On my opinion this is the most important area to be included in the proposed frame work if we (stakeholders) look forward for satisfactory final product of our projects.*

Finally, the element of 'project supervision during execution' was 100% agreed by the respondents, hence, it is substantial to be included in the proposed framework.

(ii) **Applicability of the Proposed Framework**

Interview was further conducted with respondents regarding the applicability and effectiveness of the proposed framework as means of improving clients' compliance during project construction stage. The results revealed that among nine (9) interviewees, seven (7) which is 78% agreed that it is applicable and effective, one (1) which is 11% said 'not', while one (1) which is also 11% argued that it needs some small improvement.

(iii) **Recommendations**

During the interview, the respondents were also requested to suggest how the proposed framework should be improved to make it more effective and workable. In this case, three of the respondents recommended that before the client engages consultants and contractor for the project, it should be better for him to engage a technical personnel who will assist him in engagement process of those professionals. A technical personnel shall also stand on behalf of the client in coordinating building team and management activities as well. This comment was positively considered in an improved framework. Moreover, it was recommended that there should be a room at which clients may opt to comply basing on 'design and build', since, the proposed framework is more of 'traditional method'. This comment is vital to the effective application of the proposed framework, however, due to time constraints, the research recommended it as an area for further study.

4.6.4 Improved and Validated Framework

Taking together the results and recommendations gained from the respondents, the improved framework was then developed. In this case, the comment regarding to give room of engaging a technical personnel who will assist clients in engagement process of all professionals was considered in improved and validated framework as shown in Figure 4.9. The abbreviation interpretations and steps to be followed when clients comply during project construction stage are demonstrated in Tables 4.9 and 4.10 respectively.

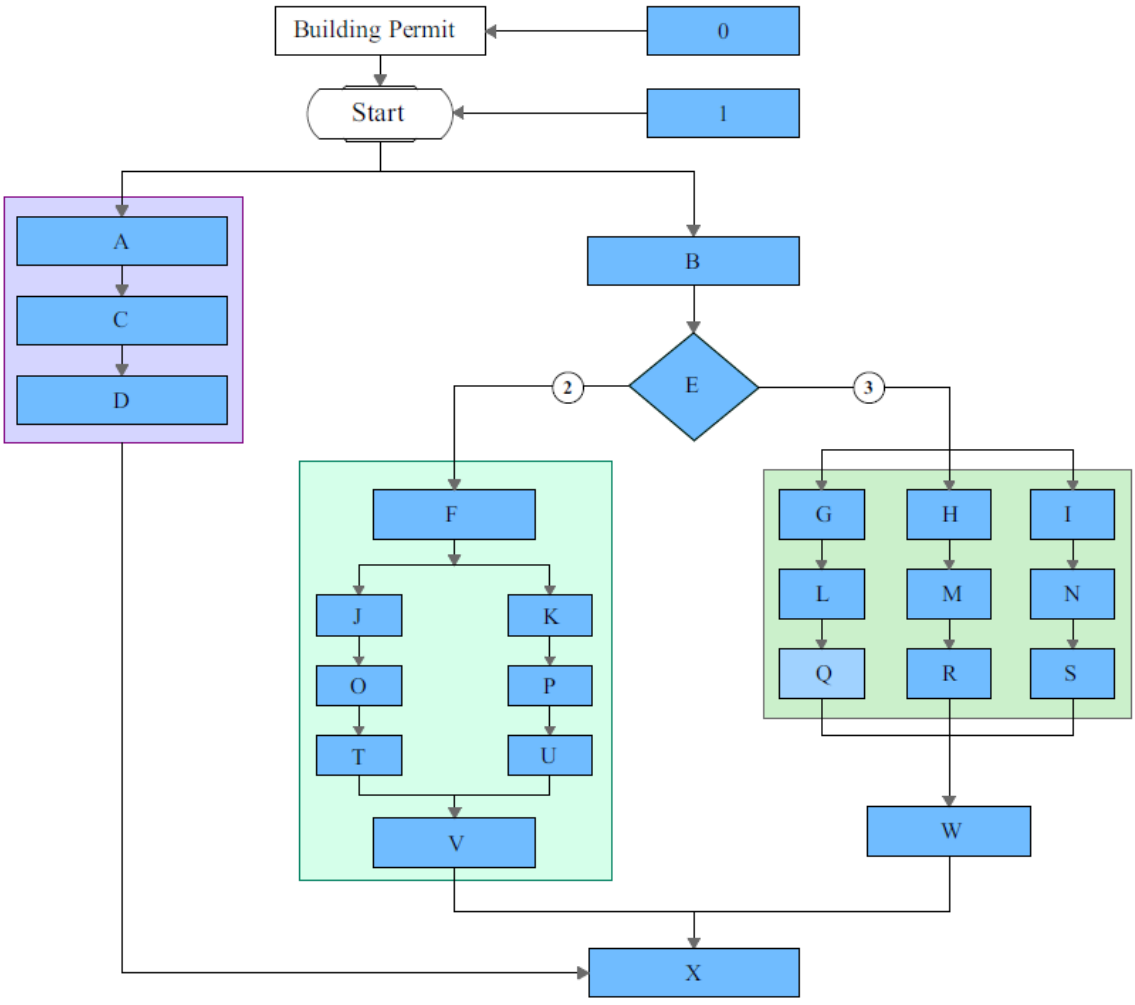

Figure 4.9: Validated Framework for Improving Clients to Comply During Project Construction Stage (Key: see Table 4.9).

Table 4.9: Key for the Figure 4.8 and Figure 4.9

Abb	LONG FORM
A	Client engages contractor for project registration and execution of works
B	Client engages consultants for project registration and supervision of works
C	Client instruct contractor to register the project, avail stickers from CRB and pin it to the sign board as required
D	Client make sure contractor executes the works as per contract
E	Client have two option of engaging consultants for project supervision
F	Client engages architect as a project manger
G	Client engages architect to supervise the construction work
H	Client engages quantity surveyor to supervise the construction work
I	Client engages structural engineer to supervise the construction work
J	Architect engages QS on behalf of client to assist on project cost control
K	Architect engages engineer on behalf of client to assist on project supervision
L	Client instruct architect to register the project, avail stickers from AQRB and pin it to the sign board as required
M	Client instruct Quantity Surveyor to register the project, avail stickers from AQRB and pin it to the sign board as required
N	Client instruct structural engineer to register the project, avail stickers from ERB and pin it to the sign board as required
O	Architect instruct QS to avail sticker from AQRB and pin it to the sign board
P	Architect instruct engineer to avail sticker from ERB and pin it to the sign board
Q	Client to make sure Architect is supervising the works and conducts periodic inspection to the construction works depends on the scope of work
R	Client to make sure QS is supervising the construction works by undertaking periodic project evaluation so as to control the budget during project execution
S	Client to make sure the engineer conducts periodic inspection to the works so that the building is constructed according to contract and specifications
T	Apart from his duty of supervision, Architect also to make sure the QS undertakes periodic project evaluation so as to control the budget
U	Architect also make sure engineer conducts periodic inspection to structural works so that the building is constructed according to the details and specifications during execution
V	Client to make sure the Architect, as a project manager does his overall obligation of project supervision and coordination of sub consultants roles
W	Client make sure the Architect, quantity surveyor and engineer take the overall responsibility of project supervision by ensure that each one plays the respective roles as per contract

X	The client has fully complied with regulatory boards by engaging contractor, architect, quantity surveyor and engineer. Also, the project is registered with regulatory boards, sign board is erected, stickers are availed and pined on sign board, project is executed by contractor, and the same is supervised by consultants up to project completion.
0	Once Client acquires building permit from (LGA)
1	Client engages a technical personnel who shall assist him in engagement and general coordination of building team, on his behalf.
2	Client opts to have single contract when engaging consultants
3	Client opts to have separate contracts when engaging consultants

Table 4.10: Procedures to be followed for client to comply with regulatory boards

Steps	**Procedures to be Followed for the Implementation of Proposed Framework and Validated Framework Proposed, as Illustrated in Figure 4.8:**
	Contract Agreements
01	Client to engage architect as a project manager for the supervision and overall coordination of construction works. In this case, architect shall engage quantity surveyor and engineer as sub consultants on behalf of client. The contract between two parties should state clearly the scope of the service, including project registration to AQRB and ERB, avail and pinning of stickers to the sign board, erection of sign board and overall supervision of construction works. OR
02	Client to have separate contracts with architect, Quantity surveyor and engineer for the purpose of supervision of construction work. The contract between the client and each one shall state clearly the scope of the service, including project registration to AQRB for the case of architect and qs, and ERB for the case of engineer. The same shall also state on the requirement of availing and pinning of stickers to the sign board, erection of sign board and supervision of construction works in general.
03	Client to engage contractor to execute the work. The contract between two parties should state clearly the scope of the service, including project registration to CRB, avail and pinning of stickers to the sign board, and execution (erection) of construction works.
	Project Registration
04	Client shall instruct QS to register the project and avail stickers from AQRB
05	Client shall instruct QS to register the project and avail stickers from AQRB
06	Client shall instruct engineer to register the project and avail stickers from ERB
07	Client to make sure the contractor registers the project, avail stickers from CRB and pin it to the sign board as agreed in the contract agreement
	Erection of Sign board
08	If client opted to engage architect as a PM, he shall instruct him to erect sign board
09	If client had separate contracts with architect, QS and engineer, then he shall instruct either of one to erect sign board upon the agreement between two parties.
	Pinning of Stickers on Sign board
10	If client opted to engage architect as a PM, he shall instruct him to pin all stickers availed from AQRB and ERB on sign board
11	If client had separate contracts with architect, QS and engineer, then he shall instruct everyone to pin the respective stickers on sign board as required.

	Project Supervision and Execution
12	Client make sure Architect supervise the works including general coordination of site activities, and conducts periodic inspection as required depends on the scope of work
13	Client make sure the Quantity surveyor is supervising the works by undertaking periodic project evaluation so as to control the budget during project execution
14	Client make sure the engineer conducts periodic inspection to the works so that the same is constructed according to the details and specifications during project execution

4.7 Summary of Key Findings

This chapter explains the detailed analysis of the collected data from the field so as to obtain more useful data. The findings of this study have been arranged in accordance with the specific objectives of this study, as shown in table 4.11 of summary of key findings. Nevertheless, the study unveiled that the proposed framework improves client's compliance during project construction stage.

Table 4.11: Summary of key findings

S/N	Researched Areas (Questions)	Key Findings	Remarks
1.	a) Project registration with Regulatory Boards	The results indicate that there is a low level of compliance by clients in the area of project registration during execution.	Regulatory Boards have to put emphasis on the enforcement activities on the matter.
	b) Project registration with Regulatory Boards after default notices.	The results unveiled that there is an average level of compliance in this area, since most of the developers were noted to comply prior to project commencement.	Regulatory Boards have to keep it up and make sure the compliance is raised up to 100% for the same.
	c) Periodic inspection (supervision) by consultants	There is low level of compliance in the area of consultants' supervision. In this case, most of the clients are partially engaging consultants (frontal practice) during project registration for the purpose of obtaining stickers and sign board only; and ignoring the importance of works to be supervised.	Regulatory boards have to put emphasis on the enforcement activities so that the developers engaging full consultant's services including supervision works.
	d) Erection of sign boards.	The results unveiled that there is an average level of compliance in the area of erection of sign board.	Regulatory boards have to put emphasis on the matter by making sure the sign boards are erected prior to project execution.
	e) Pinning of stickers on the sign board	The results indicated that 61% were complied. This indicated that there is an average level of compliance in the area of pinning of stickers on the sign board.	Still there is a need for the regulatory boards to put emphasis on the matter so as to improve the intended level of compliance.

2.	a) Awareness of the importance of contractor in project construction stage	The results revealed that most of the developers are aware of the importance of engaging contractor. Thus, there is high level of awareness among the clients in this area, even it is claimed to be an expensive task to comply with.	The compliance is so satisfactory, though Regulatory boards have to review and minimize cost of compliance.
	b) Awareness of the importance of consultant in project construction stage	The results revealed that there is a low level of awareness in this area; though most of them understand more on the role of structural engineers and know nothing on the side of architects and QS. Thus, the awareness among the society in this area is still seemed to be a problem that hinders clients to comply.	Nevertheless, the regulatory boards have to put emphasis on the matter by conducting training so as to improve the level of awareness among the society.
	c) Awareness of project compliance with regard to regulatory boards	The results revealed that most of the developers are not aware of the project compliance with regulatory boards. Hence, this is seemed to be one among the most factors that hindering clients to comply	There is a need for regulatory boards to put emphasis by providing education and training among the society.
	d) Cost of compliance (project registration and consultancy fees)	Most of the interviewees are arguing that the respective project registration fee and consultancy fees are not affordable. Hence, costs of compliance are seemed to be the barrier to clients' compliance.	The regulatory boards have to minimize the cost of compliance so as to make easier for developers to comply.
	e) Awareness of Cost/consequence of non-compliance in construction stage	The results revealed an average awareness of the consequence of non-compliance. Since, most of them are aware on the risk of possibility of cracks to the buildings and poor quality of the final product only, and know nothing on other associated risks.	There is a need for regulatory boards to keep on conducting training so as to improve the level of awareness among the society.
	f) Lack of coordination between regulatory boards and LGA	Most of the developers are arguing that there is lack of coordination between regulatory boards and LGA.	Since, it is seemed to be the most factor that hindering clients to comply, thus, there is a need for the regulatory boards to put emphasis on the matter so as to improve compliance.
	g) Prolonged compliance process	The results unveiled that most of the developers are arguing that compliance process is so prolonged and exhausting.	Prolonged compliance process has become an obstacle and hindering developers to comply. Thus, there is a need for regulatory boards to put emphasis on the matter so as to improve compliance.

CHAPTER FIVE
CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The study aimed at examining the level of compliance by clients during project construction stage, assessing the factors hindering clients to comply during project construction stage, and lastly to develop frameworks for improving clients to comply during project construction stage. Consequently, this chapter is however covered conclusions on the research objectives, recommendations on frameworks for improving compliance and areas of further study.

5.2 Conclusions

5.2.1 Level of Compliance by Clients During Project Construction Stage

Regarding the level of compliance, eight areas were tested in the study through interview and documentary review as the base to examine the level of compliance. Those areas are; engagement of contractors, engagement of consulting firms for project supervision, inspection of site construction works by the consultants, supervising consultants if are the same to those providing stickers, project registration to AQRB, CRB & ERB, instant of project registration, erection of sign board and pinning of stickers on the sign board.

The findings unveil that there is low level of compliance in most of the areas including engagement of contractors, engagement of consulting firms for project supervision and project registration with AQRB, CRB & ERB. This indicating that no emphasis is put on compliance matters by double storey private residential developers. That is to say those developers are neither engaging contractors, architects, quantity surveyors and engineers nor registering projects to respective boards. Consequently, the same has been observed from documentary review.

Moreover, findings reveal that there is low level of compliance in the area of inspection of site construction works by the consultants. Nevertheless, through documentary review, it was observed that the issue is so worse in which the tendency of consultants not inspecting (supervising) the works is developing rapidly. This is due to the tendency of double storey private developers not entertaining the engagement of full consultant’s supervision services, instead, they only seeking the consultants to provide them with stickers and sign board only.

Likewise, it was noted an average level of compliance to the area of the instant of project registration. However, through documentary review, it was observed that there is a high level of compliance on the same. It is implying that more emphasis is put on compliance matters by double storey private developers; in which the developers were observed to have registered the respective projects to the regulatory boards prior to project commencement.

Furthermore, the area of erection of sign board and pinning of stickers on the sign board were observed to have being complied at a high level. This indicates that more emphasis is put on compliance matters by developers, in which they ensure that the sign boards are erected and stickers are pinned on sign board once the project is registered to the respective boards.

5.2.2 Factors Hindering Clients to Comply During Project Construction Stage

Regarding the factors hindering clients to comply, seven areas were focused in the study through interview as the base to assess the factors hindering clients to comply during project construction stage. Those areas include; awareness of the importance of contractor, awareness of the importance of consultants in construction stage, awareness of project compliance with regard to AQRB, CRB & ERB regulations, project registration fee for AQRB, CRB & ERB, importance of project compliance, cost/consequence of non-compliance, and the challenges on project compliance during project construction stage.

The findings unveil that; there is high awareness among the developers in the area of the importance of contractor in project construction stage. This indicates that more emphasis is put on compliance matters by double storey private residential developers.

Furthermore, the findings reveal that; there is an average level of awareness in most of the areas including; importance of consultants in construction stage, project compliance with regard to AQRB, CRB & ERB regulations, importance of project compliance during project construction stage and cost/consequence of non-compliance during project construction stage. This indicating that no emphasis is put on compliance matters by regulatory boards, thus, lead to low level of compliance by clients during project construction stage.

Moreover, on the area of project registration fee to AQRB, CRB & ERB was observed to be not affordable. This indicates that most of the developers are failing to comply due to the high cost of compliance to regulatory boards. This is the result of lack of emphasis on registration fee by regulatory boards.

The findings also unveil that; there are other challenges facing project compliance by clients during project construction stage which include; cost of compliance, prolonged compliance process, lack of awareness and lack of coordination between regulatory boards and Local Government Authority. Nevertheless, cost of compliance was observed to be the most challenge facing clients' compliance. This indicates that no emphasis is put on the challenge matters by regulatory boards.

5.2.3 Frameworks for Improving Clients to Comply During Project Construction Stage.

Lastly, the study was capable to develop a framework for improving clients to comply with regulatory boards during project construction stage, in Tanzanian (see Figure 4.8). The framework provides the procedures for client to comply once have been granted with building permit from the Local Government Authority prior to project execution.

5.3 Recommendations

In the view of the findings on the assessment of clients' compliance with regulatory boards during project construction stage in Tanzania, the following are the recommendations that are suggested;

(i) **Reduce Cost of Compliance:** The study revealed that standard and affordable cost of compliance is very significant toward clients' compliance with regulatory boards during project construction stage in Tanzania. It is hereby suggested for the regulatory boards to revise and reduce the respective project registration fee chargeable by the boards. Also, there is a need for the boards to review consultancy fee by making them affordable and should ensure that the same will not become a barrier to the people that are willing to comply, especially for double storey private residential projects.

(ii) **Formulation of One Registration Center (Shortening Compliance Process):** Furthermore, the study indicated that shortening compliance process by formulating one registration center is substantial way to attain high level of compliance by clients with regulatory boards during project construction stage. All regulatory boards (AQRB, CRB & ERB) have to sit together and form one compliance service center where developers can get all compliance services including project registration service so easier and at once.

(iii) **Awareness Creation of Building Regulatory Compliance:** Additionally, the study unveil that awareness creation as well is very important toward clients' compliance with regulatory boards during project construction stage in Tanzania. In this case, the

regulatory boards have to put more emphasize on awareness creation of building regulations to the public. The regulatory boards have to ensure the community are given sufficient training and education regarding client's compliance obligations through media; such as radio, television and magazines, sports and games, by tailored made, etc.

(iv) Coordination Between Regulatory Boards and LGA: The findings revealed that the coordination between regulatory boards and Local Government Authority (LGA) is very significant towards attainable level of clients' compliance with regulatory boards during project construction stage in Tanzania. It is suggested the regulatory boards to have a close coordination with Local Government Authority in such a way that private developers are informed on the requirements of project compliance with regulatory boards once they are granted with the building permits. This will improve the level of compliance by clients since most of them are seemed to comply with LGA on the application of building permit.

(v) Improve Enforcement Activities: Moreover, the study indicated that sufficient enforcement by the regulatory boards is of importance towards reasonable level of compliance by clients with regulatory boards during project construction stage in Tanzania. It is therefore suggested the regulatory boards to have sufficient enforcement activities by employing more staffs/officers and providing them with suitable incentives so as to improve working spirit. Adding on this, the boards are supposed to cooperate and communicate each other, periodically, so as to have collective sufficient enforcement.

(vi) Strictly Measures Against Defaulters: Further, it is suggested the regulatory boards to strictly take reasonable measure against developers who found to have not complied in the cause of construction process. Likewise, the board should not hesitate to take further action of taking defaulters to court when necessary, as required by the regulations.

5.4 Areas for Further Studies

(i) Further study can be carried out regarding assessment of public awareness of building regulatory compliance in developing private residential buildings in Tanzania.

(ii) Also, study may be carried out regarding the assessment of the level of compliance with regulatory boards between public buildings and private buildings in Tanzania.

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APPENDICES

APPENDIX I: Interview Guides for Proposed Framework

Section A: Introduction

Title: Assessment of clients' compliance with regulatory boards during project construction stage, in Tanzania. (Case of: Double Storey Private Residential Buildings in Dar es Salaam)

Respondents: Double Storey Private Residential Developers

Section B: Interview Guides

a) Level of compliance by clients during project construction stage
   (i) Have you engaged contractor, consultants or both, and registered your project to AQRB, CRB & ERB?
   (ii) When? Prior to project commencement or after being issued with default notice?
   (iii) Do consultants inspect (supervising) the site construction works? How often?
   (iv) Have you erected the sign board?
   (v) Do the respective registration stickers pinned on the sign board?

b) Factors hindering clients to comply during project construction stage
   1. Are you aware of the importance of contractor in project construction stage?
   2. Are you aware of importance of architect, QS, and/or engineer in construction stage?
   3. Are you aware of project compliance with regard to regulatory boards?
   4. How do you find the cost of compliance (project registration and consultancy fees)?
   5. Do you know the cost/consequence of non-compliance in project construction stage?
   6. How do you find the coordination between regulatory boards and LGA?
   7. How do you find the compliance process with regulatory boards?

APPENDIX II: Sources of Evidence Used in Documentary Review

A. Project Particulars and their Respective Sources of Evidence

S/N	Item	Sources of evidence
1.	Type of building project	Project registration & Project Inspection records
2.	Location of building project	Project registration & Project Inspection records
3.	Size of building project	Project registration & Project Inspection records
4.	Nature of building project	Project registration & Project Inspection records

B. Data Collected and their Respective Sources of Evidence

S/N	Data collected	Sources of evidence
1.	Total number of double storey private residential buildings that were registered by the AQRB, ERB & CRB in year 2019 to 2020	Project registration records (MISS) from both AQRB, ERB & CRB
2.	All project developers who registered (complied) the projects once after being issued with default notice by the AQRB.	Default notice records and Site inspection records (MISS)
3.	All double storey private residential project developers that were found not engaged registered architect, QS, engineer and contractor during inspection in year 2019 to 2020.	Project Inspection records (MISS) from both AQRB, ERB & CRB that showing all inspected projects in Kinondoni Municipality, for the year 2019 to 2020
4.	All double storey private residential project developers whose consultants are not conducting effective supervision (periodic site inspection) to the projects.	Project Inspection records (MISS) from both AQRB & ERB that showing all inspected projects in Kinondoni Municipality, for the year 2019 to 2020
5.	All double storey private residential project developers that were found not erecting sign board (though they have been issued with stickers) during inspection.	Project Inspection records (MISS) from both AQRB, ERB & CRB that showing all inspected projects in Kinondoni Municipality, for the year 2019 to 2020
6.	Narrow down all projects developers whose project stickers were not pined on sign board during inspection.	Project Inspection records (MISS) from both AQRB, ERB & CRB that showing all inspected projects in Kinondoni Municipality, for the year 2019 to 2020
NB	Confidentiality of all documents was done ethically during documentary review	

APPENDIX III: Interview Guides for Framework Validation

Section A: Introduction

A Proposed framework has incorporated six main parts (stages) of which clients have to comply with prior to project execution once granted with the building permit from the LGA.

Respondents: AQRB, CRB, ERB, LGA and Clients

Section B: Specific Validation Questions

a) Do you think that the client to engage Architect**,** Quantity Surveyor**,** Structural Engineer**,** and/or main Contractor is significant to be considered prior to project construction stage?
b) How do you find that the client to have written contract agreement with the consultants and contractor prior to project construction stage?
c) Do you think that the project registration with regulatory boards is substantial to be considered prior to construction stage, once the LGA issues building permits to clients?
d) Do you think is that necessary to erect sign board during project construction stage, once the project is registered with regulatory boards?
a) What do you think that pining of stickers on sign board is significant to be considered during project construction stage, once the sign board is erected on site?
e) What do you think that project supervision (including periodic inspection) is significant to be considered during project construction stage, once the project is commenced?

Section C: General Validation Questions

This section contains general validation questions which enquire on the applicability of the proposed framework and recommendations for improvements.

a) Do you think that the proposed framework is applicable in assessing the level of clients' compliance during project construction stage in Tanzania?
b) To what extent does the proposed framework can effectively improve clients' compliance during project construction stage?
c) What are your suggestions to improve the proposed framework?

APPENDIX IV: Introduction Letter to all respondents.

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Ref.No. ARU/A.2013/

8th April, 2021

TO WHOM IT MAY CONCERN

Dear Sir/ Madam,

RE: INTRODUCTION LETTER FOR POSTGRADUATE STUDENT

Refer to the subject above.

The Student above is pursuing Masters of Science in Construction Economics and Management (MSc. CEM) in our University. As a Student he is required to do dissertation work as part of the requirements for the award of the Masters of Science in Construction Economics and Management (MSc. CEM). For the accomplishment of this exercise, student is required to carry out literature review, extensive search for field data and subsequently analyse the same for conclusive scientific results.

We are therefore requesting you to assist the bearer of this letter **Mr. Salim H. Ali, with Reg. No. HD/T.1377/2019,** who will need information from your organisation. The title of his Dissertation is ***"Assessment of Clients' Compliance during Project Construction Stage, in Tanzania".***

Thank you for your cooperation and contribution.

Yours Sincerely,

Dr. Shubira Kalugila
For: Deputy Vice Chancellor
Academic Affairs