



INFLUENCE OF POLICY FRAMEWORK ON MITIGATING BUILDING FAILURES IN KENYA

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ABSTRACT

This study focused on establishing the influence of policy framework on mitigating building failures in Kenya. The study population was drawn from institutions in both the National and County Governments involved in Policy and Legal formulation, planning and enforcement as well as regulatory professional bodies in the building sector. The total target population was eight hundred and seventy-seven (877) respondents, within the two levels of government. The study used stratified random sampling technique in selecting the sample. The sample size was 275 respondents. Primary data which was largely quantitative and descriptive in nature was collected by use of structured questionnaires. The questionnaire was pilot-tested to test whether the instruments were reliable and valid before administering in the actual study. In analyzing the data, regression analysis was carried out to identify the significance of each study variable. Descriptive statistics such as frequencies, percentages, the mean, standard deviation and standard errors were used in describing the data. From the findings, it was clear that not all of the building professionals were aware of the building policies that were in place and being used and recommended that the institutions charged with the formulation and implementation of the building sector policies should involve the building sector professionals and stakeholders in the formulation, implementation and review of Sector Policies. The Study found out the existence of many policies in sector and recommended harmonization to a comprehensive and adequate policy that addresses all aspects of building process. The study suggested a further research to be conducted on the influence of governance framework on mitigating infrastructural project failures in Kenya.

Key Words: Policies, Building Failures

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INTRODUCTION

Building failures have become a global phenomenon and of great concern due to deaths, maiming of people and loss of investments. The increased population growth rate as well as urbanization which has resulted to increased demand for residential and commercial buildings to accommodate increased human activities leading to construction of substandard buildings to meet increased demand hence increased building failures. According to World Population Bureau (2016), the population of the world stood at 7.4 billion with that of Kenya estimated to be 45.4 million people with prospects of growth at 3% per annum. United Nations (2012) showed a positive trajectory in growth of megacities from only 3 in 1975 to 16 in year 2000 and a projection of 27 by the year 2025. These large urban agglomerations have a population of more than 10 million people driving the demand for high rise buildings.

The Kenya National Housing Policy (2004) indicates that demand for housing stands at 150,000 units per annum explaining the mushrooming of substandard buildings which have continued to pose danger to life. Such buildings have been collapsing killing many Kenyans and maiming others. The Constitution of Kenya (2010) under Article 26 provides right to life and under The Economic and Social Rights, Article 43(b), provides right to accessible and adequate housing and to reasonable standard of sanitation. Therefore, to address the requirements of the Constitution of Kenya, there is need to address how to reduce collapsing of buildings that have claimed many lives while at the same time addressing the issue of provision of adequate housing to satisfy the increasing demand.

All Policies and regulations designed to steer public and private affairs should respect the Constitution and natural justice (North, 1998). All stakeholders should subordinate their actions to the existing Laws

in order to ensure harmony and fair treatment for all. Good governance should serve the interests of all players and should respond adequately and relevantly to the concerns of stakeholders. It should not be rigid to opinions and suggestions from players in the sector (World Bank, 1994). The State's ability to effectively coordinate the implementation of Laws and regulations is a key element in eliminating bad governance. This is because government is the only single body with such resources and acceptance to implement universally acceptable standards in all sectors (Kaufman, 2006).

Governance challenges coupled with capacity shortcomings contributed heavily to the collapse of buildings (Mutiso, 1996). The documented process challenges from inception to decommissioning include lack of coordination among the relevant institutions, inadequate professional endowment among approving officers, inability for staff in approving authorities to understand drawings and undetected omissions due to lack of accredited checkers. These views are collaborated by Olanitori (2011) who found that lack of institutional capacity and structures to ascertain concrete quality leads to use of compromised concrete and inadequate anchorage. Institutional capacity is a major contributor to success and should include tools and equipment, financial resources, human resources and technology endowment.

Any effective law must be anchored on strong policy on the side of government. Indeed, policy covers proper troubleshooting of the presenting challenges culminating with proposals for relevant and water tight legal mechanisms (Riemer, 2009). In order for laws to be effective it is imperative that they be preceded by strong policy background as a foundation in which to understand any sector and address its challenges. Policy coverage for the building and construction sectors of the East African region are glaringly weak.

Statement of the Problem

Building failures have become a global phenomenon attributed to use of substandard building materials and structural deficiencies (Kioko,2014; Rosetto,2016). While studying the collapse of Hotel New World in Singapore, Seng (2011) cited poor design and lack of stringent building regulations or standards. McGuire (1974) discovered building failures in Europe is due to progressive failure which are described as the systematic weakening of a building due to overloading and maintenance neglect overtime. Victoria (2012) suggests that vigorous criteria should be set to inspect the suitability of buildings progressively throughout the life of the buildings while Festus (2012) suggests a stringent set of standards as a cure for building failures in Europe.

In the African region, various scholars including Madu (2005), Fagbenle (2010), Chendo and Obi (2015), Oloyade (2010) and Anthony (2013) who studied the causes of building failures in the west African region, identified structural defects, design faults, material weaknesses, poor workmanship, climatic conditions and even natural factors such as floods and strong winds as major causes of building failure and suggests that proper concrete mixes, approved steel qualities and cross checks in engineering calculations to be the cure. Oloyede (2010) noted that in Nigeria, use of low quality materials and employment of incompetent professionals and artisans are causes of building failures.

In Ghana, Botchway, Afram and Ankrah (2014) notes that it is a design issue and suggested design integrity should be ensured and be supervised by competent professionals during implementation. Abimbola and James (2012), recommends an overhaul of the policies, mainly the building codes to initiate sustainable measures and enforce the industry's best practice. Adewuyi (2010) recommends the establishment of both supervision and inspection units for the entire construction period. A study on Incessant Collapse of Buildings in Nigeria found that

50% of building collapses arose from design faults, 40% from faults related to construction sites, and 10% as product failure (Olagunju *et al.* 2013). In Uganda, the major causes of collapsing buildings have been due to professional negligence rising from corrupt deals (Irumba & Mwakali, 2007).

In Kenya, the report of the Commission of Inquiry to the collapse of Sunbeam building (1996) identified poor workmanship, sub-standard materials, faulty design, adverse climatic conditions and setting of buildings in unsuitable areas as the major causes which collaborate with studies in other countries. Kenya has experienced increase in building failures over the last 10 years which has killed and maimed many people and destroyed investment. Despite the promulgation of the Constitution of Kenya (2010) which defines the functions of National and County Governments, the establishment of National Construction Authority (NCA) in 2011 and the National Building Inspectorate (NBI) in 2016, the situation has not improved. According to NBI, Building Inspection and Audit Report (Sep, 2019), a total of 14,751 buildings have been audited with 716 requiring immediate integrity testing and 10,648 as unsafe. NBI has tested 97 buildings and demolished 10,070 structures.

The NBI, Building Audit Report (2015), indicates that in the early 80's and 90's, Kenya had almost zero cases of collapsing buildings. However, due to increased demand for residential houses, commercial and public buildings, and as population increases coupled with high rate of urbanization, the trend has changed. In Nairobi for instance, Nairobi's eastlands estates, particularly Umoja, Huruma, Dandora, Kayole, Kariobangi, Donholm, Tena including Zimmerman and Kahawa comprises poorly constructed structures which are imminent disasters. Investors and developers have taken advantage of the high demand for houses and inadequate capacity of County Governments and other institutions to enforce building regulations and therefore sub-

standard structures have become the norm rather than the exception. As such, reduction of building failures and eventual collapse are matters of national concern due to loss of human life and loss of investment including environmental degradation.

This research findings sought a solution to this problem by analyzing the policy framework and their influence on mitigating building failures.

Research Objectives

This study sought to establish the influence of policy Framework on mitigating building failures in Kenya.

Study Hypothesis

H₀: Policy Framework has no significant influence on mitigating building failures in Kenya

LITERATURE REVIEW

Power Elite Theory

The theory was established by Wright (1956) to describe and explain the power relationships in a contemporary society. This theory proposes that governance is by a class of people who occupy dominant and top positions of influence and power in society and that many policies and decisions are made by three groups of people who include leaders in the corporate arena, senior officers in the military and notable leaders in the political arena. What these three groups agree upon is largely what becomes law or guides to the way industries and sectors are managed hence selfish and partisan interests in their decisions or guidelines. These groups ensure that most of the policies benefit cartels outside government (Mills,1963). Under this arrangement, policies are designed to benefit the elite and as such majority of small players are left out to bear the burdens of heavy regulations while a few dodge state supervisions (Summers, 2006). The power of the elite can be felt in all sectors because they seek to control

all activities for the benefit of their political and business interests. They can resist and frustrate any effort to bring order if that order is going to disorganize their interests even if it is meant to be a benefit to the masses (Domhoff, 2006).

The theory is relevant to the study since it tries to find out how policies are formulated, their coverage, participation and who the policies are meant to serve. The theory was useful in finding out whether the existing policies take into consideration the interests of sector stakeholders. This theory was also used to check if the existing policies are tailor made to solve specific sector challenges and whether all stakeholders were involved in identifying the challenges to be addressed using these policies. GoK (2010) envisages full participation in making policies, this theory was used to gauge the levels of participation in developing sector policy for the building sector and whether that participation or lack of it has any influence in the efficiency of the final policy product.

However, power elite theory flourishes well in regimes which have political vacuum or power gaps. Wolfensohn (1999) found that cartels and organized monopolistic tendencies in power distribution came up to fill gaps created by political vacuums and that such gaps do not necessarily persist after democracy and institutional independence is realized. Mills (1963) himself contradicted the theory by postulating that power elite tendencies are associated with the mid-life entrepreneurs who slowly become compliant with democratic intervention as they progress in age. This creates the impression that power elite is temporary and not a permanent problem in formulation of policy.

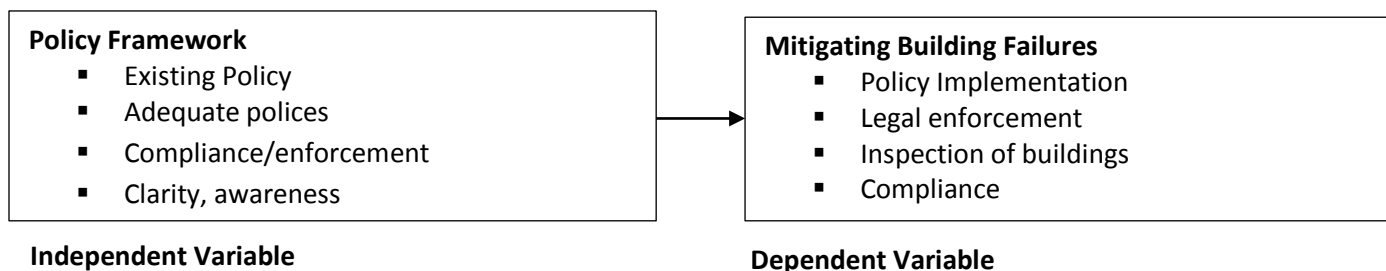


Figure 1: Conceptual Framework

Policy Framework

Policy refers to a set of principles by which government activities are guided or the declared objectives that a government seeks to realize (Business dictionary, 2017). The University of Sydney (2016) defines policy as course of action adopted or proposed by government. The purpose of policy is to convey overall mission of an organization, ensure clear understanding of expectations, influence behavior and support ethical decision making, foster credibility and trust as well as create ground for development of standards. Sapru (2009) discusses the concept of public policy as not being a precise term but a concept which denotes a declaration of goals, course and actions, general purposes and an authoritative decision. It can also be used to depict desired objectives or processes within government (Howlett, Ramesh, & Perl, 2009). Public policy guides activities which are consistent with development and constitutions and carries principles of a general nature whose purpose is to point the wholesome development of a county towards a certain direction (Sapru, 2009).

The institutional nature and approach to policy covers institutions and individual offices which are mandated to implement certain government decisions. Actions of individuals are directed towards government and hence need to create policy and institutions such as legislature, judiciary and bureaucracy. Without policy, legislative efforts would be disjointed and blind to the core challenges ailing

the industry. This is because the proper way to make law is to begin from identifying sector challenges and then weaving solid policy grounds and direction for the sector after which attendant laws and regulations can be made (Sapru, 2009).

The housing sector in Kenya is guided by the Housing Policy (Sessional Paper number 3 of 2016). The policy centers on affordability and access to housing and outlines specific aims of increasing access to housing including empowering the poor to access housing and basic services and infrastructure necessary for a healthy living environment especially in urban areas. Encouraging integrated, participatory approaches to slum upgrading, including empowering the poor access housing and essential services and infrastructure fundamental for a sound living condition particularly in urban zones. Empowering coordinated, participatory ways to deal with slum upgrading, including wage creating exercises that successfully battle destitution, advancing and financing of research on the improvement of building materials and development methods among others. The policy recognizes that there is a gap in housing delivery of about 200,000 houses annually which gives room to unscrupulous business parties to seek ways of quickly coming in to take advantage of the gap by providing substandard houses and evading regulatory requirements as much as possible.

Policy requires an institutional mechanism for implementation in order to actualize the envisaged benefits of the policy (Vedung, 2017). Clearly, the

Housing Policy (2004) does not cover critical areas of implementation mechanism of guidelines in the sector. The inability to foresee the chaos resulting from the vibrancy of the multiple efforts to meeting the envisaged housing demand is in itself a deficiency of the policy. The housing policy is weak and this coupled with the absence of a construction policy only compounds the problem of governance in the building industry. This research sought to establish the cardinal weaknesses of the current policies and whether they can be relied upon to manage the entire building sector effectively.

Other subsector policies affecting building includes National Urban Development Policy, (NUDD), National Land Policy and National Environment Policy (2013), Maintenance Policy (2016) and Slum Upgrading and Protection Policy (2016).

Mitigating Building Failures

Mitigation is the process of taking reasonable action where possible to avoid additional injuries or losses (Business Dictionary, 2016) in this study, it is used to mean policies, procedures and action taken to lessen and avoid additional injuries and losses as a result of building failures. Building failures occurs when a building loses its ability to perform the function for which it was designed. Building failures are categorized in two major forms namely physical and performance failures. Physical or structural failure is attributed to overloading resulting to extensive damage of structural components which may result to total or partial collapse. Performance failure is associated with the loss of ability by non-structural components such as loss of ventilation, excess leakages or dire state of disrepair (Douglas & Ransom 2007).

In order to identify failures, various inspections of buildings are recommended. These include building condition survey, stock condition survey, and schedule of dilapidations, measured survey, schedule of condition, survey of building under construction

and survey for alteration. The purpose of such inspections is to ensure that structural defects due to lack of maintenance can be detected and rectified early to keep building structurally sound for continued occupation, particularly as building age, and wear and tear set in (Chanter & Swallow, 2007).

Government of Queensland (2011) provided details of the mandatory inspection of all buildings in order to enable certification for new occupation or continued occupation. The guidelines provided to building owners ensure that their building are in compliance with state requirements for safety and health. The inspections are anchored in the building code and have policy and legal backing for prosecution in case of default. Inspections start from development approval with site inspection for suitability as well as inspection of building plans by professional. Subsequently, foundation inspection, slab and columns inspection which includes walling and final stages inspection encompassing site and drainage inspections are done before occupation certification is given. Remedial measures or condemnation is given where necessary.

City of Chicago (2010) outlines the mandatory requirements for registration of each multiple storey building in the city. It requires that any building containing four (4) or more family units or sleeping accommodations for ten (10) or more must be registered with the building department each year and that any alteration to the same must also be registered with the same body. This registration includes details of the owner, materials used, contractor employed, professionals involved, street address as well as any records for alteration. This registration ensures ease of access in evacuation and tracing of maintenance of the building in the city.

According to Oloyede (2010) who studied collapse of buildings in Nigeria, non-compliance with the law and slow or selective application of the law and weak capacities in oversight agencies are major causes of

collapse of buildings. The third variable is the institutional framework which the study finds important in applying to understand the capacities, adequacy, competencies, staffing levels, training, resource and alignment to emerging challenges. Institutional framework becomes also important in understanding the network of institutions involved in the sector as well as their relations and synergies in mitigating building failure.

In Kenya, the statistics of buildings which have failed or have been found to have the weaknesses which can cause failure, are of great concern. The National Building Inspectorate (2016) has inspected a total of 4,690 buildings in Nairobi alone out of which 30 houses have been demolished while 1,440 buildings have been classified dangerous and requiring to be demolished. This is a significant number given that it only covers one county and there are 46 other where buildings are yet to be inspected.

The laws are enacted by parliament, and with most government institutions and agencies being established by Acts of Parliament. The Policy makers who formulate such laws, do not accordingly subject them to adequate stakeholders and public opinions before implementation. This thus creates a scenario of inadequate laws governing the industry. Even for the currently existing laws, there are questions of inadequate awareness and compliance with the laws. Similarly, the existing laws and by-laws are disjointed and not harmonized. This research sought to establish gaps in terms of policies in a bid to make recommendations to seal any identified gaps. The inadequate harmonization effect, inadequate capacity and, generally the inadequate legal framework could be a factor that significantly influences mitigating buildings failures.

The institutions that have been put in perspective in this study includes the regulatory bodies and government agencies that are key stakeholders in building sector. These bodies and agencies include

the National Construction Authority (NCA), Engineers Board of Kenya (EBK), and Board of Registration of Architects and Quantity Surveyors (BORAQS). Some unethical members for these bodies have been responsible for inadequate designs, non-adherence to approved designs and unprofessionalism in the execution of construction works (GoK, 2010). For the mentioned institutions, the question of capacity to undertake their mandates is of great concern to this study. The capacity is with regard to the availability of equipment and qualified personnel, which is key for the execution of their mandates. The fourth variable that the study explored was the contextual framework which comprises the surrounding circumstances within which building occurs. This is important because building does not occur in a vacuum and there could be other factors which are non-technical in nature. These factors include compromise in design, supervision and inspection of buildings, non-compliance with building policies, regulations and standards, professional ethics and bribery. The study considers these factors to have influence in all stages of building process and could therefore affect the quality of final product.

Several cases of corruption and greed have on several occasions been reported on the part of both the regulatory bodies and property developers, who set aside the adherence to the building code of conduct in a bid to make quick money. Issues of morality feature within this context because even with the existing policies and institutions governing the industry, there is an apparent disregard for adherence to the set standards by clients, professionals and the regulatory agencies.

Empirical Review

Material weaknesses and choice as well as manufacturing faults may lead to unreliable structural materials including centrally blended concrete or substandard structural steel (Yilmaz & Çelebi, 2015). Moreover, natural factors such as rainfall, atmospheric pressure and changes in temperature

may facilitate collapse of poorly constructed buildings. Heavy downpours, for instance, may cause uncompleted or completed building to collapse when lines of weaknesses exist (Keable & Keable, 2011). Thus, it is recommended that construction professionals should involve proper quality management, thus keenly considering the likelihood of all possible natural disasters throughout the lifecycle of construction (Drennan, McConnell, & Stark, 2014).

In Africa, the problem of collapsing buildings has been incessant, Structural failure, inadequate supervision and workmanship, faulty designs, carelessness, use of substandard construction materials, and hasty construction have been the prevalent causes of collapsing buildings (Bosede & Sunday, 2014; Fagbenle & Oluwunmi, 2010). In Ghana, the problem of collapsing buildings and retrogression in the safety of built environment has been witnessed (Botchway, Afram & Ankrah, 2014). It is unfortunate that these incidents have been rampant, despite modern construction technology. Various buildings, such as commercial complexes, transmission masts, factories, classrooms, and private houses have been collapsing in different parts of Ghana due to shoddy work, inadequate supervision, lack of commitment to the shelter delivery and construction regulatory bodies, and inaccurate reproduction of engineering and architectural details (Botchway, Afram & Ankrah, 2014). Noncompliance with regulations, poor supervision, poor inspection regimes and illegal conversions otherwise called change of user are central factors in the cause of building failures. A breakdown between the law and enforcement is a breeding ground for building malpractices which eventually lead to building failures, (Wardhana, 2003). When contractors make alterations to design without consulting project engineers the building is exposed to the risk of failure either during or after completion, (Ratay, 2005). Many buildings which end up collapsing have weak structural designs and some

can be seen leaning even during construction. Through corruption, such buildings are allowed to continue eventually coming down to cause injuries or loss of life, (Cherono, 2016).

Wade (2010) identifies building maintenance as a key component in preventing building failures. Poorly maintained buildings are more likely to fail due to neglect of wear and tear on the building components. Building maintenance schedules should be followed in order to ensure buildings do not age faster than anticipated giving in to small repairs which should have been noted in the course of daily operation of the building. Mutiso (1996) agrees that some buildings such as sunbeam building in Nairobi could have come down due to infestation by white ants which is a maintenance issue that could have been prevented to avert the loss of life and property. Property management involves regular inspections for defects and proposal of remedial measures to prevent fatal deterioration and eventual collapse.

In Kansas City, Missouri, the United States, the walkways of the Hyatt Regency Hotel collapsed, killing about 114 people and injuring 200 (Banset & Parsons, 1989). The walkways collapsed due to a modification in design. Despite the changes, there was no adequate communication between the contractors and design engineers during the alteration of the design, leading to weak support rods of the walkways. This failure was mainly due to breach of quality management practice that demanded that decision-making process for a change in a building's design should involve all relevant parties. The failure of the walkways serves as a case study of professional courses worldwide and is valuable in training on the significance of professional ethics (Banset & Parsons, 1989).

Yaakup, Johar and Dahlan (1997) bring out a clear picture of organized development control in Malaysia and explains in detail the pre-requisites for approval of building plans which include stringent checks for design failures and weaknesses which could lead to

collapse of buildings under construction or during occupancy. This ensures that past mistakes leading to losses are not repeated and lessons are documented for posterity. The study also highlights common causes of building failures in Malaysia as to include the following; bad design, faulty construction, foundation failure, extraordinary loads, unexpected failure modes or combination of causes (Abdallah, 2011).

While studying causes of building failures in Nigeria, Otanitori (2011) found that the quality of sand used in making concrete has a bearing on the strength of building components such as beams and columns made using such concrete. The study found that excess clay content makes the resultant concrete mixes vulnerable and subsequently unable to hold for long. Adeoye (1998) and Amanda-Ayafa (2000) found that 38 buildings collapsed within 20 years between 1976 and 1995 but the rate of collapse picked up to reach 8 buildings between 2005 and 2006 in southern Nigeria. The studies found that all the buildings which collapsed came down due to wrong concrete strengths. Mosley *et al.* (2007) and Olotuah (2005) supported these findings.

In Kenyan construction industry, over the decade, over 14 buildings have collapsed leading to loss of both life and property (Hannah *et al.*, 2014). Studies have been conducted, with majority of the studies pointing at contributing factors such as low quality construction materials. For example, the amount of impurities such as clay, silt, and organic impurities in building sand has an effect on the resulting concrete compressive and bonding strength (BS 882, 1992). Various standardizations give various allowable percentages of impurities and the duty of offering monitoring of the standards lies squarely with the Kenya Bureau of Standards (KEBS). However, in general, the allowable content of such deleterious materials should not exceed 5% (Hannah *et al.*, 2014). Koech (2001) argued that local governments have the sole privilege and mandate of ensuring safety and

preempting building failures by exercising their supervisory roles in the construction industry. Nduthu (2012) found that county governments having inherited the defunct local authorities required extensive capacity building in terms of institutional support to be able to carry out the mandate of development control.

METHODOLOGY

The study used both descriptive and correlational research designs. The population for this study was drawn from both the National Government and representation from eleven (11) County Governments. Under the National Government the study aimed to gather information from officers of the National Construction Authority (NCA), National Building Inspectorates, Kenya Bureau of Standards, Professional Bodies and Officials of the Ministry of Transport, Infrastructure, Housing, and Urban Development. Also, the study included officers from the County Government and particularly from the departments of planning, compliance and enforcement. This study used the stratified sampling technique.

The instrument for data collection was a questionnaire which was administered to sampled respondents. The structure of the instrument included both closed-ended and open-ended questions. Data processing and analysis were done based on qualitative and quantitative methods. The qualitative data from the study was subjected to content analysis, categorized, classified and tabulated to support the Quantitative data. Quantitative data was analyzed by use of the Statistical Package for Social Science (SPSS version 22).

FINDINGS

Influence of Policy Framework on Mitigating Building Failure in Kenya

On awareness of the relevant policies, the findings indicated that most (59% n= 122) of the professionals

in the building industry were aware of the relevant policies that existed while (41% n=84) were not aware of the existing policies. This indicated that the relevant authorities that are charged with the implementation of the policies had not done enough sensitization to ensure that every professional in the industry is aware of all existing sector policies to enable implementation and enforcement. This also indicated low level of professional involvement in the policy formulation process.

On the policies that were mostly adopted by the respondents, the findings indicated that majority of the respondents adopted construction industry policies in their routine work (34%, n=58) followed by the building policy (25%, n=43) then National Housing

Policy (22%, n=38). This finding indicated that professionals in the building industry mostly adopted construction policy while maintenance policy was the one that was least adopted which explains why building failed due to performance failure induced by non-structural components and factors such as poor maintenance or exposure to adverse climate conditions.

On the accessibility of the policies, the study findings indicated that majority of the respondents (39%, n=80) found it very easy to access relevant policies with respect to buildings. Respondents (36%, n=75) found it easy to access the relevant policies while 17% and 3% found it difficult and very difficult respectively to access the sector policies.

Table 1: Factor Analysis on Policy Framework

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
There is adequate implementation and enforcement of building sector policies	1.812	10.225	47.07
There exists a comprehensive building policy in the country	1.716	9.154	56.224
There is continuous review and audit of building sector policy implementation and success	1.614	8.428	64.652
Stakeholders in the building sector are fully aware and conversant with the existing policies governing the building sector	1.523	7.033	71.685
Stakeholders in the building sector adequately comply with the existing building policies	1.499	6.732	78.417
There are adequate policies guiding all the areas within the building sector	1.346	4.822	83.239
There is adequate harmonization of the multiple policies guiding the building sector	1.236	4.695	87.934
There is continuous reference to the laid down policies in all building processes	1.158	3.323	91.257
The existing building policies are clearly defined and communicated to stakeholders	1.146	2.853	94.11
Existing building policy is operationalized through the building regulation	1.123	2.652	96.762
Building policies are formulated through participation of all building stakeholders	1.111	2.468	96.578
Existing policies covers safety and risk management practices	1.023	2.254	98.832
Adherence to the building policy reduces building failures	.014	0.548	99.38
Building polices specify maintenance requirements	.005	0.318	99.698
Existing building policies covers building sustainability	.001	0.302	100.000

From the findings in table 1, the value of the eigenvalue or amount of variance in the original variables accounted for by each component as given by the 'total' was greater than one in most of the variable except the last 3 factors; therefore, the following factors were dropped in the analysis: Adherence to the building policy reduces building failures; Building polices specify maintenance requirements and Existing building policies covers

building sustainability". According to Snook, (1996), depending on whether one was doing explanatory factor analysis or confirmatory factor analysis, the cut off point for factor loading is determined by the researcher depending on the euginvalues obtained during the factor analysis. In this case, the last three factors in table 1 gave much lower values as compared to the rest hence the cut off for factor loading was set as 1.

Table 2: Frequency Distribution on Policy Framework

Statement	5	4	3	2	1	Totals
(where 1-strongly disagree, 2-disagree, 3-neither agree nor disagree, 4 – agree and 5-strongly agree)						
There is adequate implementation and enforcement of building sector policies	n 35	24	22	73	52	206
	% 17	12	10	36	25	100
There exists a comprehensive building policy in the country	n 12	48	16	82	48	206
	% 6	23	8	39	24	100
There is continuous review and audit of building sector policy implementation and success	n 16	31	13	91	55	206
	% 7	15	7	45	26	100
Stakeholders in the building sector are fully aware and conversant with the existing policies governing the building sector	n 8	29	15	98	56	206
	% 3	14	8	48	27	100
Stakeholders in the building sector adequately comply with the existing building policies	n 7	27	11	87	74	206
	% 3	14	5	42	36	100
There are adequate policies guiding all the areas within the building sector	n 21	28	13	77	67	206
	% 10	14	6	38	32	100
There is adequate harmonization of the multiple policies guiding the building sector	n 20	36	11	85	54	206
	% 10	17	5	41	27	100
There is continuous reference to the laid down policies in all building processes	n 12	25	12	91	66	206
	% 6	12	6	44	32	100
The existing building policies are clearly defined and communicated to stakeholders	n 14	33	10	89	60	206
	% 7	16	5	43	29	100
Existing building policy is operationalized through the building regulation	n 25	32	13	80	56	206
	% 12	15	6	39	28	100
Building policies are formulated through participation of all building stakeholders	n 16	21	12	82	75	206
	% 8	10	6	40	36	100
Existing policies covers safety and Risk management practices	n 14	12	21	81	78	206
	% 7	6	10	39	38	100

The findings in table 2 indicated that majority of the respondents 36% (N73) disagreed that there was adequate implementation and enforcement of the building sector policies while 39% (N82) majority disagreed that there was existence of comprehensive building policy in Kenya. There was no continuous

review and audit of building sector Policy implementation and success (45% N91) while stakeholders in the building sector (48% N98) were not fully aware and conversant with the existing Policies governing the building sector. Stakeholder in the building sector did not comply with the existing

building policies (42% N87) and there were no adequate policies guiding all the areas within the building process and lack of effort to harmonise multiple policies in the building sector and lack of stakeholder participation in the formulation of all building Policies (40% N82).

Regression Analysis

Based on linear regression model, the study sought to determine the influence of policy framework on

mitigating building failures in Kenya. The following hypothesis was therefore tested:

H_0 : Policy Framework has no significant influence on mitigating building failures in Kenya

The study found out that policy framework explained a significant proportion on mitigating building failures in Kenya, $R^2 = .845$ This implied that 84.5% of the proportion in mitigating building failures in Kenya was explained by policy framework as indicated in table 3.

Table 3: Model Summary for Policy Framework

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.836 ^a	.845	.787	.413

a. Independent variables : (Constant), Policy Framework

Table 4: ANOVA for Policy Framework

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.366	1	9.366	23.177	.000 ^b
	Residual	4.041	10	.4041		
	Total	13.407	11			

a. Dependent Variable: Mitigating Building Failures

b. Independent variables : (Constant), Policy Framework

The findings indicated that the significance value in testing the significance of the model for the relationship between policy framework and mitigating building failures was $p = 0.000$ which was less than 0.05 testing at 5% significance level using a one tail test. The F-value obtained was greater than

0.05 ($F=23.177 > 0.05$) indicating that the null hypothesis was rejected and the research then concluded that: the Policy Framework has a significant influence on mitigating building failures in Kenya.

Table 4: Regression Coefficients for Policy Framework

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error			
1	(Constant)	.647	.661		1.387	.014
	Policy Framework	.937	.109	.756	7.812	.000

a. Dependent Variable: Mitigating Building Failures

Based on the linear regression model, $Y = \alpha + \beta_1 X_1 + u$, the model therefore becomes; $Y = 0.647 + 0.937X_1 + u$

The study findings in the table 4 indicated that for very one unit change in policy framework, mitigating building failures in Kenya increases by 93.7% ceteris paribus hence implying a positive influence of policy

framework on mitigating building failures in Kenya. The study found that policy framework significantly predicted mitigating building failures, $\beta = .937$, $t = 7.812$, $p = .000$. This finding implied rejection of the null hypothesis since the p value is less than <.05 set by the study and the t value was more than 1.96 at 95% confidence level. The study therefore concluded

that policy framework significantly influences mitigating building failures in Kenya.

The findings were supported by Sapru (2009) who denotes that without policy, legislative efforts would be disjointed and blind to the industry. The proper way to make law is to begin from identifying sector challenges and then weaving solid policy grounds and direction for the sector after which attendant laws and regulations can be made.

According to Riemer (2009), any effective law must be anchored on strong policy that covers proper troubleshooting of the presenting challenges culminating with proposals for relevant and water tight legal mechanism. It is a foundation in which to understand any sector and address its challenges. Policy coverage for the building and construction sectors of the East African region are glaring weak.

CONCLUSIONS AND RECOMMENATIONS

The study found out that the relevant authorities that were charged with the implementation of the policies had not ensured that every professional in the industry had proper awareness of the policies since everyone in the industry should be aware of the relevant policies in the sector. The finding indicated that professionals in the building industry mostly adopt construction policy while maintenance policy is least adopted. This is an indication that the policy making process is not all inclusive particularly involvement of building professionals and stakeholders.

The findings that the policy framework has significance influence in mitigating building failure indicated the importance the sector must place on policies guiding the sector. The stakeholders in the sector must be involved in its policies formulation, implementation and review. The policies form the foundation in which to anchor the law and the institution created for the implementation of the policy

and the law. Policies therefore should be comprehensive, adequate and accessible to all stakeholders and players in the sector. The existence of multiple policies in the sector complicates an already complex sector and therefore need for harmonization of policies with clear defined roles of National Government, County Government, National institutions and professionals in the administration and management of the building sector.

The quality of the existing policies are wanting, archaic and non-inclusive making enforcement rather a challenge. Weak policies have equally resulted in weak laws and weak institutions because both the law and institution should be anchored in a policy otherwise lack of clear policy leads to disjointed legislative efforts. According to Sapru, 2009, the proper way to make law is to begin from identifying the sector challengers and then weaving solid policy grounds and direction for sector after which attendant laws and regulations can be made.

The study recommended review and harmonisation of the existing policies and to develop a comprehensive building policy that covers all aspects of planning, construction, risk management, maintenance, destruction, disposal and establishes legal and institutional framework for policy implementation. The policy formulation should be all inclusive involving all shareholders, National and County Governments including public participation for ownership to enable implementation and enforcement.

Suggested Areas for further Study

The study recommended a research to be undertaken on the influence of policy framework on mitigating failure and collapse of infrastructure facilities. The infrastructure is a sub-sector which supports the building subsector of the construction industry in Kenya that experiences similar challenge.

REFERENCES

- Adewuyi, B. A. (2010). *Structural Factors that cause Building Failures* (Unpublished Thesis)
- Amanda-Ayafa A. (2000). *Failures in building: A case study of Lagos Metropolis*. Post Graduate Diploma Thesis, Federal University of Technology, Akure, Nigeria .
- Anthony, N. U. (2015). Building Failures/Collapses and their Reputational Effect on Building Industry in Nigeria! *International Journal of Science and Research IJSR*, Vol. 4, No. 6, 847-853.
- Banset, E. A., and Parsons, G. M. (1989). *Communicating failure in Hyatt Regency disaster. Issues in Energy, Education and Practice*, 273–288
- Botchway, E., Afram, S. O., & Ankrah, J. (2014). *Building Permit Acquisition in Ghana: The Situation in Kumasi. International Institute of Science, Technology and Education (IISTE)*, 4(20), 11-22.
- Building Dictionary. Retrieved from <http://www.dictionary.com/browse/building>
- Chanter, B., & Swallow, P. (2007). The Changing Context within which Building Maintenance Operates. *Building Maintenance Management*.
- Drennan, L. T., McConnell, A., & Stark, A. (2014). *Risk and crisis management in the public sector*. Routledge.
- Fagbenle, O. I. (2010). Building Failure and Collapse in Nigeria: The influence of the Informal Sector! *Journal of Sustainable Development*, Vol. 3, No. 4, pp. 268-276.
- Fagbenle, O.I. & Oluwunmi, A.O. (2010). Building Failure and Collapse in Nigeria: The Influence of the Informal Sector! *Journal of Sustainable Development*. Vol. 3, No. 4, December.
- Government of the Republic of Kenya (2010). *Urban Areas and Cities Act*, Government Printers, Nairobi.
- Hannah, N. N., Raphael, N. M. & Zachary, A. G. (2014). Effects of Sand Quality on Compression Strength of Concrete: A Case of Nairobi County and its Environs, Kenya! *Open Journal of Civil Engineering*, Vol. 4, 255-273.
- Howlett, M., Ramesh, M., & Perl, A. (2009). *Studying public policy: Policy cycles and policy subsystems* (Vol. 3). Oxford: Oxford university press.
- Kaufmann, D., A. Kraay & Zoido-Lobaton (1999). *Aggregating Governance Indicators*, Washington, D.C.: World Bank.
- Madu, L.C. (2005). *Journal of Nigeria Institute of Architects (N.I.A) Architecture: Research & Practice* Vol. 1. No. 3, (2005, November). ISSN 1597-2947.
- McGuire, W., (1974). *Prevention of progressive collapse*. Proceedings of the Regional Conference on Tall Buildings, Asian Institute of Technology, Bangkok.
- Mosley, W. H., Bungey, J. H. and Hulse, R., (2007). *Reinforced Concrete Design*, 6th ed. Hampshire, UK, Book Power with Palgrave Macmillan Publications.
- Mutiso, R,G,M (1996), Report of the Commission of Inquiry to Examine the Building Laws, By-Laws and Regulations Existing

- Nduthu, D. M. (2012). *The Institutional Challenges of Development Control in Urban Areas*. A Case Study of Thika Municipality, Kenya
- North, D. & R. P. T. Thomas (1996). *Rise of the Western World: A New Economic History* Cambridge: Cambridge University Press.
- Olagunju, R. E., Aremu, S. C., & Ogundele, J. (2013). Incessant collapse of buildings in Nigeria: an architect's view. *Civil and Environmental Research*, 3(4), 49-54.
- Olagunju, R.E. (2002). Fire Safety Problems in the Tropics. A study of the Pharmaceutical Industry in Nigeria! *Journal of Science, Technology and Mathematics (JOSTMED)*. Federal University of Technology, Minna Vol. 5. No. 1.
- Oloyode, S.A. Omogun, C.B. and Akinjare, O.A. (2010). Tracking Causes of Building Collapse in Nigeria! *Journal of sustainable Development*, Vol. 3. No. 3, 127-132.
- Riemer, N. (2009). *On not having read Itkonen*: Empiricism and intuitions in the generative data debate. *Language Sciences*, 31, 649-662.
- Snook, S. C., & Gorsuch, R. L. (1989). Component analysis versus common factor analysis: A Monte Carlo study. *Psychological Bulletin*, 106(1), 148-154
- Subramanian, Swamy (2009). *Corruption and Corporate Governance in India*: Satyam, Spectrum & Sundaram. Har-Anand, ND India.
- Vedung, E. (2017). *Public policy and program evaluation*. Routledge.
- Victoria Maria Janssens (2012). *Modelling progressive collapse in steel structures*. Trinity college, Dublin.
- Wardhana F.C. (2003). Study of Recent Building Failures in The United States! *Journal of Performance of Constructed Facilities* 17(3), 151-158. Retrieved from American Society of Civil Engineers Research Library Database.
- Wolfensohn, J. (1999). *Remarks at a Global Forum on Fighting Corruption*. Washington, D.C., World Bank.
- Wright Mills (1963). *Power, Politics and People*, New York (1963, pp.174).
- Yaakup, A.B., Johar, F. and Dahlan, N. A. (1997). *Decision Support Systems in Urban Planning*. GIS and Decision Support System for Local Authorities in Malaysia, in H. Timmermans, E & F SPON, London.
- Yilmaz, F., & Çelebi, U. B. (2015). The importance of safety in construction sector: costs of occupational accidents in construction sites. *Business and Economics Research Journal*, 6(2), 25.