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**FACTORS THAT ACCOUNT FOR CONSTRUCTION OF UNAUTHORIZED  
BUILDINGS IN GHANA**

**BY**

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**A THESIS PRESENTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS  
FOR A DEGREE OF MASTER OF PHILOSOPHY IN CONSTRUCTION  
MANAGEMENT**

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## DECLARATION

I hereby declare that this work is the result of my own original research and this thesis has neither in whole nor in part been prescribed by another degree elsewhere. References to other people's work have been duly cited

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## ABSTRACT

Construction of unauthorized buildings has become a major problem in towns and cities of most developing countries. Despite numerous efforts at local levels to address this problem, its existence and effects keep on rising in various metropolis, municipalities and districts in Ghana. This research explores the causes of unauthorized buildings in Asakae, a suburb of the Sekondi-Takoradi Metropolis and identifies strategies to curb them. A sample size of 234 respondents, comprising (182) house-owners, (50) Assembly-members, (1) head of physical planning department and (1) head of works department from the Sekondi-Takoradi Metropolitan Assembly (STMA) was chosen for the study. Questionnaire and personal observation were employed to collect the primary data. Data generated from the survey was further analyzed, using factor analysis technique, relative importance index, one-sample t-test and descriptive statistics (percentages and frequencies). The findings of the survey indicated that Institutional, Physical, Educational and Socio-economic factors account for construction of unauthorized buildings in Asakae. The findings further revealed that, imposition of high penalties on culprits by the local authority, automating of permit acquisition, monitoring and detection of unauthorized building operations are amongst the measures which could be instituted to address such a problem. It is recommended that there should be regular public education on building regulations of Ghana. More so, the assembly should automate their operations, with respect to permit acquisition and monitoring of buildings under construction, to avoid bureaucracy and corruption that has characterized their operations.

**Keywords:** Factors, Unauthorized buildings, Building regulations, Construction, Account.

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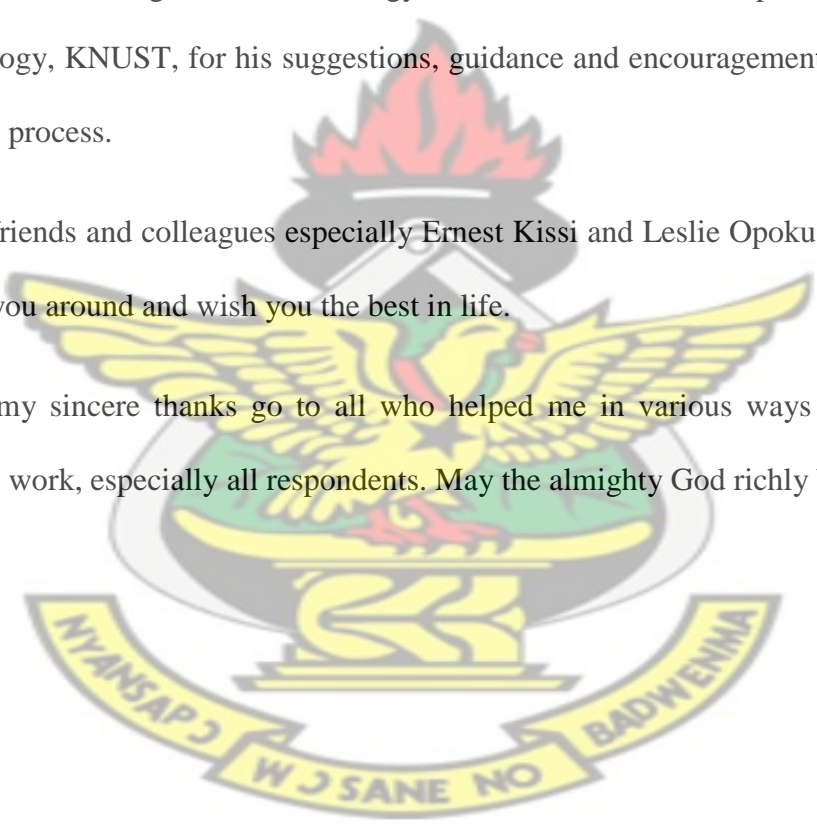
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## DEDICATION

This thesis is dedicated to all my family members, especially my senior brother Mr. Andrews Somiah and my wife Mrs. Dorcas Sena Somiah.

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## LIST OF ABBREVIATIONS

AMA	Accra Metropolitan Assembly
DPA	District Planning Authority
EPA	Environmental Protection Agency
MCE	Metropolitan chief executive
MMDAs	Metropolitan, Municipal and District Assemblies
MP	Member of Parliament
NADMO	National Disaster Management Organization
PCA	Principal Component Analysis
PPD	Physical Planning Department
RII	Relative Importance Index
SPSS	Statistical Product for Service Solutions
SSI	Semi-structured interview
STMA	Sekondi-Takoradi Metropolitan Assembly
TCPD	Town and Country Planning Department

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the Study

Construction of unauthorized buildings has become a major problem in towns, cities and municipalities of most developing countries in the world of which Ghana is of no exception to this development (Weiner, 2003; Acquah-Harrison, 2004). Despite the numerous efforts at both the international and local levels to address this problem, its existence keeps on rising (Adjei Mensah *et al.*, 2013). A report by UN-habitat (2006), estimated that, about 90 percent of areas noted of unauthorized buildings in the world are found in towns and cities of developing countries.

Accordingly, in Ghana most of the unauthorized buildings are found in cities like Accra, Kumasi, Tamale, Takoradi and other large towns (Acquah-Harrison, 2004). More so, Freiku (2003) argued that, unauthorized buildings are even constructed on public rights and places reserved for schools, open spaces, nature reserves, parks, roads, market and sanitation sites. Sometimes, such buildings, according to Ioannidis *et al.* (2007), are permanent buildings and are of good constructions; in some cases, it can be two-storey buildings, or even luxurious buildings. Furthermore, unauthorized buildings are found scattered within agricultural land (Ali and Sulaiman, 2006); and according to UN-habitat (2003), this practice has become an eye-sore and it is frightening.

Consequently, unauthorized buildings denote: any building which has been constructed without a permit or any building which has been constructed without the conditions incorporated in a permit fully complied with (Republic of Ghana, 1993; Republic of



Ghana, 1996; Potsiou and Ioannidis, 2006, cited in Ioannidis *et al.*, 2007). Hence, unauthorized buildings do not consent with the provisions of the national building regulations (Potsiou and Ioannidis, 2006, cited in Ioannidis *et al.*, 2007; Ioannidis *et al.*, 2007).

Likewise, regardless of an existing building fitting perfectly into the plan scheme of an area, it still becomes unauthorized building if there is no building permit that covers the building. More so, buildings with permits but are illegally located or sited falls under unauthorized buildings because, such buildings do not consent with of the conditions of a building permit. Accordingly, an extension or addition to an already existing building, which had the appropriate permits, renders the building equally unauthorized just as buildings without permits. According to Kumar (2012), sometimes house-owners submit building designs and get the building permits all right however, at construction stage, they construct different designs which they never submitted for approval or permit.

More so, stemming from the provisions of the L.I. 1630, no construction work shall be covered until it has been inspected and approved by the District Planning Authority; in case of default, the District Planning Authority may serve a notice requiring the owner of the building to lay open or pull down, as much sections of the building works as may be necessary to ascertain whether any of the provisions of the L.I 1630, or conditions incorporated in permits, have been complied with. In extreme cases, the District Planning Authority may do so by court order; and the cost incurred is surcharged to the House-owner (Republic of Ghana, 1996; Owusu-Mensah, 2003).



Drawing from the discussions above, three categories of unauthorized buildings could be inferred, namely: unauthorized extension or additions to an already existing building; unauthorized siting of buildings (i.e. buildings with or without permits and are illegally or wrongly sited/located); and lastly, unauthorized modification and uncertified construction.

More so, it worth emphasizing that, unauthorized buildings have been given various expressions by different authors across the globe, namely: unregistered construction; unauthorized construction; unauthorized building works; illegal buildings; illegal structures; informal building, informal construction and illegal construction(c.f Ioannidis *et al.*,2007;United Nations,2009;Weiner,2003; Chitlangia,2014).

Ahmed and Dinye (2011) opined that, conscious effort to ensure harmonious spatial development and environmental sanity in Ghana dated back to the colonial era but that notwithstanding, there is not much to show for the efforts made. Accordingly, they attributed the problems of congestion and inaccessibility to some activity areas to unauthorized buildings. Again, unauthorized buildings tend to create both hygiene and safety related problems; such buildings may obstruct fire escape routes and lead to high casualties in case of fire; more so, the questionable structural integrity of such buildings poses risk to humanity (Lai and Ho, 2001; Ahmed and Dinye, 2011). To this extent, Kumar (2012) argued that, loss of property and life can be reduced if buildings are designed and constructed as authorized.

## 1.2 Problem Statement

Construction of unauthorized buildings keeps on rising in many developing countries in the world of which Ghana is no exception (Adjei Mensah *et al.*, 2013). Accordingly, Weiner (2003) indicated that, it is now common for 30 to 60 percent of an entire city's population to live in houses and neighborhoods that have been developed illegally thus, it is very challenging for governments to furnish such areas, with infrastructure and services essential for health and general well-being.

Notwithstanding the powers vested in the District Assemblies, Municipal Assemblies and Metropolitan Assemblies to control construction of unauthorized buildings in Ghana, it appears that they have not been able to exercise strict control, as people are still circumventing the regulations (Freiku, 2003; Setrana, 2013).

Accordingly, Andoni (2007) argued that, unauthorized buildings pose many serious social, political, economic and environmental implications hence, the need to address it by both governments and civil society.

A recent survey that was conducted by the Physical Planning Department of the Metro has publicized that, 36 percent of buildings in the metropolis are not having building permits, thus, rendering them unauthorized (Setrana, 2013). In the same vein, a report by Global communities (2013) has predicted uncontrolled unauthorized physical developments in the metropolis due to the influx of people in the Metro as a result of the oil industry. However, according to Ioannidis *et al.* (2007), similar distinct factors account for construction of unauthorized buildings in several countries. Therefore, this research explores the causes of unauthorized buildings in the Sekondi-Takoradi

Metropolis and identify strategies to curb them using Asakae, a suburb of the Sekondi-Takoradi Metropolis as a case study.

### 1.3 Research Questions

Based on the aforementioned problem statement, the following research questions were proposed:

- What is the extent of construction of unauthorized buildings in Asakae?
- What are the relevant factors that account for construction of unauthorized buildings in Asakae?
- Are house-owners aware of the national building regulations?
- What strategies are to be mounted to curb the practice of construction of unauthorized buildings?

### 1.4 Aim

The aim of the research was to explore the causes of unauthorized buildings in Asakae, a suburb of the Sekondi-Takoradi Metropolis, and identify strategies to curb them.

### 1.5 Objectives

Accordingly, the following set of objectives aided in achieving the aim of the study:

1. To assess the extent of unauthorized buildings in Asakae
2. To identify factors influencing construction of unauthorized buildings in Asakae
3. To assess the awareness of House-owners on the National Building Regulations
4. To identify strategies that will curb construction of unauthorized buildings.

## 1.6 Research Methodology

Questionnaire and personal observation were used to collect the primary data bearing in mind the aim and the set objectives of the study. Similarly, Secondary data were gathered through extensive review of existing literature from journals, papers, thesis, websites and reference books, so as to gather more knowledge on the subject area. SPSS 16.0 and Excel 2010 edition for windows were used for the analysis. The analytical procedure employed aimed at exploring factors that have accounted for construction of unauthorized buildings in Asakae and identify strategies to curb them; relevant data to achieve the set objectives were gathered as followed:

- *To assess the extent of unauthorized buildings in Asakae*

Literature was reviewed. Survey questionnaire and physical inspection were used to collect the needed empirical information from the study area; data generated was analyzed using descriptive statistics (i.e. frequencies and percentages).

- *To identify relevant factors influencing construction of unauthorized buildings in Asakae*

This aspect of the research identified the causes of unauthorized buildings. Literature was reviewed to identify relevant factors. Questionnaire was used to obtain the needed empirical information from house-owners, head of physical planning department or physical planning and monitoring department, head of works department and Assembly members in the metropolitan assembly; data generated was analyzed using factor analysis.

- ***To assess house-owners awareness on the national building regulation***

Literature was reviewed on relevant sections of the national building regulations (L.I 1630). Accordingly, survey questionnaire was administered to obtain the needed empirical information from house-owners; and data generated was analyzed using relative importance index.

- ***To identify strategies that will curb the practice of construction of unauthorized buildings***

Literature was reviewed and various relevant strategies were identified. Questionnaire were administered to obtain the needed empirical data from the head of physical planning department, head of works department and Assembly-members in the metropolitan assembly; data generated was analyzed using one-sample-t-test.

### **1.7 Significance of the Study**

The study was informed by the construction of unauthorized buildings which has become a problem in towns and sub-towns in the Sekondi-Takoradi Metropolis, and in Ghana as a whole. This research seeks to unravel the factors accounting for construction of unauthorized buildings in Ghana as well as bringing into the fore, the relevant strategies for curbing construction of unauthorized buildings in Ghana. The recommendations thereof is believed, will help curtail the phenomena in Ghana. In addition, the findings from the study seeks to add to the existing knowledge on factors influencing construction of unauthorized buildings and strategies to curb them; also it serves as a basis for further research into issues concerning construction of unauthorized building largely in Ghana.



## **1.8 Scope of Study**

This research was limited to the Sekondi-Takoradi Metropolis of Ghana. The study area was Asakae, a suburb of the metropolis. Asakae was chosen for the study because, though there had been a well-planned composite scheme for the area, the area is proliferated with unauthorized buildings. Buildings investigated were only residential buildings owned by families or/and individuals. Aspect of unauthorized buildings that were covered included unauthorized siting of buildings (that is, buildings that have strayed into or sited on plots of land reserved for public usage such as roads/lanes, agriculture land and water ways or buildings covering at least 80 % of the total plot area; unauthorized extensions and additions to residential buildings; as well as, unauthorized modification and uncertified construction works.

## **1.9 Structure of Research**

The research consisted of five chapters. These were: general introduction (chapter one); literature review (chapter two); research methodology (chapter three); Results and discussion (chapter four); as well as summary of findings, conclusions and recommendations (chapter five). Chapter one begun with an account of the background of the study. Then, the research subject presented by stating the research questions, research aim and objectives, scope and significance of the study, the research method and the organization of the study's structure. Chapter two covered extensive literature review on the topic bearing in mind the research questions the study seeks to answer.

Chapter three entailed a description of the research methods used in this study. The method included quantitative and cross sectional study approach. Chapter four covered



results and discussion, answering various research questions raised by the objectives. Chapter five covered a discussion on the academic and practical value of the findings, conclusion and recommendations as well as potential areas for further research.

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## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

This chapter is a review of the various works that are relevant to the study. It covers the concept of unauthorized buildings, characteristics of unauthorized buildings, factors influencing construction of unauthorized buildings, overview of the National Building Regulations, Building Permits and unauthorized buildings in Ghana, and Strategies for curbing construction of unauthorized buildings.

#### 2.2 Concept of Unauthorized Buildings

Unauthorized buildings have been given different expressions by several authors all over the world, but that notwithstanding, there is much no difference in its concept. Unauthorized buildings was termed by Weiner (2003) as ‘illegal building’ or ‘Illegal construction’; ‘Informal construction/buildings’ by Ioannidis *et al.* (2007); ‘Illegal structures’ by Lai and Ho (2001); ‘unauthorized structures’ (Adjei Mensah, 2010); ‘Illegal construction’ (United Nations, 2009), or ‘unauthorized construction’ (Chitlangia, 2014). Regardless of the term used, they are buildings without permit or the conditions in a permit not fully incorporated; suggesting that such buildings have not been approved by authorities (Republic of Ghana 1996; Ioannidis *et al.*, 2007). Accordingly, Kahraman *et al.* (2006) argued that, unauthorized buildings are buildings constructed without authorization, legal bureaucratic sanction and without regular engineering control and checks.

There are two thoughts generally held in literature with regards to construction of unauthorized buildings. They are pessimist and optimist thoughts (Adjei Mensah, 2010).

The pessimists are of the thinking that since approval or permit is pre-requisite to building then, buildings without approval from authorities should be demolished and not even regularized or legalized or validated (Andoni,2007;Vlaevsky,2013). The pessimists argued that such buildings may be structurally unsafe, have poor lighting and ventilation systems and may not conform to land use planning(Lai and Ho,2001;Adjei Mensah,2010).More so, though unauthorized buildings are obviously serving a number of needs however, they are problematic (Lai and Ho,2001);they contribute to *black economy* as government are not able to generate revenue from them (Kumar,2002).Thus the full legalization or regularization of illegal buildings and the recognition of individual freehold property title, have been proposed in several countries as the "radical" way to transform economies (Andoni, 2007).

On the other hand, the optimists' thought is that, the approval process is very bureaucratic, planning authorities are inefficient coupled with inadequate planning schemes (Fekade,2000;Freiku,2003); therefore buildings should be constructed while approval is being sort; and eventually validated or regularized in accordance with the existing zoning plans and construction requirements (Vlaevsky, 2013). It is presumed and supported by many authors that legalization of unauthorized buildings would be the solution of all the housing problems (Smith, 1980; Andoni, 2007).Unauthorized buildings are a source of accommodation to mass of the population therefore, demolishing them is widening the gap of housing deficit (Adjei Mensah, 2010).More so, it has to be noted that in major cases, some illegal buildings pass the conditions of acceptable housing (based on standard of measurement of level of satisfaction). Time and again, they are even more spacious than some authorized buildings or buildings

provided by some estate developers. Thus, the need to regularize or legalize them remains important (Andoni, 2007). Furthermore, Vlaevsky (2013) and Andoni (2007) opined that, demolition of illegal construction is not commendable. Consequently, construction of unauthorized buildings is a response to a non-functioning of some factors, be it land administration system, urban management, housing policies, economic development, job opportunities, among others, which are related to the execution of state function at all its levels (Debusmann and Arnold 1996; Fekade, 2000; Huchzermeyer 2002; Global Urban Observatory 2003). Therefore, the state cannot punish someone that has provided for itself, what the state has failed to do (Andoni, 2007); because in the observations of Freiku (2003) and Vlaevsky (2013), great bureaucracy has characterized construction administration and permit acquisition processes; to this extent, people are compelled to begin construction without first obtaining all necessary permits.

**Table 2.1: Summary of related terms of unauthorized buildings**

Description	Author
<i>Unauthorized construction</i>	<i>(Chitlangia, 2014)</i>
<i>Unauthorized structures</i>	<i>(Adjei Mensah, 2010)</i>
<i>Illegal construction</i>	<i>(United Nations, 2009)</i>
<i>Illegal building</i>	<i>(Weiner, 2013)</i>
<i>Informal construction/buildings</i>	<i>(Ioannidis et al., 2007)</i>

### 2.3 Characteristics of Unauthorized Buildings

According to the Local Government Law of 1993 (Act 462) and L.I. 1630, unauthorized buildings depicts: any building or structure which has been constructed without a permit or any building which has been constructed without the conditions incorporated in a permit fully complied with (Republic of Ghana, 1993; Republic of Ghana, 1996). Likewise, Ioannidis *et al.* (2007) held the view that, unauthorized buildings denote buildings which

have been constructed without the required permits from the appropriate authorities. Similarly, Adjei Mensah (2010) argued that, unauthorized buildings engulf structures or buildings such as houses that do not conform to the building regulations or land-use regulations in towns and cities. Accordingly, Kumar (2012) argued that, sometimes owners or developers submit building designs and get the building permits all right however, at construction stage, they construct different designs which they never submitted for approval for permit. For instance, as observed by Weiner (2003), in Thailand, city officials had to give additional time to two department stores to demolish floors they had added illegally on top of their buildings. The original permit to the stores covered only four floors but subsequently, they added seven more floors despite official warnings.

Based on the discussions above, the following characteristics of unauthorized buildings have been drawn:

- *unauthorized extension and/or additions to an already existing building;*
- *Unauthorized siting of buildings (that is: buildings with or without permits and are wrongly sited or located); and*
- *Uncertified construction and unauthorized modification.(These buildings are unauthorized based on the argument that: their stages of construction were not inspected and certified by authorities and/or they have been modified compared with the approved designs as required under L.I.1630).*

According to Nawagamuwa and Viking (2003), some unauthorized structures [buildings] are poorly constructed and some do not have windows, so even during daytime, occupants cannot see each other without the help of a light or fire. Accordingly,



in such instances, ventilation is poor and very often, circulation of fresh air is totally lacking (Adjei Mensah, 2010). As observed by Desai and Devadas (1990), unauthorized buildings could be single storey or even a six storey. According to Adinyira and Anokye (2013), unauthorized buildings, particularly unauthorized extensions or additions to buildings, are responsible for serious building related accidents in residential buildings. They obstruct passage ways in times of fire outbreak and other emergency rescue operations.

### **2.3.1 Unauthorized Siting of Buildings**

According to Freiku (2003), anytime building permit is granted, the permit allows the building owner to proceed with the approved type of development at a particular location.

Accordingly, section 14(2) of the National Building Regulations (L.I.1630) articulated that, the total floor area of residential buildings should not exceed 80% of the total plot area upon which the building is located or sited; otherwise, no permit would be given for such development (Republic of Ghana, 1996). Thus, any residential building in default of this provision is unauthorized. More so, Owusu-Mensah (2003) observed that, there are a number of buildings sited on unauthorized locations- roadways, waterways and other unauthorized places –and they had remained one of the major problems confronting city and town managers over the years. For example, Chang (2013) reported of a five separate but adjoining two-storey buildings, which have been sited in the middle of a planned extension of Haitong road within the Fu'an village, making the narrow road practically impossible for cars to run through most especially, during the rush hours. Likewise, In Nigeria, Weiner (2003) argued that, the president of Nigeria



ordered the demolition of all unauthorized buildings in the Federal Capital Territory, specifically those erected, among other things, on sewage lines, green areas, and security zones for environmental sanity and security to prevail.

In expanding the argument of unauthorized siting of buildings, Kumar (2012) indicated that in India lands-use planning is highly esteemed therefore, each city marks areas for a particular type of development. Thus, restricting land usage, termed as 'Lal Dora'. Nonetheless, buildings are now and then, found to have been sited on land reserved for agriculture; factories sited on a residential land and area, among others.

Thus, making it almost impossible for government to provide them with necessary facilities including water supply, prompt emergency service provisions, electricity and sewage disposal (Kumar, 2012).

### **2.3.2 Unauthorized Extension and/or Additions to Buildings**

Section (7) of the National Building Regulations specifically enjoins that, no building works can be commenced without the prior approval of building plans and consent for commencement of the building works, from the District Planning Authority (Republic of Ghana, 1996). As a result, any building work (extensions, additions or modifications, among others), contravening this provision is regarded as unauthorized. Hence, unauthorized extension and/or additions are after construction inclusion of space (that is: room, balcony, among others), that respectively extend an existing building, horizontally and vertically, without prior approval (permit) from approved authorities or institutions (Adinyira and Anokye, 2013). The result of unauthorized extension and/or addition is a new building that is entirely different from the formal building or the building plan that

was approved by authorities (Kumar, 2012). Subsequently, most of these changes occur after the building plans have been vetted and approval granted for construction, such changes might not conform to building regulations. These building works often deface the external aesthetics; pose fire implications by obstructing avenues of escape in case of fire outbreak; or pose structural complications to the building which can even result in accident (Lai and Ho, 2001;Kumar,2012).

### **2.3.3 Unauthorized Modification and/or Uncertified Construction**

Unauthorized modification is the result of internal changes to the layout of a building without permit from authorities; all the same, this work does not necessarily increase the overall net floor area of the building as approved (Adinyira and Anokye, 2013). Time and again, most modifications occur after the building plans have been vetted and approval given (Kumar, 2012). Hence, violates the provisions of the national building regulations (L.I1630).

Uncertified construction emerges when section (10) sub regulations (1-3) of the L.I.1630 is violated by house-owners. The section emphasize that, any person to whom a building permit has been issued must notify, in writing, the District Planning Authority at least forty-eight hours indicating the date on which he intends to begin his work, and of the dates on which the following stages of construction will be ready for inspection by the District Planning Authority: demarcation of site of the plot and siting of the buildings; foundations of buildings set out; foundations excavated and level pegs for concreting; foundations concreted; trenches for drainage work excavated to levels and gradients; drains laid and joined and ready for testing; reinforcing steel fixed in position before

concreting; concrete shuttering ready for striking; walls completed to wall-plate level; and roof frame-work completed before covering (Republic of Ghana, 1996).

Furthermore, because no construction work shall be covered until it has been inspected and approved by the District Planning Authority, any building constructed without the various stages, accordingly inspected and certified by an assigned inspector, constitute uncertified construction and the product of such construction is unauthorized. In the event that, the laid down procedure in subregulation (1) of section (10) of the L.I.1630 are not followed, then section (10) subregulation (6) enjoins the District Planning Authority to serve a notice requiring to the owner to cut into, lay open or pull down as much of the building works as may be necessary, to ascertain whether any of the provisions have been complied with (Republic of Ghana, 1996).

#### **2.4 Factors Influencing Construction of Unauthorized Buildings**

According to Ioannidis *et al.* (2007), a combination of social, economic, legal, and administrative factors contributes, in several countries, to construction of unauthorized buildings. In addition to this,, the United Nations (UN) (2007) broadly attributed the reasons for the construction of unauthorized structures [buildings] to include institutional, physical, political and social-economic factors. In a more elaborated argument, Acquah-Harrison (2004) and Adinyira and Anokye (2013) reasoned that, ineffectiveness in the implementation of planning legislations and development control measures, population growth, scarcity of land, high enforcement cost, poor building management, delay in the issuance of development and building permits, dissatisfaction with architectural designs, and ambiguities in the planning and building ordinances are

factors influencing construction of unauthorized buildings. Keteku-Atiemo (2006) and Davids (2011) opined that, high dominance of informal labour force in the construction industry is a contributive factor to construction of unauthorized buildings.

More so, factors such as ignorance of many house owners and developers on the Building Regulations; multiple sale of lands by some chiefs in the country; inability and inefficiency of the Building Inspectorate Unit of the assemblies to enforce the law; cumbersome nature of the procedure to obtain development permits from statutory authorities, influence construction of unauthorized buildings (Freiku, 2003; Graphic Editorial, 2010; Darkwa and Attuquayefio, 2012).

It is obvious from the afore-mentioned factors that, the various authorities are expressing highly inter-related views; therefore, for a well-focused and efficient discussion, the factors were discussed under eight main headings namely: Political, Legal, Educational, Professionalism, Land insecurity, Institutional, Physical and Socio-economic factors. Lai (1998b, cited in Lai and Ho, 2001) and Diang'a (2011) observed that, construction of illegal structures [unauthorized building] has persisted and indeed proliferated even in the urban and rural areas.

#### **2.4.1 Political**

Politicians have been cited as drives behind construction of unauthorized buildings. Accordingly, their influence makes it difficult for authorities to strictly enforce the laws (Adams, 2012; Kumar, 2012). Consequently, Shawan (2013) reported the former BMC deputy commissioner, G Khairnar, to have said that: *"If there is political pressure, normally you cannot take action. If you demolish, the officer will be demolished. He will*



*be finished*". In many times, warning notices are served to deter or stop the construction but it seems that, they even fuel rampant construction works (*ibid.*). More so, Dabilis (2013) exposed the Greek government's lack of political will to track down unauthorized buildings by allowing people who have constructed unauthorized buildings to keep them by paying a penalty. However, the country's highest court undermined it in its ruling citing that, the legislation is unconstitutional and recommended that the process be canceled. But that notwithstanding, the government passed another law that allow house-owners to pay a fine to 'semi-legalize' their buildings. According to Vibe Ghana (2013), local authorities such as Accra Metropolitan Assembly (AMA) have showed lack of political will to stop unauthorized buildings. The assembly failed to pull down an unauthorized building built by a retired Supreme Court judge, which strayed 25 metres inside a road, thereby making it difficult for human and vehicle to use the route.

Furthermore, Kombe and Kreibich (2000) argued that, failure of government to respond to the housing needs of the populace has given rise to many unauthorized buildings. According to Cheema (1993), lack of political will by government to initiate and sustain formal housing policy for all the populace, has influenced a cross section of the populace in Turkey to address their housing needs through unauthorized means. As a result, in most cities of Turkey, such populace has occupied land illegally acquired and built their houses with their own resources, without following building codes and other governmental regulations. Moreover, Ali and Sulaiman (2006) asserted that in Zanzibar, lack of political will, exhibited by the ruling Afro Shirazi Party (ASP) during the years of the post-revolution era, to sustain the socialist housing scheme in both towns and rural areas, that lead to a well planned residential buildings in areas like Magomeni and Sogea

cities, has largely influenced construction of unauthorized buildings in Zanzibar from the 1980s. In another related instance, UN-habitat (2003) and Warah (2003) reported that, lack of political will by governments to implement policies aimed at stopping construction of unauthorized buildings has remained contributory factor to the growth of unauthorized buildings.

#### **2.4.2 Legal: The Existence of Obsolete, Outdated, Duplicative and Contradictory Provisions in Building Laws.**

The existence of obsolete, duplicative and contradictory provisions in planning and building laws has made it very difficult for individuals who flout regulations to be sanctioned. Even in cases where action is taken against offenders, the sanctions appears not to be punitive enough due to some contradictory provisions in these pieces of legislations such as ,the prescription of varied sanctions for the same offence (Adinyira and Anokye, 2013).Furthermore, contributing to what appears to be an overlapping of institutional roles and responsibilities (Ameyibor *et al.*,2003).This was evidenced in the assertion of Adinyira and Anokye (2013),that making the Metropolitan, Municipal and District Assemblies the highest authority in the district under a decentralized system without synchronizing the provisions in the new Act ultimately reduced the once powerful Town and Country Planning Department to an advisory unit.

Furthermore, relating the provision under section 63 of the Local Government Act, to the provision made by the L.I 1630 which gives implied approval of three months from the date an application is made for building permit, obviously makes the enforcement of planning and building regulation very difficult (Adinyira and Anokye,2013).As a result, the Ghana Institute of Architects (GIA),at the end of its first session of GIA's annual



general meeting held in Accra, called for the review of the existing National Building Regulations 1996 (LI 1630), to enable the law to deal with contemporary issues. The honorary secretary of the institute described the existing law as outdated and expressed dissatisfaction that, it did not include contemporary issues including change in building regulation and enforcement, green modes of construction and matters bordering on the extent to which a parcel of land could be developed and the correct distance from a boundary to a building. Similarly, GIA recommended the enforcement of Private Public Partnership to monitor and control construction of buildings in the nation (GNA, 2013).

#### **2.4.3 Educational: Ignorance of House-owners and Land-owners on the Building Regulations and Illiteracy**

Construction of unauthorized buildings are influenced by ignorance on planning schemes and ignorance on planning and building regulations (Freiku, 2003; Owusu-Mensah, 2003; Kings-Amadi, 2004, cited in Adjei Mensah, 2010). Most stakeholders, especially chiefs and landowners, see area and site planning schemes or plans by the town and country planning authorities, as "foreign"; they disregard them and go ahead to either design their own plans or begin to demarcate lands anyhow, even to the extent of allocating waterways and reserved areas to developers. Others who even decide to use the planning schemes designed by the town and country planning to allocate plots to developers, often do not understand the interpretations in the plans, and the reasons why certain areas should not be allocated (Owusu-Mensah, 2003).

Furthermore, Quarcoopome (1992) argued that, most customary laws emphasized on a notion of collective use without alienation and not private ownership; similarly, believes that, land is ancestral trust which the living share with the dead, and that the ultimate

owners of lands are the gods; tangled with the notion that allodial rights are vested in corporate groups, such as clans and families(i.e. dead, living and unborn); and that members of the corporate group and strangers who require plots to build on, only have to approach the elders of the group for the purpose and land shall be allocated to them, have created a situation which building owners or developers, according to Owusu-Mensah (2003), have consistently ignored laid down plans and drawings and continued to build haphazardly. Moreover, Kings-Amadi (2004, cited in Adjei Mensah, 2010) observed that, construction of unauthorized buildings is as a result of lack of education of the public on planning regulations as well as land users ignorance. Accordingly, a Graphic Editorial (2010) indicated that education on re-planning and the laws regulating buildings must be intensified as many citizenry even do not know that, the Local Government Act 462, sections 51 and 52, make provision that unauthorized developments, which include buildings on any public land, could be stopped (demolished) without notice and the developers surcharged with the cost of demolition.

#### **2.4.4 Professionalism: High Dominance of the Construction Industry by Informal Labour Force.**

Informal labour forms about 80% of all the construction labour force in Ghana, and it's quite surprising that even the formal sector draws it labour from here. Their only form of training is by apprenticeship, where a master (trainer) transfers his knowledge informally to the apprentice (trainee). There is therefore a high tendency of a master transferring a wrong or inadequate skills to the apprentice, who will in turn, transfer them to others. The informal knowledge then becomes widespread and the common knowledge which are used by the informal labour force. The labour force, at times, may be easily influenced by house-owners who want cheap labour to reduce and cut down on

specifications, with the wrong notion of cutting cost and saving money ,without resort to any technical reference (Keteku-Atiemo, 2006); thereby posing serious risks to the quality and safety of the buildings they worked on.

There are instances that houses built by informal labour force are not up to the standard and walls crack up soon after construction; some even don't know how to mix or lay bricks (Davids,2011).Inferring from the above discussions, then without a properly structured form of training and adequate knowledge and skill, buildings will continue to be constructed, not in conformance with building regulations and specifications thus, leading to construction of unauthorized buildings which may pose structural and socio-economic risks (Keteku-Atiemo, 2006).

#### **2.4.5 Land Insecurity**

The opportunity to make money from the sale or lease of lands has facilitated numerous multiple sale of land, conflicts between families, communities, and individuals on land ownership issues, resulting in high incidence of title insecurity and conflict over land in Ghana. Likewise, people have resorted to the use of land guards to secure their interest in land in Ghana (Darkwa and Attuquayefio, 2012).Accordingly, a Graphic Editorial (2010) opined that, some chiefs have been cited in double and triple sale of lands thus, resulting in chaotic situations at times.

Furthermore, Gough and Yankson (2000, cited in Darkwa and Attuquayefio, 2012) observed that, the land market in Ghana is complex and diverse, and it is characterized by a high level of uncertainty and widespread disputes. Accordingly, Freiku (2003) observed that, conditions on allocation of land by landowners (where land owners expect

allocated lands developed within a specific timeframe) and the complexity of lease have been a major cause for the construction of unauthorized buildings. The more devastating instances are where people even link the use of land to ownership. According to a survey by Freiku (2003) and Ali and Sulaiman (2006), once a house was built on a land, one could claim ownership of the land, and there was almost no possibility of being forcefully removed from the area or the land.

#### **2.4.6 Institutional Factors**

According to Smith (1980) and Ali and Sulaiman (2006), ascendency in the construction of unauthorized buildings is as a result of lack of qualified planners, lack of logistics for the planning authorities to work with, discriminatory urban regulations and public spending. Accordingly, Freiku (2003) argued that, this has resulted in unnecessary bureaucracy and delay in issuing building permits. Likewise, United Nations (2007) linked unrealistic zoning regulations, complex legislations, excessive bureaucracy in issuing building permits, and corruption of officials to some of the factors that contribute to construction of unauthorized buildings. Furthermore, Magigi and Majani (2006) argued that, poor policy enforcement, outdated laws, and inadequate capacity of local authorities to provide adequate land plans, could be part of the factors that have contributed to the construction of unauthorized buildings. In another instance, Freiku (2003) asserted that, owing to bureaucracy, cost of building permit, delay in issuing permits, among others, many building owners avoid applying to obtain the required permits before they start their projects. Owusu-Mensah (2003) observed that, institutional inefficiencies has indeed, resulted in indiscriminate construction, to such an extent that, buildings are sited in unauthorized places without restraint.



#### **2.4.7 Physical Factors**

Location and physical characteristics (nature of the land) of certain areas may influence construction of unauthorized buildings. Most people prefer living in central or advantageous areas where they will get easy accessibility to infrastructure, place of work, and urban services, especially health and education (Magalhaes and Eduardo, 2007). Millions of disadvantaged majority in developing countries perceive certain areas, for example urban centres, as places for improving their quality of living because they are likely to have better access to well-paid jobs, better education, better health care and even variety of dishes. This makes such areas or cities a “destination of choice”. This situation has generated a considerable flow of migrants to urban areas or such areas (Hall and Pfeiffer, 2000; Nawagamuwa and Viking, 2003; Adjei Mensah, 2010); as a response to the housing needs of such migrants, who just cannot afford a formal dwelling, they tend to construction of unauthorized buildings (Smith, 1980; Flood, 2000). Furthermore, Adjei Mensah (2010) argued that, there are people who prefer living on marginal lands which are neglected by city authorities; Hence, according to Sietchiping (2000), this explains why many unauthorized buildings are constructed at areas such as found in the deep valleys in Kenya, river banks in Bombay, abandoned waste dumps in Manila, and dangerous slopes in Yaoundé.

#### **2.4.8 Socio-Economic Factors**

The incentive to construct unauthorized buildings is largely based on economic reasons (Lai and Ho, 2001). Accordingly, Weiner (2003) and Kings-Amadi (2004, cited in Adjei Mensah, 2010) asserted that, poverty is often tagged as the leading socio-economic factor that accounts for construction of unauthorized buildings; poor people with large



families can hardly afford to approach authorities for a permit when they build or expand their living unit. Furthermore, Sietchiping (2000) opined that, many unauthorized buildings result from high rent charges and high cost of land, high immigration rate, problems of landlessness, poverty and unemployment. Accordingly, Freiku (2003) argued that high cost in getting land document and building permits influence house-owners to put up unauthorized buildings. More so, Owusu-Mensah (2003), Adjei Mensah (2010) and Adinyira and Anokye (2013) argued that, unwillingness to accept laid down regulations and schemes, amidst population growth account for construction of unauthorized buildings.



**Table2.2: Summary of factors accounting for construction of unauthorized buildings**

Factor	Variable	Author(s)
<b>Political</b>	<ul style="list-style-type: none"> <li>• Lack of political will to enforce building regulations</li> </ul>	Warah(2003);Adams(2012)
	<ul style="list-style-type: none"> <li>• Inadequate policy on housing</li> </ul>	Ali and Sulaiman (2006)
<b>Socio-Economic</b>	<ul style="list-style-type: none"> <li>• High rent</li> </ul>	Sietchiping(2000);Adjei Mensah(2010)
	<ul style="list-style-type: none"> <li>• High cost of land</li> </ul>	Sietchiping(2000);Adjei Mensah(2010)
	<ul style="list-style-type: none"> <li>• High cost in getting land document and building permits</li> </ul>	Freiku (2003)
	<ul style="list-style-type: none"> <li>• Unwillingness to accept laid down regulation</li> </ul>	Owusu-Mensah (2003)
	<ul style="list-style-type: none"> <li>• Population growth</li> </ul>	Adinyira and Anokye (2013)
	<ul style="list-style-type: none"> <li>• Obsolete and contradictory laws</li> </ul>	Adinyira and Anokye (2013)
<b>Legal</b>	<ul style="list-style-type: none"> <li>• Lack of public-private partnership in controlling unauthorized buildings</li> </ul>	Owusu-Mensah (2003)
	<ul style="list-style-type: none"> <li>• Non-punitive sanctions against offenders</li> </ul>	Adinyira and Anokye (2013)
	<ul style="list-style-type: none"> <li>• Overlapping institutional roles and responsibilities</li> </ul>	Ameyibor et al.(2003)
<b>Educational</b>	<ul style="list-style-type: none"> <li>• Ignorance on planning schemes</li> </ul>	Owusu-Mensah (2003)
	<ul style="list-style-type: none"> <li>• Ignorance on building regulations</li> </ul>	Adjei Mensah (2010)
<b>Institutional</b>	<ul style="list-style-type: none"> <li>• Unrealistic zoning</li> </ul>	Owusu-Mensah (2003);United Nations (2007)
	<ul style="list-style-type: none"> <li>• Logistic and capacity gap</li> </ul>	Ameyibor et al.(2003);Magigi and Majani (2006)
	<ul style="list-style-type: none"> <li>• Corruption</li> </ul>	Kumar (2002);Kumar (2012)
	<ul style="list-style-type: none"> <li>• Bureaucracy</li> </ul>	Freiku (2003);United Nations (2007)
	<ul style="list-style-type: none"> <li>• High enforcement cost</li> </ul>	Freiku (2003)
<b>Professionalism</b>	<ul style="list-style-type: none"> <li>• Labour force are easily influenced by house-owners</li> </ul>	Keteku-Atiemo(2006)
	<ul style="list-style-type: none"> <li>• Cheap labour</li> </ul>	Keteku-Atiemo(2006);Davids(2011)
<b>Land insecurity</b>	<ul style="list-style-type: none"> <li>• Litigant land market</li> </ul>	Darkwa and Attuquayefio(2012)
	<ul style="list-style-type: none"> <li>• Multiple sale of land</li> </ul>	Darkwa and Attuquayefio (2012)
<b>Physical</b>	<ul style="list-style-type: none"> <li>• Location of land</li> </ul>	Magalhaes and Eduardo(2007)
	<ul style="list-style-type: none"> <li>• Nature of land</li> </ul>	Magalhaes and Eduardo (2007)

## **2.5 Overview of the National Building Regulations (L.I 1630)**

In exercise of the powers conferred on the Minister responsible for Works and Housing by Section 63 of the Local Government Act of 1993 (Act 462), and in consultation with the Minister responsible for Local Government, the national building regulations of 1996 (LI 1630) were enacted on 27<sup>th</sup> of September, 1996 (Republic of Ghana, 1996). The sections of the building regulations reviewed for the study were application of regulations and building plans (Part I); and plot development (Part II).

### **2.5.1 Application of Regulations and Building Plans**

The national building regulation applies to the erection, alteration or extension of a building as defined (in the building plan), unless otherwise provided in the building regulations of Ghana. An applicant shall satisfy the district planning authority that, he or she has good title to the land relevant to the plans. Otherwise, no approval shall be granted to any applicant who does not have a good title to the land, and, for the purposes of this regulation, good title shall be in accordance with a certificate issued by the chief registrar of land titles or any other agency so authorized. Accordingly, the applicant shall submit to the district planning authority, a certificate signed by a licensed Surveyor to the effect that, the corners of the plot on which the building is to be constructed or sited, have been demarcated on the ground in a permanent manner, in accordance with the site plan (Republic of Ghana, 1996).

More so, the District Planning Authority to which plans have been submitted, may in the exercise of its power under section 64 of the Local Government Act, 1993 (Act 462), grant the building permit in accordance to these regulations and may attach to the permit

any conditions, with respect to the proposed building or work, that is inconsistent with these regulations. This include the condition that, the applicant shall submit such further information or details as may be required by the district planning authority from time to time, as the building or work progresses. The district planning authority may specify in a building permit, the time within which the work so authorized in the permit should be commenced. The period of validity of a building permit shall ordinarily be five years. In the event that the work authorized in the permit is not completed within the time stipulated, the district planning authority may extend the period on application by the applicant or his agent, who must be a person in the building design profession (Republic of Ghana, 1996).

Furthermore, any building or work carried on after the date of expiry of a building permit, or before an application to extend the period of validity has been approved, violates these regulations. A district planning authority may refuse to issue a building permit if the applicant has failed to complete any building or work authorized by a building permit or other approval previously granted to him. Whenever a person applies for a building permit, the district planning authority (DPA) shall notify him within 7 days on the receipt of the application and shall within a period of 3 months, notify the applicant whether the application is granted or refused (Republic of Ghana, 1996).

However, an applicant who is not informed of the grant or refusal of the application, may after the expiry of the 3 months, commence construction on the assumption that the application is acceptable to the DPA. A person to whom a building permit has been issued, referred to in these Regulations as "developer", shall give to the DPA at least forty-eight hours notice in writing indicating the date on which it is intended to begin

work, and of the dates on which the following stages of construction will be ready for inspection by the DPA: *the demarcation of site of the plot and siting of the buildings; the foundations of buildings set out; the foundations excavated and level pegs for concreting; the foundations concreted; the trenches for drainage work excavated to levels and gradients; the drains laid and joined and ready for testing; the reinforcing steel fixed in position before concreting; the concrete shuttering ready for striking; the walls completed to wall-plate level; and the roof frame-work completed before covering* (Republic of Ghana, 1996).

Similarly, no construction work shall be covered until it has been inspected and approved by the DPA. If the procedure laid down in subregulation (1) of section (10) of this regulation are not followed, the DPA may serve a notice requiring the owner to cut into, lay open or pull down as much of the building work as may be necessary to ascertain whether any of the provisions have been complied with. If such notice is not complied with, the DPA may make an application to the nearest court to the place of the building, for an order to cut into, lay open, or pull down any part of the building or work in order to carry out any tests, necessary to ascertain whether or not these regulations have been complied with, and to charge the cost incurred to the owner of the building (Republic of Ghana, 1996).

More so, there shall be issued, in respect of a building completed to the satisfaction of the DPA, a certificate of completion for habitation or use in Form C in Schedule I Part III. A DPA may, for the purpose of giving effect to these regulations, appoint a qualified building inspector within the meaning of these regulations to oversee and inspect daily work on buildings, erections and installations (Republic of Ghana, 1996).



### 2.5.2 Plot Development

Under the 1996 national building regulations (L.I.1630), no site liable to flooding must be built upon without adequate provision for flood control. No building should be erected inside a drain, culvert, or watercourse, under a high tension cable or near a sewer, except that the District Planning Authority (DPA) has approved the building plans. Where any watercourse or ditch is on or abuts on the site of a building, the local authority may require the owner of the land to fill it up wholly or partially, or to substitute a pipe drain or culvert. However, the person shall be aware of the provision of section 13 (1) that, no building shall be erected on a site which has been reclaimed, unless there has elapsed such a period in the opinion of the DPA that, the foundation will be firm and that the erection of buildings on the site will not be inimical to the health and safety of the community (Republic of Ghana, 1996).

Furthermore, under section 14 subregulation (1), no dwelling house shall be erected on a site of smaller area than 450 square meters with a frontage of less than 15 meters except, where the plot is entirely surrounded by roads or lanes, in which case, the plot must be not less than 330 square meters and the frontage not less than 15 meters. Furthermore, under subregulation (2) of section (14), no dwelling house together with its out-buildings must cover a greater area of the plot than the following: single storey detached, 50%; two and three storey detached, 40%; single storey semi-detached, 60%; two and three storey semi-detached, 50%; and two and three storey terrace, 50%; provided the area of the residential building, other than block of residential flats must not exceed 80% of the total area of the plot (Republic of Ghana, 1996).

This suggests that, regardless of the type of the residential building, its total floor area must be within 80% of the total area of the plot. It is therefore default to this regulation should, any residential building exceeds 80% of the total plot area.

Likewise, where a building abuts or adjoins a lane, either at the rear or on the side, the width of the lane shall not be less than 3 metres. Boundary walls shall be erected 2 metres from the building in question; the front wall of the building shall not be more than 5 metres from the edge of a major road or more than 3 metres from the edge of a minor road. Boundary and fence walls shall not exceed 2 metres in height. The front wall or the back wall, if it abuts on a lane or street, shall have ventilation openings with a gross area of not less than 45 percent of the entire surface area. Where more than one building is constructed on the same plot, the distance between the buildings should not be less than 5 metres. No building shall be allowed to intrude into areas reserved for improvement lines (Republic of Ghana, 1996).

## **2.6 Building Permits and Unauthorized Buildings in Ghana**

Building permits are building development consents granted to any developer or person by a statutory authority to construct buildings in approved locations, within a set time frame and in line with local or national building regulations. Likewise, Building permit is said to be a legal document, covering any building for which its plans are found to be suitable for implementation and eventually, human habitation. Building permits are commonly granted to cover permanent buildings for residential, industrial and commercial purposes. It worth emphasizing that, building permits provide the necessary guarantees that, a proposed building is wealthy enough to be constructed at the chosen site; that a proposed building or related structure is to a large extent suitable for

construction. More so, it guarantees that ,the proposed land on which the building shall be sited is ideal, the material specifications for the building are satisfactory, the general architectural engineering and planning standards have been met, and that in every way they are conducive whether for residential, industrial, commercial, recreational or worship activities. Some organizations like Port, Volta River Authority, State Housing Corporation, among others, have some level of inputs to permits that are granted however, in almost all cases, the local authorities within which the above agencies operate command final authority, in so far as general physical development and building permits are concerned (GhanaDistricts.com,2006).

The Local Government Law of 1993 (Act 462) specifies that, before constructing a building, one should obtain a permit from the District Planning Authority (DPA). The DPA may give notice in writing to the owner; occupier or developer of the premise to relocate or remove the building on one condition that: the construction of the building has already began or completed without a permit, or is in contravention to a by-law passed by the District Assembly. The owner upon receiving the notice is expected to write a statement personally signed by him to the planning authorities citing sufficient cause or reasons as to why the building should not be relocated, removed, altered or pulled down less. The DPA shall, by notice, order the owner, occupier or developer within a specified time to relocate, alter or pull down the structure. If the owner fails to comply with the order within the specified time, the DPA shall carry out the relocation, alteration or pulling down, and recover the expenses from the developer as if, it was a debt due from that person to the District Assembly (Republic of Ghana, 1993).

More so, under section 64 (6) of the same Act 462, any person, who infringes the terms of a permit granted, commits an offence and is liable to conviction to a fine not exceeding two hundred penalty units, or to a term of imprisonment not exceeding six months, or to both. Under section 61, an allocation of land is unauthorized if the purpose or use for which the allocation is made is contrary to a provision of an approved development plan. A landowner should therefore, not subdivide or allocate a land for use, development or occupation in a town or city, or the suburb of it, or in an area where there is an approved planning scheme prepared under an enactment, except with the concurrence of the DPA, or a sub-district body acting on behalf of the DPA (Republic of Ghana, 1993).

In spite of the existing legislations and institutional arrangement to check construction of unauthorized buildings, Aryeetey *et al.* (2007) observed that, institutions are not living up to expectation because of shortages of qualified human resources, inadequate funding, poor logistics and wide spread corruption. Accordingly, Owusu-Mensah (2003) emphasized that, the town and country planning department planning schemes are inefficient and as a result, developers take undue advantage of such to build on any available land.

## **2.7 Strategies for Curbing Construction of Unauthorized Buildings**

Construction of unauthorized buildings is as a result of multiple factors (Sietchiping, 2004); it therefore requires multiple strategies to curb or mitigate this practice. Accordingly, Ioannidis *et al.* (2007) argued that, classic administrative control procedures alone cannot curb the menace. This stems from the argument that, classic administrative control procedures have been characterized by high inefficiencies,



especially when public administration suffers from lack of employees, bureaucracy, and increased responsibilities. More so, Kumar (2012) emphasized on corruption and bribery, as the key challenge that has characterized classic administrative control procedures.

Consequently, Ioannidis *et al.* (2007) opined that, in addition to classic administrative control procedures, automating the procedure of permit acquisition, as well as monitoring and controlling of buildings, is very paramount to early detection of unauthorized buildings. Similarly, GNA (2013) opined that, fostering Public-Private Partnership to monitor and control construction of buildings in the nation, is a sure means to facilitate easy detection of construction of unauthorized buildings. Furthermore, Aryeetey *et al.* (2007) argued that, institutions do not live up to expectation because of poor logistics as well as, inadequate human and financial resources. Therefore, district planning authorities should be well resourced and well paid, to enhance the efficiency of their work and also for them to exhibit high sense of professionalism (Kumar, 2002; Aryeetey *et al.*, 2007).

Nonetheless, Adinyira and Anokye (2013) argued that, unauthorized buildings occur as a result of non-punitive sanctions against offenders; the argument further elaborated that, even in cases where offenders are sanctioned, the sanctions are not punitive enough due to some contradictory provisions in the building and the planning regulations, such as the prescription of varied sanctions for the same offence. As a result, Ioannidis *et al.* (2007) opined that, Government ought to apply high penalties in case of detection of construction of unauthorized buildings. Again, sound update or review of land-use planning and building regulations, in accordance with changing



needs, so as to include contemporary issues, and series of other fiscal and social measures that are necessary for mitigating construction of unauthorized buildings (Ioannidis *et al.*, 2007; GNA, 2013). Likewise, Adjei Mensah (2013) observed that, low level of awareness of the populace on the national building regulations, contribute largely to construction of unauthorized buildings. As a measure to address this problem, he opined that, there is the need to intensify public campaigns and even inclusion of lessons on the L.I 1630 in Ghana education curriculum, so as to educate all citizenry, with regards to the provisions of the national building regulations.

According to UN-habitat (2011), there is a deficit of legal buildings to house mankind. Accordingly, the problem is compounded by lack of political will by governments to initiate and sustain affordable housing for all classes of the populace (Ali and Sulaiman, 2006). As a result, Cheema (1993), opined that government should intervene by providing or facilitating affordable buildings accessible to all class of persons. Accordingly, Andoni (2007) and Vlaevsky (2013), called for regularizing/legalizing of existing structurally sound unauthorized buildings as means of addressing the deficit of authorized buildings. Again, Keteku-Atiemo (2006) opined that, skilled artisans such as masons, carpenters, steel benders, among others, should be licensed and regulated by the assembly, so as to offer them training to upgrade their skills in their knowledge area as well as, sensitizing them on the provisions of the National Building Regulations. These artisans often behave unprofessionally by being influenced by house-owners to cut down on specifications with the motive of cutting down cost.

The table below summarizes the relevant strategies to curb construction of unauthorized buildings.

**Table2.3: A summary of strategies for curbing construction of unauthorized buildings**

<b>Author(s)</b>	<b>Strategies</b>
<i>Adinyira and Anokye (2013)</i>	<i>Government must apply high penalties in case of detection of construction of unauthorized buildings</i>
<i>Ali and Sulaiman (2006); Aryeetey et al.(2007)</i>	<i>Planning authorities should be well resourced and well paid</i>
<i>GNA (2013)</i>	<i>There should be public-private partnership in curbing unauthorized buildings</i>
<i>Ioannidis et al. (2007)</i>	<i>Automating monitoring and detection of new buildings by authorities</i>
<i>GNA (2013)</i>	<i>Review of outdated and contradictory building and planning laws</i>
<i>Adjei Mensah (2010);Kumar (2012)</i>	<i>Intensified public education on building regulations</i>
<i>Cheema (1993)</i>	<i>Government should provide or facilitate affordable buildings accessible to all class of persons</i>
<i>Vlaevsky (2013); Andoni(2007)</i>	<i>Regularizing/legalizing of existing, structurally sound unauthorized buildings</i>
<i>Keteku-Atiemo (2006)</i>	<i>Skilled artisans-masons, carpenters and steel benders should be licensed and regulated by the assembly</i>

## **SUMMARY**

This chapter discussed the concept of unauthorized buildings, characteristics of unauthorized buildings, factors influencing construction of unauthorized buildings, overview of the National Building Regulations, Building Permits and unauthorized buildings in Ghana and Strategies for curbing construction of unauthorized buildings.

## CHAPTER THREE

### RESEARCH METHODOLOGY

#### 3.1 Introduction

Blumberg *et al.* (2005) indicated that, the next important step in any research process after study of literature, is deciding on the most suitable research methodology. Accordingly, methodology denotes the way in which we discover how to go about a particular task of finding out what we believe to be true (Christou *et al.*, 2008).

More so, this research was carried out to meet the aim of the study, aided by a number of inter-related objectives namely:

1. to assess the extent of unauthorized buildings in Asakae;
2. to identify factors influencing construction of unauthorized buildings in Asakae;
3. to assess the awareness of house-owners on the national building regulations; and
4. to identify strategies that will curb the practice of construction of unauthorized buildings.

The chapter provided details on the approach that the study followed; details on the various techniques and methods that were used to select respondents to participate in the study. Furthermore, it described the study area, the study design, data and sources, the target population, sample size for the study, sampling techniques employed, the research instrument used, data processing and analysis, and the ethical issues arising from the research.

### 3.2 Study Area

Asakae has experienced tremendous population growth due to the influx of professionals from the oil industry. According to Acquah-Harrison (2004), with the passage of time, the increase in population size has played a key role in encouraging the construction of unauthorized buildings in the area. In the quest to relieve the pressures, additional rooms to buildings have been constructed on most buildings.

Accordingly, this is partly due to its strategic location from Takoradi. It shares boundaries with Whindo, Mpatado, Adentamu, Kwesiminstim and Anaji. Within the catchment area of the town are hospitals, schools, market and other businesses. Many residents in Asakae have been extending their apartment in order to meet the high demand for accommodation in the town; however, these extensions are without permit from the Metropolitan Assembly. There are illegal extensions to buildings that even stem into roads.

Many illegal additions to buildings in Asakae are due to the fact that, many house - owners resort to building the ground floor and continuing with the other floors later, possibly due to economic reasons. Most often, it happens that, by the time they continue with the other floors and rooms the permit duration has expired; and in agreement with the building and planning regulations, any building carried out after the expire of a permit is illegal or unauthorized (Republic of Ghana, 1996).

The Local Government Law (Act 462) of 1993 has given power to the Assembly, (STMA), as the main authority for implementing development plans. However, there are buildings being constructed even on public rights and places including school, market

and sanitation sites, open spaces, nature reserves, parks and roads without restraint (Freiku, 2003). Accordingly, there are buildings sited along path of drains. Furthermore, Obour (2013) observed that, some landlords are putting up new buildings without permit because the assembly does not monitor activities in the area.

Nonetheless, if this practice is not curbed, it has the tendency of inducing flood, leading to congested town, spatial disorders, among others. Asakae was chosen for the study because, though there is a well-planned composite scheme for the area, the area is proliferated with unauthorized buildings.

### **3.3 Research Design**

A research design is largely a plan of procedures for data collection and analysis (Nkyi, 2012). More so, the research design offers the researcher, a direction to follow from the commencement to the completion of the study (Nkyi, 2012). Research design is necessitated by a research strategy; and the design leads you to your research method (Creswell, 2003 and Ahmad *et al.*, 2013). The research design could be experimental, longitudinal /cross-sectional survey, case study and/or comparative (Wahyuni, 2012 and Ahmad *et al.*, 2013). However, each research design has unique conditions that require its use.

This study adopted the cross-sectional design or study. It is one of the most common and well-known studies. It gives the researcher the opportunity to select either the entire population or a subset, and from these individuals, data are collected to help answer research questions of interest. It is called cross-sectional because the information that is gathered about research participants represents what is prevailing at only one point in time or at a defined point in time (Olsen and George, 2004; Levin, 2014).



Accordingly, cross-sectional study was adopted because data were collected from the study population or sampled population just once, within a specific period (from January, 2014 to March, 2014). In addition, cross-sectional survey was very good for this study because, Kahraman *et al.* (2006) argued that, there is the likelihood of the legal status of unauthorized buildings to change with time. Thus, an unauthorized building today may well be legalized or regularized tomorrow. Accordingly, making once an unauthorized building an authorized building by authorities. Therefore, time is of essence.

More so, this research followed a quantitative approach. It adopted survey questionnaire after thorough literature review.

### **3.4 Data and Sources**

This study employed the use of both primary and secondary data. Primary data were collected using questionnaire and observation form. The primary data collected included, socio-demographic characteristics of respondents, factors responsible for the construction of unauthorized buildings, the awareness of house-owners on building regulations, the extent of construction of unauthorized buildings and strategies to curb construction of unauthorized buildings. More so, secondary data were gathered from books, journals, newspapers, articles, reports, the internet, as well as conference and working papers that were relevant to the research topic under investigation.

### 3.5 Study Population

The study population consisted of the following:

- House-owners;
- Head of works department, STMA;
- Head of Physical planning department, STMA; and
- Assembly-members in the STMA.

Due to unavailability of most current data on the research population, the research population was based on data from the 2000 Population and Housing Census, obtained from the Western Region Statistical Department, Takoradi (Ghana Statistical Service, 2012). Thus, the research population size (number of houses) was about 693. Furthermore, the head of Physical planning department, the head of works department, and the Assembly-members in the Assembly were purposively added, so to collect data relating to strategies to curb construction of unauthorized buildings.

Involving the house-owners was important because, they were the actual subjects who were involved in construction of buildings in Asakae. They were asked questions about the factors that had influenced construction of unauthorized buildings and the national building regulations (*c.f* Adjei Mensah, 2010; Adinyira and Anokye, 2013).

### 3.6 Sample Size for the Study

There are several approaches one could use to determine the sample size of a study. These, included: using a census for small populations; imitating a sample size of a similar study; using published tables; and lastly applying a formula (e.g. Kish formula, Fisher *et al.* formula, among others) (Israel, 1992; Nkyi, 2012). It was therefore essential

for the targeted population and sample size to be clearly defined by the researcher, having in mind the set objectives of the research. In order to get a sample size of the population of Asakae, the researcher adopted Fisher *et al.* (1998) formula for determining sample sizes (c.f Leone *et al.*, 2003; Adjei Mensah, 2010; Inyama *et al.*, 2011). This formula was given as:

$$nf = n / (1 + (n/N))$$

**Where:**

- $nf$  = the desired sample size (when population is less than 10,000),
- $n$  = the desired sample size (when population is greater than 10,000),
- $N$  = the estimate of the target population size.

In other to get  $n$ , Fisher *et al.* (1998) again provided another formula (c.f Leone *et al.*, 2003; Adjei Mensah, 2010; Inyama *et al.*, 2011); which was:

$$n = (z^2 pq) / d^2$$

**Where:**

- $n$  = the desired sample size (when the population is greater than 10,000)
- $z$  = the standard normal deviation, usually set at 1.96 which corresponds to 95 percent confidence level;
- $p$  = the proportion of the target population having particular characteristics;
- $q = 1.0 - p$ ; and
- $d$  = the degree of accuracy desired, this is usually set at 0.05

With (z) statistic being 1.96; degree of accuracy (d) at 0.05 percent and the proportion of the target population with similar characteristic (p) at 80 percent which is equivalent to 0.80, then “n” is:  $n = ((1.96^2) (0.80) (0.20)) / (0.05^2) = 245.86 \approx 246$ .

Accordingly, houses were used to select house-owners because houses were appropriate avenues through which household heads and house house-owners can easily be located (c.f Melesse, 2006; Adjei Mensah, 2010; Adinyira and Anokye, 2013). Substituting the calculated figure for  $n$  into the formula, the sample size for the study was calculated as followed:

$$nf = 246 = \frac{246}{(1 + (246/693))} = 181.55 \approx 182$$

A calculated sample size of 182 respondents was obtained. Thus, 182 house-owners were selected for the study. In addition to this, fifty-two (52) key informants namely: the head of physical planning department, STMA; the head of works department, STMA; and the Assembly-members in the Sekondi-Takoradi Metropolis were purposively included in the study, making the total respondents, 234.

**Table 3.1: Total sample population for the study**

<i>Unit</i>	<i>Sample Size</i>
<i>House-owners</i>	<i>182</i>
<i>Head of Physical Planning Department, STMA</i>	<i>1</i>
<i>Head of Works Department, STMA</i>	<i>1</i>
<i>Assembly-members, STMA</i>	<i>50</i>
<b><i>TOTAL</i></b>	<b><i>234</i></b>

### 3.7 Sampling Techniques

Non probability sampling techniques such as the snow ball and the purposive were adopted for this research.

### **Snow Ball**

The study focused on house-owners who were living in Asakae at the time of the research. Due to the difficulty in locating some of the house owners, the snow-ball sampling technique was used to select house-owners because, there was no sampling frame to select the house owners from (*c.f* Adjei Mensah, 2010). With the snow-ball method, one subject who is located gives the researcher the name of another subject, who in turn provides the name of a third, the third gives the name of the fourth and so on, until the required sample size is covered. This strategy is viewed as a response to overcome the problems associated with concealed or hard-to-reach populations. Thus, in the context of this research, one house-owner was selected, and through him/her other house-owners were reached, until the required sample size for house-owners was obtained. It is devoid of one house-owner being interviewed twice.

### **Purposive**

The purposive sampling method was used in selecting the key informants, namely the head of Physical Planning Department, the head of Works Department and the Assembly-members in the Sekondi-Takoradi Metropolitan Assembly. They play vital role in the local governance of the Assembly: preparing planning schemes, as well as inspection and monitoring of construction of buildings in the Metropolis.

### **3.8 Research Instruments**

In accordance with the objectives of the research, desk survey (Literature review), questionnaire and observation checklists were used to collect the primary data. These instruments were chosen because they were the most appropriate. The desk survey is an



essential aspect of the research since it sets the pace for the development of questionnaire (*c.f* Fadhley, 1991; Kissi, 2013).

### **3.8.1 Questionnaire**

The questionnaire was designed in line with the objectives of the study. Generally, the way in which questions are asked in the questionnaire affects the quality of responses. It is therefore imperative that, not only the right questions are asked, but also the questions are understood and asked in the right way (Oppenheim,1996). Subsequently, poor questionnaire tends to increase number of non-response in a survey (Nkyi,2012). Furthermore, questionnaire ought to be kept in simple unambiguous language, devoid of technical words to curtail prospective errors from respondents (Mangiome,1995).

Accordingly, the questionnaire was designed such that it would be appealing to respondents, easy to read, understood, completed and coded. The design incorporated the use of both close-ended questions and scaled-response questions. Close-ended questions had more than one response options whilst, the scaled-response measured the strength or intensity of the respondent's opinions.

Similarly, questionnaire was structured to capture information such as the socio-demographic background of respondents, Awareness of House-owners on the National Building Regulations, Factors contributing to construction of unauthorized buildings, Uncertified construction works, Works without permit and Strategies to curb construction of unauthorized buildings. The contents of the questionnaire incorporated all the variables developed from the literature review. The questionnaire was administered to house-owners through personal delivery. Accordingly, this offered the

researcher the opportunity to easily adapt to the questions and also pick up non-verbal cues from the respondents (*c.f* Larvrakas, 1993; Adinyira and Anokye, 2013).

### **3.8.2 Observation Checklist**

Observation checklist or building inspection form, specifically, the non-participant observation technique, was another instrument that was used in the study. In this kind of observation, the observer studies the respondents from outside the group without participating in the activities of the respondents (Adjei Mensah, 2010). In the case of Asakae, buildings which were of importance to the study were observed. Buildings that were observed were based on the researcher's own choice. Observation checklists were completed during the physical inspection of the buildings in order to ascertain the presence and extent of unauthorized buildings. Data collected included: characteristic of unauthorized buildings, number of unauthorized buildings, and size of buildings. Features at Asakae community that were observed were the unauthorized buildings.

### **3.9 Data Processing and Analysis**

The data collected from the field were cross-checked and edited to ensure that there were no mistakes in the responses and that, the information given were relevant. Afterwards, the data were coded and fed into the computer. The Statistical Product for Service Solutions (SPSS version 16) and Microsoft Excel 2010 were used to process and analyze the questionnaire. Data generated from the survey was further analyzed, using factor analysis technique, relative importance index, one-sample t-test and descriptive statistics (percentages and frequencies). Factor analysis was also employed with the aim of finding groups of related variables. Thus, reducing large number of variables into a

more easy to understand framework. Relative Importance Index was employed to rank and assess the level of awareness of house-owners on the national building regulations. The one-sample t-test aided in analyzing the strategies to curb construction of unauthorized Buildings. Descriptive statistics (percentages and frequencies) aided in analyzing data from the Observation Checklist.

### 3.9.1 Relative Importance Index

Relative importance index was employed when assessing house-owners awareness on the National Building Regulations (L.I 1630). The respondents were asked to rate the various statements to indicate the extent to which they agree to the statements on the questionnaire, based on a five-point Likert scale, where 1 represented Strongly Disagree, 2 – Disagree, 3 – Undecided or Uncertain, 4 – Agree; and 5 – Strongly Agree. In the analysis of the extent of their agreement to the various statements, in order to ascertain their level of awareness on the National Building Regulations, Relative Importance Index (RII) was used (c.f Fugar and Agyakwah-Baah, 2010). Individual frequencies were multiplied by their corresponding values of factors under each rank of 1-5. The sum was divided by the product of the total number of respondents and the highest figure or integer on the five-point Likert-type scale (5) (c.f Fugar and Agyakwah-Baah, 2010; Nkyi, 2012). For a five-point response item, RII produces a value ranging from 0.2 – 1.0 (c.f Badu *et al.*, 2013). In the calculation of the Relative Importance Index (RII), the formula below was used (c.f Badu *et al.*, 2013):

$$RII = \frac{\Sigma W}{A * N}$$

Where,  $W$ : weighting given to each statement by the respondents and ranges from 1 to 5;  $A$  – Higher response integer (5), and  $N$  – total number of respondents.

### 3.9.2 Factor Analysis

Several factors account for construction of unauthorized buildings (Sietchiping, 2004; United Nations 2007; Ioannidis *et al.*, 2007). As a result, during the literature review in chapter two, many factors (variables) were identified to have contributed to construction of unauthorized buildings. The variables were grouped into eight (8) major factors based on their inter-relation. These eight (8) major factors were Professionalism, Political, Land Insecurity, Institutional, Education or Educational, Socio-Economic, Physical and Legal. Accordingly, to empirically ascertain the factors responsible for the construction of unauthorized buildings at Asakae, the factors (variables) were evaluated using Factor Analysis (Principal Component Analysis). In view of this study, twenty-four (24) key variables which were identified in the literature review were presented to the house-owners to solicit their views. On each of the 24 variables, respondents were asked to indicate the extent to which that variable influenced people to construct unauthorized buildings, based on a five-point Likert scale where: 1-Highly Insignificant, 2-Insignificant, 3-Neither, 4-Significant and 5-Highly Significant.

#### 3.9.2.1 Factor Analyses of Dependent Variables

The fundamental concept underlying factor analysis, is the ability to statistically manipulate the empirical relationship among several variables, to help reveal conjectural constructs of the relationships (Kreuger and Neumann, 2003). This means that, factor analysis is very useful for reducing a mass of information into an economical



description, for easy explanation and analysis, by selecting and grouping related variables into their common factor patterns (Rummel, 1970). Accordingly, due to the relatively large number of the dependent variables, (i.e. factors that account for construction of unauthorized buildings), involved in the study, it was deemed imperative to use factor analysis to establish which of the variables could be measuring aspects of the same underlying dimensions. Furthermore, factor analysis is useful for finding clusters of related variables and therefore, ideal for reducing a large number of variables into a more easily understood framework (*c.f* Hair *et al.*, 1998; Norussis, 2000; Ahadzie, 2007; Kissi, 2013). During factor extraction, the shared variance of a variable is partitioned from its unique variance and error variance to reveal the underlying factor structure; hence, only shared variance appears in the solution.

#### **3.9.2.2 Initial Considerations**

Factor analysis depends on the correlation matrix of the variables involved. Usually, the correlations need a large sample size before they are stabilized. The reliability of factor analysis is reliant on the size of the sample. A minimum of ten observations per variable is necessary to avoid computational difficulties (Decoster, 1998). A suitable choice is offered by SPSS to check whether the sample is big enough: the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO test). According to existing literature, the value of the KMO must be greater than 0.5 (*c.f* Kissi, 2013). More so, the Bartlett test of Sphericity is used to establish the potential correlations suggesting that clusters do exist in the factors.



### 3.9.2.3 Preliminary Analysis

In factor analysis, it is customary to first look at the inter-correlation between variables; with regards to the correlation matrix, two things are important: the variables have to be inter-correlated but they should not correlate too highly, extreme multi-collinearity and singularity, as this can cause problems when determining the unique contribution of the variables to a factor (Field, 2005). Inter-correlation is checked in SPSS by using the KMO test and Bartlett's test of Sphericity whilst, multi-collinearity is checked by using the determinant of the correlation matrix. KMO statistic varies between 0 and 1. A value of zero (0) shows that the sum of partial correlations was large relative to the sum of correlations; indicating diffusion in the pattern of correlations thus, factor analysis is most likely inappropriate. When a value is close to 1, it shows that, patterns of correlations are relatively compact thus, factor analysis would give reliable factors. Values ranging between 0.8 and 0.9 are great according to Hucheson and Sofronica (1999, cited in Field, 2005).

Bartlett's test indicates the strength of the relationship among variables. It tests the null hypothesis that, the original correlation matrix is an identity matrix. Thus, with identity matrix, all of the diagonal elements are one (1), and all off diagonal elements are zero (0). Accordingly, for factor analysis to be applied, the relationships among the pairs of variables should be linear. Furthermore, the sample should be large enough to yield the reliable estimates of the correlations among the variables. If the R-matrix is an identity matrix, then all correlation coefficients would be zero (0) (c.f Field, 2005).

The desire therefor, is for the Bartlett's test to be significant (i.e. must have a significance value of less than 0.05). A significant test indicates that the R- matrix is not

an identity matrix and therefore there are some relationships between variables that should be included in the analysis (*c.f* Field, 2005).

The determinant of the matrix is used in testing for multi-collinearity or singularity. The determinant or the R-matrix should be greater than 0.00001. Accordingly, Field (2005) opined that, if it is less than the value, the variables that correlate very highly should not be included in the analysis. However, no two variables correlate very highly. Mild collinearity according to Field (2005), is not a problem for factor analysis and hence, the data is appropriate for factor analysis.

After all necessary tests of reliability and survey instrument, survey size adequacy and population matrix were satisfied; the data set was subjected to factor analysis using Principal Component Analysis (PCA) with varimax rotation. Preceding the Principal Component Analysis, the communalities involved were first established. Communalities show how much of the variance in the variables has been accounted for by the extracted factors, and it is extremely useful in deciding which factors to finally extract. The conventional rule regarding communality values is that; extraction values (eigenvalues) of more than 0.50 at the initial iteration shows that the variable is significant; thus should be included in the data for further analysis or otherwise removed (Field, 2005).

### **3.9.3 One-Sample T-Test**

In analyzing the results of the strategies for curbing construction of unauthorized Buildings, the one sample t-test was used to ascertain the relative significance of the variables. According to Ahadzie (2007), the one sample t-test is normally used to establish whether a sample mean is significantly deviant from a hypothesized mean.

Preliminary descriptive analysis such as mean scores, standard deviations and standard mean error of each of the factors were used to ascertain the outcome of the survey. For this survey, the rating scale adopted credited higher ratings of 1 and 5 to Important and Very Important strategy. More so, an arbitrary mean was fixed at an appropriate level of 3.5 and the significance level was set at 95% in accordance with predictable risk levels (c.f Ling, 2002; Ahadzie, 2007; Kissi, 2013).

The standard error related to the standard deviation of sample means. It was a measure of how representative a sample was likely to be of the population (Field, 2005). If the standard error was large, it was an indication that, there existed lot of variability between means of different samples. However, a small standard error was an indication that, most sample means were similar to the population mean, and that, the sample was likely to be an accurate reflection of the population. Accordingly, the significance level was set at 95% in accordance with predictable risk levels (Cohen, 1992, cited in Kissi, 2013).

### **3.10 Ethical Issues**

Permission was sort from the Assembly (STMA) and the Elders of Asakae before the field work begun. The researcher before administering the questionnaire introduced himself to the respondents to avoid impersonation. Accordingly, the purpose of the study was made known to the respondents. Participation in the study was not compulsory but based on the willingness of respondents. Anonymity of respondents was highly esteemed. During the field work, all forms of identification including names, addresses and telephone numbers of respondents were avoided.

## SUMMARY

As noted, this chapter outlined key elements that were very primary in deciding a suitable research methodology to address any research objective. This chapter identified and explained, among other things, the sources of data, research instrument, sampling technique, data processing and ethical issues. The chapter that follows presents the results of the study.

# KNUST



## **CHAPTER FOUR**

### **RESULTS AND DISCUSSIONS**

#### **4.1 Introduction**

This chapter provided a detailed explanation of the main survey results and relating its findings to Ghana. The sections of the chapter are : respondents' awareness of Building Regulations of Ghana, factors that influence construction of unauthorized buildings, the extent of construction of unauthorized buildings and strategies to curb construction of unauthorized buildings. The quantitative analysis involved the use of descriptive statistics (percentages and frequencies), factor analysis (principal component), relative importance index and one sample t-test.

#### **4.2 Respondents' Awareness of Building Regulations of Ghana**

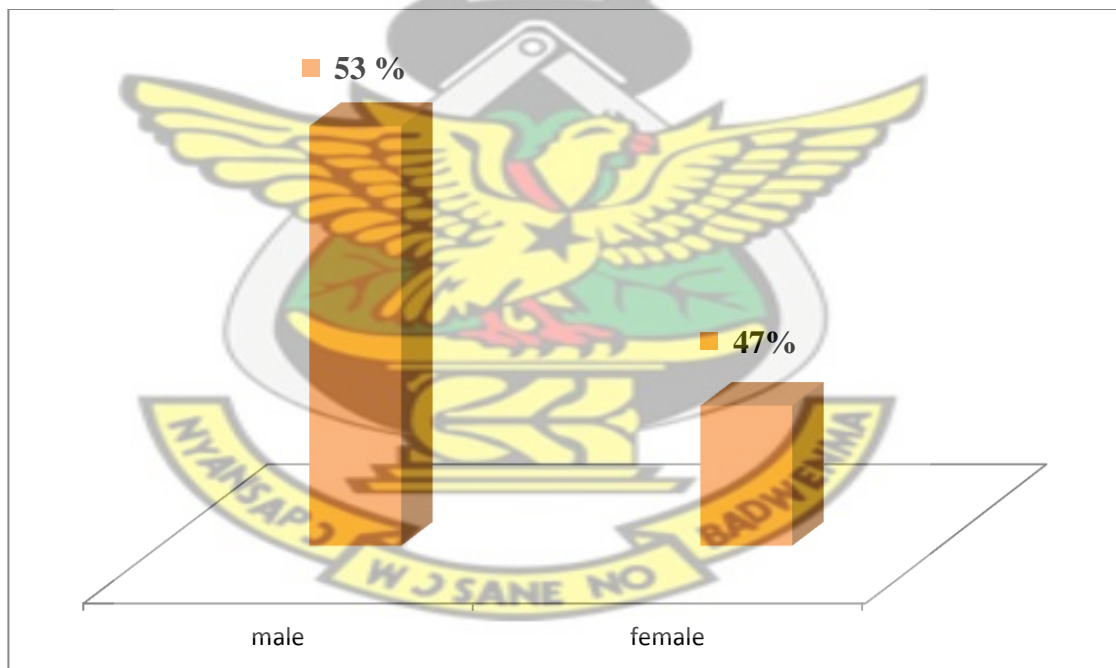
##### **4.2.1 Socio-Demographic Characteristics of Respondents**

This section briefly explains the background of respondents. It is imperative because, the background of the respondents will help generate confidence in the reliability of data collected; and eventually the findings of the study. Accordingly, Adinyira and Anokye (2013) argued that, it is always important to have a fair idea of the respondents so as to situate the responses within context. As a result, the relevant socio-demographic variables of respondents that this research covered included age, sex, level of education and employment (occupational status) (c.f Adjei Mensah, 2010; Melesse, 2006).



#### 4.2.1.1 Sex of Respondents

According to Melesse (2006) and Adjei Mensah (2010), males have been identified as the main actors involved in construction of unauthorized buildings. Accordingly, the results from **Fig. 4.1** confirmed this observation as, (53) percent of the respondents were males and the remaining (47) percent were females. This could be attributed to the nature of the cultural systems in Ghana, where males are expected to work to provide for the family, in terms of provision of shelter and other necessities, whilst females usually stay at home and take care of the activities of the household. However, the respondents were not gender bias; the sampling technique ensured inclusion of all members of the population being sampled for the study.



**Fig. 4.1** Sex of respondents

#### 4.2.1.2 Age of respondents

Age is important variable to consider with respect to construction of unauthorized buildings because, most of residents and owners of unauthorized buildings are young adults who are in their active working age (Adjei Mensah, 2010). Accordingly, respondents were asked to indicate their age. The age of the respondents were categorized in five year intervals in order to know the particular age range that contains the majority of respondents. The categorization was in line with the 2008 Ghana Demographic and Health Survey's (GDHS) categorization of the age-groups of Ghanaians (*c.f* Adjei Mensah, 2010). Most of the respondents aged from 38-42 representing 46.7% with none of the respondents ageing below 28 years (Table 4.1). This supports the observation of Adjei Mensah (2010) that, majority of residents and owners of unauthorized buildings are young adults who are in their active working age. More so, the distribution of *Table 4.1* suggested that, matured persons provided the needed information for this research (*c.f* Adinyira and Anokye, 2013).

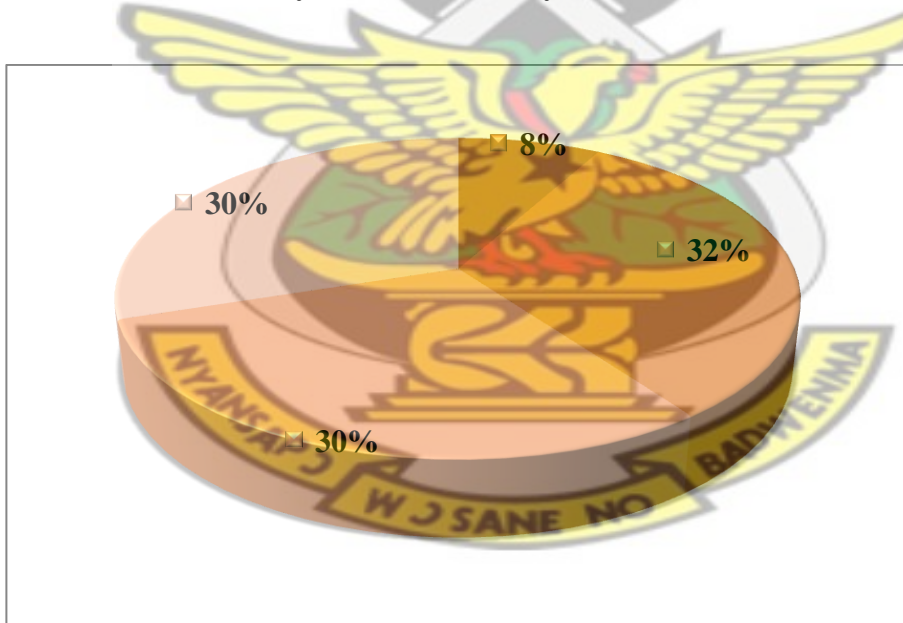
**Table 4.1 Age of respondents**

Age(years)	Frequency	Percentages (%)
up to 22	0	0
23-27	0	0
28-32	6	3.3
33-37	8	4.4
38-42	85	46.7
43-47	26	14.3
48-52	19	10.4
53-57	12	6.59
58 and above	26	14.3
Total	182	100

#### 4.2.1.3 Level of education

According to Nawagamuwa and Viking (2003) and Melesse (2006), education is a key factor that influences construction of unauthorized buildings. Owners of unauthorized buildings are basically illiterate and/or have low levels of education.

Contrary to the assertion of Nawagamuwa and Viking (2003) and Melesse (2006), this research revealed that, even the educated constituted most of the owners of unauthorized buildings. As shown in *Fig.4.2*: 30% of the house-owners had secondary school education; 30% tertiary; 32% basic and only 8% had no formal education. This perhaps could be attributed to the effect of Free Compulsory Basic Education Programme being practiced in Ghana, which aimed at making it compulsory for every Ghanaian to attain at least basic education by the 2005 (Ministry of Education, 2003).



*Fig. 4.2 Level of education*

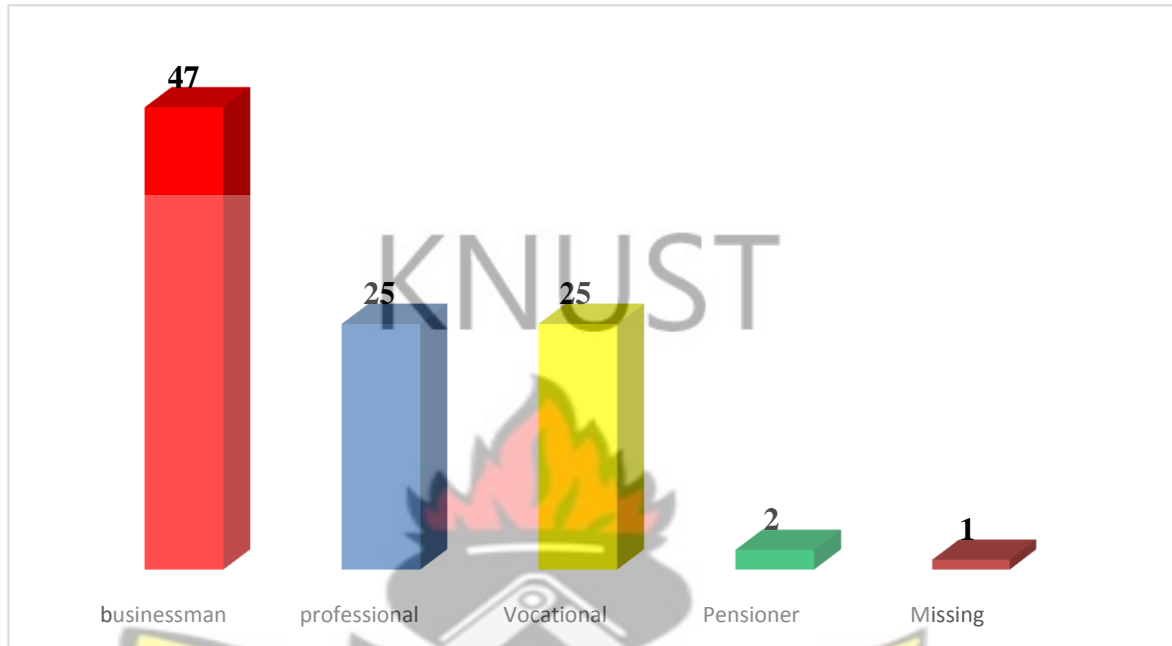
#### 4.2.1.4 Occupation of respondents

The occupation of a respondent amongst other things, determines a respondent's level of income. The level of income influences a person's ability to build, consequently, becoming a house owner. A study by Global Development Research Centre (GDRC) (2003, cited in Adjei Mensah, 2010) revealed that, the occupational status of house-owners invariably influences construction of unauthorized buildings; accordingly, Melesse (2006) opined that, most of unauthorized buildings are largely being put up by economically well to do persons in the society.

In view of this, respondents were asked to indicate their occupational status. The categories were 'businessman' referring those who were self-employed; 'professional' refers to those with formal training from recognized tertiary institutions (for instance, Teachers, Nurses, Doctors and the likes), 'vocational' referred to those who had been trained by master-apprenticeship means and lastly, 'pensioner'. Accordingly, *Fig. 4.3* summarized the occupation status of the respondents: (47%) were 'businessman' ;( 25%) were 'professional' ;( 25%) were 'vocational' and (2%) were 'pensioner'.

Likewise, affirming the findings of GDRC (2003, cited in Adjei Mensah, 2010) that, the occupational status of house-owners invariably influences construction of unauthorized buildings. Those who were self-employed, 'businessman', built more than the other categories; this might be attributed to the result of entrepreneurship. The 'professional' often find themselves in the public sector of Ghana. However, large sections of workers in the public sector are not well paid thus, explaining their inability to own buildings. It was, however, not surprising that (47%) of the house owners were 'businessman'. This

affirmed Melesse (2006) opinion that, most of unauthorized buildings are largely being put up by economically well to do persons in the society.



***Fig. 4.3 Occupational status of respondents***

#### **4.2.1.5 Discussion: Awareness on building regulations**

According to Adjei Mensah (2010) and Adinyira and Anokye (2013), construction of unauthorized buildings occur due to ignorance of people about building regulations. To verify this at Asakae, 182 sampled house-owners were asked to answer certain questions which were formulated from the national building regulations (L.I.1630). The L.I 1630 is a building regulation that regulates construction of buildings in Ghana. The questions were categorized under two main headings namely: awareness on building permit, and awareness on plot development, which related to relevant sections of the L.I.1630.



**Table 4.2: Awareness on building regulations-Building permit (Relative Importance Index-RII)**

No	BUILDING PERMIT Statement(Variable)	Rating					$\Sigma W$	RII	Rank
		1	2	3	4	5			
1	One must be notified on the receipt of his/her permit application by 7 days and decision on his/her permit application by 3 months	8	72	27	4	71	604	0.664	2 <sup>nd</sup>
2	Anyone who wants to build any structure must inform the Planning Authorities on the date he intend starting	17	89	32	16	28	495	0.544	6 <sup>th</sup>
3	I can proceed to build if I do not hear of the outcome of my building permit after 3 months	59	42	22	25	34	479	0.526	7 <sup>th</sup>
4	There is validity period after which my permit expires	6	57	57	8	54	593	0.652	3 <sup>rd</sup>
5	Every stage of construction must be certified by Authorities before another stage's works commences	45	37	39	14	47	527	0.579	4 <sup>th</sup>
6	A building completed to the satisfaction of the District Planning Authority would be issued with a certificate of completion for use before you assume occupancy	42	72	24	13	31	465	0.511	9 <sup>th</sup>
7	Once I have building permit I can choose to construct any building on the land	13	28	41	61	39	631	0.693	1 <sup>st</sup>
8	Planning authorities can stop me from building, if I don't have the required land documents	5	101	16	33	27	522	0.574	5 <sup>th</sup>
9	Approval is needed for extension, modification and additions to buildings	42	65	29	18	28	471	0.518	8 <sup>th</sup>

**Table 4.3: Awareness on building regulations-Plot development (Relative Importance Index-RII)**

No	PLOT DEVELOPMENT Statement(Variable)	Rating					$\Sigma W$	RII	Rank
		1	2	3	4	5			
1	No site liable to flooding must be built upon without adequate provision for flood control.	38	66	23	24	31	490	0.538	4 <sup>th</sup>
2	No building should be erected inside/over a drain, culvert, or watercourse, under a high tension cable or near a sewer	17	89	32	16	28	495	0.544	3 <sup>rd</sup>
3	Boundary walls shall be erected 2 metres from the building in question	39	42	8	36	57	576	0.633	1 <sup>st</sup>
4	Total floor area of residential buildings must be within 80% of the total area of the plot	42	59	22	25	34	496	0.545	2 <sup>nd</sup>
5	No building shall be allowed to intrude into areas reserved for improvement lines	71	72	27	4	8	352	0.387	5 <sup>th</sup>

#### **Awareness of building permit**

House-owners demonstrated low level of awareness on building permit at Asakae. Most of them expressed views that were contrary to the L.I.1630, in relation to the various questions that were asked on building permit as shown in *Table 4.2*. A clear look at the rating showed that, only a few of the respondents agreed to the statements from the L.I.1630. Accordingly, to rank the level of awareness on L.I.1630, the variable, *once I have building permit I can choose to construct any building on the land*, ranked 1<sup>st</sup> with RII value of 0.693. In addition to this, *one must be notified on the receipt of his/her permit application by 7 days and decision on his/her permit application by 3 months*, ranked 2<sup>nd</sup> with RII value of 0.664. Ranking 3<sup>rd</sup> was the variable, *there is validity period after which my permit expires*, with RII value of 0.652.

In the same vein, the statement, *every stage of construction must be certified by Authorities before another stage's work commences* ranked 4<sup>th</sup> with RII value 0.579. Furthermore, the statement, *Planning authorities can stop me from building, if I don't have the required land documents*, ranked 5<sup>th</sup> with a RII value of 0.574. More so, the statement, *Anyone who wants to build any structure must inform the Planning Authorities on the date he intend starting*, ranked 6<sup>th</sup> with RII value of 0.544. Again, the statement, *I can proceed to build if I do not hear of the outcome of my building permit after 3 months*, ranked 7<sup>th</sup> with RII value of 0.526.

In addition, the statement, *Approval is needed for extension, modification and additions to buildings*, ranked 8<sup>th</sup> with RII value of 0.518. Lastly, *a building completed to the satisfaction of the District Planning Authority would be issued with a certificate of completion for use before you assume occupancy*, ranked 9<sup>th</sup> with RII value of 0.511. The results from Table 4.2 indicated that, house-owners at Asakae had low level of knowledge with respect to building permit. This probably may be due to lack of education on building permit by the planning authorities in the Secondi-Takoradi metropolis. Thus, supporting the observations of Adjei Mensah (2010) and Adinyira and Anokye (2013) that, construction of unauthorized buildings occur due to ignorance of people about planning and building regulations.

### **Awareness on plot development**

The level of awareness of house-owners on plot development at Asakae followed similar pattern as the awareness on building permit. Most of the answers that the house-owners gave were contrary to the provisions of the National Building Regulations. Accordingly, Table 4.3 gave a summary of the answers given by respondents. The L.I.1630 clearly

emphasizes that: *Boundary walls shall be erected 2 metres from the building in question*, however, this statement ranked 1<sup>st</sup> with RII value of 0.633.

In addition to this, the statement, *Total floor area of residential buildings must be within 80% of the total area of the plot* ranked 2<sup>nd</sup> with RII value of 0.545. Furthermore, the statement, *No building should be erected inside/over a drain, culvert, or watercourse, under a high tension cable or near a sewer* ranked 3<sup>rd</sup> with RII value of 0.544, while the statement, *No site liable to flooding must be built upon without adequate provision for flood control*, ranked 4<sup>th</sup> with RII value of 0.538. Accordingly, the statement, *No building shall be allowed to intrude into areas reserved for improvement line* ranked 5<sup>th</sup> with RII value of 0.387. The distributions of *Table 4.3* indicated that, the level of awareness of house-owners about plot development at Asakae is very low.

More so, from *Tables 4.2* and *4.3*, all variables were considered to significantly influence the construction of unauthorized buildings in Asakae. However, those variables with RII below 0.700 moderately influence construction of unauthorized buildings (*c.f* Badu *et al.*, 2013). In addition to this, it could be concluded that, following the distributions of *Tables 4.2* and *4.3*, the level of awareness on the national building regulations (L.I.1630), exhibited by house-owners at Asakae was very low. More so, the finding supported Adjei Mensah (2010) and Adinyira and Anokye (2013) that, construction of unauthorized buildings occurs due to ignorance of people about the national building regulations. Accordingly, it is expedient, that awareness creation be vigorously intensified by the Sekondi-Takoradi Metropolitan Assembly to avert this course.



### 4.3 Factors Influencing Construction of Unauthorized Buildings at Asakae

Accordingly, with reference to the data presented in *Table 4.4*, the data from the survey for the factors that account for construction of unauthorized buildings was adequate. The data had 54 observations per variable with the value of KMO greater than 0.5.

The KMO achieved a sufficiently high value of 0.708 suggesting that the sample size was adequate for factor analysis (*c.f* Field, 2000; Ahadzie, 2007). Given the high KMO achieved in this case, there was no need to produce anti-image matrices to further check the adequacy of the sample size. However, the Bartlett test of Sphericity was undertaken. In this case, a Sphericity value of 2739.398 was realised and the associated significance (Sig.) was 0.000.

**Table 4.4: KMO and Bartlett's test**

<b>Kaiser-Meyer-Olkin Measure of Sampling Adequacy.</b>		<b>0.708</b>
Bartlett's Test of Sphericity	Approx. Chi-Square	2739.398
	Df	276
	Sig.	.000

After all necessary tests of reliability and survey instrument, survey size adequacy and population matrix were satisfied; the data set was subjected to factor analysis using principal component analysis (PCA) with varimax rotation. Preceding the principal component analysis, the communalities involved were first established. Accordingly, from *Table 4.5*, the average of the extractions was 0.728. The conventional rule regarding communality values was that; extraction values (eigenvalues) of more than 0.50 at the initial iteration showed that the variable was significant; thus should be included in the data for further analysis or otherwise removed (*c.f* Field, 2005; Kissi, 2013).



**Table 4.5: Communalities**

<b>Factors</b>	<b>Initial</b>	<b>Extraction</b>
<i>location of land</i>	<i>1.000</i>	<i>.654</i>
<i>nature of land</i>	<i>1.000</i>	<i>.487</i>
<i>lack of political will to enforce building regulations</i>	<i>1.000</i>	<i>.445</i>
<i>Inadequate policy on housing</i>	<i>1.000</i>	<i>.511</i>
<i>high rent</i>	<i>1.000</i>	<i>.521</i>
<i>high cost of land</i>	<i>1.000</i>	<i>.493</i>
<i>high cost in getting land documents</i>	<i>1.000</i>	<i>.478</i>
<i>unwillingness to accept laid down regulations</i>	<i>1.000</i>	<i>.702</i>
<i>population growth</i>	<i>1.000</i>	<i>.488</i>
<i>ignorance on planning schemes</i>	<i>1.000</i>	<i>.742</i>
<i>ignorance on building regulations</i>	<i>1.000</i>	<i>.658</i>
<i>unrealistic zoning</i>	<i>1.000</i>	<i>.646</i>
<i>logistic and capacity gap</i>	<i>1.000</i>	<i>.467</i>
<i>Corruption</i>	<i>1.000</i>	<i>.715</i>
<i>Bureaucracy</i>	<i>1.000</i>	<i>.781</i>
<i>high enforcement cost</i>	<i>1.000</i>	<i>.701</i>
<i>obsolete and contradictory laws</i>	<i>1.000</i>	<i>.565</i>
<i>lack of public private partnership in controlling unauthorized buildings</i>	<i>1.000</i>	<i>.591</i>
<i>non punitive sanctions against offenders</i>	<i>1.000</i>	<i>.571</i>
<i>overlapping institutional roles and responsibilities</i>	<i>1.000</i>	<i>.572</i>
<i>labour force are easily influenced by house owners</i>	<i>1.000</i>	<i>.270</i>
<i>cheap labour</i>	<i>1.000</i>	<i>.405</i>
<i>litigant land market</i>	<i>1.000</i>	<i>.760</i>
<i>multiple sale of land</i>	<i>1.000</i>	<i>.417</i>

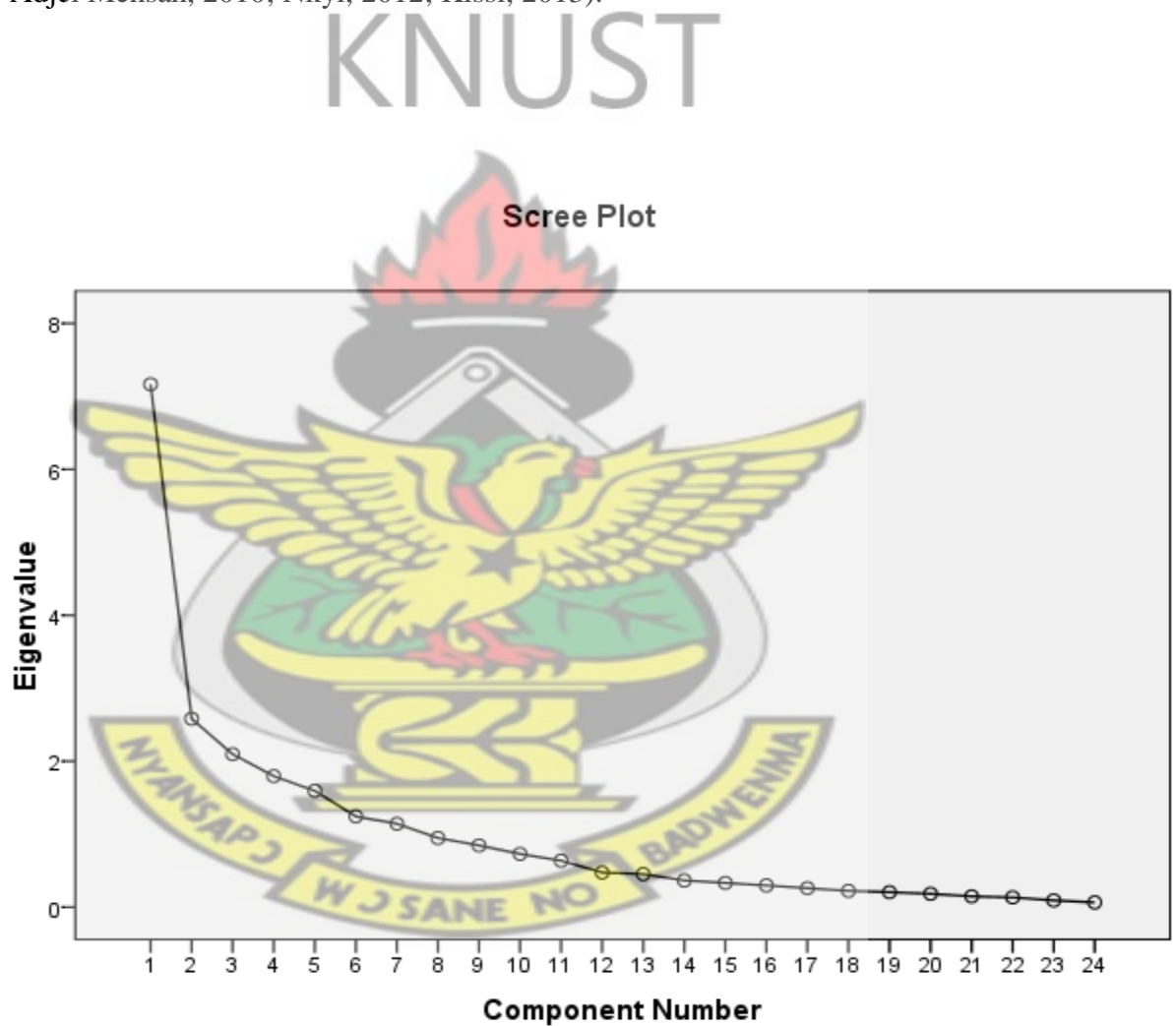
Extraction Method: Principal Component Analysis

However, in applying the latent root criterion on the number of principal components to be extracted suggested that, four (4) components should be extracted because, their respective eigenvalues were greater than one (c.f Kissi, 2013).

**Table 4.6: Component Transformation matrix**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.167	29.862	29.862	7.167	29.862	29.862	4.637	19.323	19.323
2	2.582	10.759	40.620	2.582	10.759	40.620	3.747	15.613	34.936
3	2.096	8.734	49.354	2.096	8.734	49.354	3.043	12.681	47.617
4	1.795	7.478	56.832	1.795	7.478	56.832	2.212	9.215	56.832
5	1.594	6.642	63.474						
6	1.243	5.178	68.652						
7	1.142	4.758	73.410						
8	.946	3.943	77.354						
9	.845	3.522	80.876						
10	.729	3.037	83.913						
11	.636	2.650	86.563						
12	.474	1.974	88.537						
13	.452	1.884	90.421						
14	.365	1.521	91.942						
15	.331	1.381	93.324						
16	.297	1.239	94.563						
17	.259	1.081	95.644						
18	.222	.925	96.569						
19	.205	.852	97.422						
20	.183	.762	98.183						
21	.147	.613	98.796						
22	.133	.553	99.349						
23	.092	.383	99.732						
24	.064	.268	100.000						

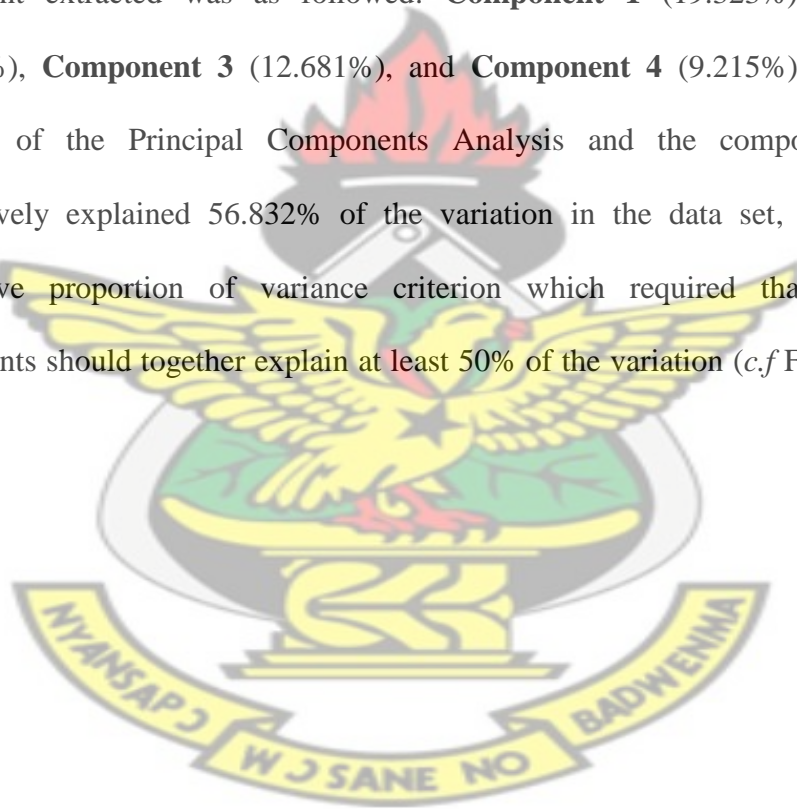
Accordingly, from **Table 4.6** and the scree plot in **Figure 4.4**, four (4) components with eigenvalues greater than 1.0 were extracted using the factor loading of 0.50 as the cut-off point. In all, the four (4) extracted components cumulatively explained 56.832 % of the variation in the data, which confirms to the proportion of variance criterion, which says that, the extracted components should together explain at least 50% of the variation (c.f Adjei Mensah, 2010; Nkyi, 2012; Kissi, 2013).



**Fig. 4.4 Scree Plot**

The purpose of rotation is to reduce the number of factors on which the variables under investigation have high loadings thus, achieving simple structure. According to Chris

(2004), the results after factor rotation indicate the amount of variance between the variables that each factor accounts for; thus, provides loadings of all the variables on each factor. Accordingly, after rotation, three variables were deleted from the original 24 variables. The reasons were that these variables either did not load well or did load significantly on more than one scale (*c.f* Adjei Mensah, 2010; Nkyi, 2012). However, each of the remaining 21 variables had a factor loading of 0.5 and above, which was acceptable (*c.f* Field, 2005; Kissi, 2013). The total variance explained by each component extracted was as followed: **Component 1** (19.323%), **Component 2** (15.613%), **Component 3** (12.681%), and **Component 4** (9.215%). Thus, the final statistics of the Principal Components Analysis and the components extracted, cumulatively explained 56.832% of the variation in the data set, and fulfilled the cumulative proportion of variance criterion which required that, the extracted components should together explain at least 50% of the variation (*c.f* Field, 2005; Kissi, 2013).



**Table 4.7 Rotated Component Matrix<sup>a</sup>**

<b>Rotated Component Matrix<sup>a</sup></b>				
<b>Factors</b>	<b>Component</b>			
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Location of land			.787	
Nature of land			.674	
lack of political will to enforce building regulations			.539	
Inadequate policy on housing			.649	
high rent				.715
high cost of land				.648
high cost in getting land documents				.563
Unwillingness to accept laid down regulations		.619		
ignorance on planning schemes		.857		
ignorance on building regulations		.707		
unrealistic zoning			.702	
Corruption	.836			
Bureaucracy	.871			
high enforcement cost	.775			
obsolete and contradictory laws	.657			
lack of public private partnership in controlling unauthorized buildings	.534			
Non-punitive sanctions against offenders	.557			
overlapping institutional roles and responsibilities		.573		
labour force are easily influenced by house owners	.515			
cheap labour				.617
litigant land market		.845		
<b>Extraction Method: Principal Component Analysis.</b>				
a. Rotation converged in 5 iterations				



Accordingly, components were assigned with labels upon critical examination of inherent relationships among various factors under the identified components (*c.f* Nkyi, 2012; Kissi, 2013). Consequently, based on an examination of the inherent relationships among the variables under each component, together with factors with the highest loadings, the following labels and interpretation were provided; **component 1** is termed *Institutional factors*; **component 2**, *Educational factors*; **component 3**, *Physical factors*; **component 4**, *Socio-economic factors*, as the main factors that account for construction of unauthorized buildings in Asakae. The following section discussed each component individually.

#### **4.4 Discussion of Component Results**

##### **4.4.1 Component 1: Institutional factors**

The seven extracted as success criteria for component 1 were corruption (83.6%), bureaucracy (87.1%), high enforcement cost (77.5%), obsolete and contradictory laws (65.7%), lack of public private partnership in controlling unauthorized buildings (53.4%), non-punitive sanctions against offenders (55.7%), and labour force are easily influenced by house owners (51.5%). The number in parenthesis indicated the respective factor loadings; from *Table 4.6*, this cluster accounted for 19.323% of the variance. This supports the observation Owusu-Mensah (2003) that, institutional inefficiencies account for construction of unauthorized buildings. According to Freiku (2003), institutional bureaucracy compels many house-owners not to acquire building permit before they even start their building. Owusu-mensah (2003) observed that, the situation appears to be more disturbing as private land developers have consistently ignored laid down

drawings and plans and continue to build haphazardly (Owusu-mensah, 2003).It is therefore important that institutional factors are immediately addressed so as to prevent people from building in an unauthorized manner.

#### **4.4.2. Component 2: Educational factors**

Component 2 accounted for 15.613% of the variance. The respective loading factors were unwillingness to accept laid down regulations (61.9%), ignorance on planning schemes (85.7%), ignorance on building regulations (70.7%), overlapping institutional roles and responsibilities (57.3%), and litigant land market (84.5%). Subsequently, this component was labelled *Education factors*. Accordingly, this finding supports the observations of Adjei Mensah (2010) and Adinyira and Anokye (2013) that, unauthorized buildings occur due to lack of education or enlightenment and ignorance of people about planning schemes and building regulations. Similarly, Owusu-Mensah (2003) observed that, to a large extent, people have disregarded planning schemes and building regulations; thus, rendering the land market a very litigant one (Gough and Yankson, 2000, cited in Darkwa and Attuquayefio, 2012).

It is expedient that education factors are giving the necessary attention by the Sekondi-Takoradi metropolitan Assembly to avert this course.

#### **4.4.3 Component 3: Physical factors**

Component 3 consisted of Location of lands (78.7%), Nature of land (67.4%), Lack of political will to enforce building regulations (53.9%), Inadequate policy on housing (64.9%) and Unrealistic zoning (70.2%) ; thus ,accounting for (12.681%) of variance and accordingly, labelled as *Physical factors*. This supports the observation of

Magalhaes and Eduardo (2007) that, physical characteristics such as, location and nature of the land of certain areas, may influence construction of unauthorized buildings, as most people prefer living in central or advantageous areas where they will get easy accessibility to infrastructure, place of work, and urban services, especially health and education.

Therefore, in the absence of adequate policy on housing, lack of political will to enforce building regulation amidst unrealistic zoning would mean that, people would be at liberty to build without following the due processes of law; thus, contributing to increase in construction of unauthorized buildings.

#### **4.4.4 Component 4: Socio-economic factors**

Component 4 accounted for (9.215%) of the variance and comprised of high rent (loading factor 71.5%), high cost of land (loading factor 64.8%), high cost in getting land documents (loading factor 56.3%) and cheap labour (loading factor 61.7%). This supports the findings of Sietchiping (2000) and Ioannidis *et al.* (2007) that, construction of unauthorized buildings in developing countries occur largely due to socio-economic factors. Adjei Mensah (2010) threw more light on these socio-economic factors by indicating that many unauthorized buildings are as a result of high rent charges and high cost of land.

Owing to the high cost in getting land documents (Freiku, 2003); Adjei Mensah (2010) indicated that, there is high incidence of title insecurity and conflict over land in Ghana.

As a result, people have resorted to immediately building on lands they have paid for, though they do not have building permit, in order to secure their interest in the land; ascribing to the observation of Ali and Sulaiman (2006) that, once a house is built on a

land, one could claim ownership of the land, and there was almost no possibility of being forcefully removed from the area or the land. According to Keteku-Atiemo (2006), developers most often go in for cheap labour and end up cutting down on specifications with the wrong notion of cutting cost and saving money.

Hence, socio-economic factors have densely contributed to increasing number of unauthorized buildings in the nation. It is important that the socio-economic variables are addressed to avert the course of construction of unauthorized buildings in Ghana.

#### 4.5 Extent of Unauthorized Buildings in Asakae

As part of the specific objectives of this research was, to assess the extent of unauthorized buildings in Asakae. Accordingly, literature was reviewed and three characteristics of unauthorized buildings were identified. They were:

- unauthorized extension and/or additions to an already existing building;
- Unauthorized siting of buildings (i.e. buildings with or without permits and are illegally or wrongly sited or located); and
- Unauthorized modification and uncertified construction.

Accordingly, **Table 4.8** presented the frequency and percentage of the various categories of unauthorized siting of buildings; *Area of building exceed 80% of the total plot area* was the dominant category of unauthorized siting of buildings in the buildings surveyed. It was found in 46.7% of all the buildings surveyed. This was followed by *Buildings sited on access roads/lanes*, as 16.5% of the buildings surveyed were found to have been sited on access road/lane. The third category of unauthorized siting was *Buildings sited on agriculture land/high tension*. This was found to constitute 4.4% of the buildings



surveyed whilst *Buildings sited on waterways* constituted 1.6% of the buildings surveyed.

**Table 4.8: Unauthorized siting of buildings**

No	Unauthorized Siting	Observations	Frequency	Percentage
1	Area of building exceed 80% of the total plot area	Found	85	46.7
		Not Found	97	53.3
2	Buildings sited on access roads/lanes	Found	30	16.5
		Not Found	152	83.5
3	Buildings sited on waterways	Found	3	1.6
		Not Found	179	98.4
4	Buildings sited on agriculture land/high tension	Found	8	4.4
		Not Found	174	95.6

Likewise, another characteristic of construction of unauthorized buildings is *uncertified construction*. Accordingly, **Table 4.9** revealed the presence of unauthorized buildings, with respect to *uncertified construction*. According to section (10) of the L.I.1630, it is clear that no construction work shall be covered until it has been inspected and approved by the District Planning Authority. More so, **Table 4.9** presented the various stages of construction, in conformation with the L.I.1630, which must be certified and approved by the District Planning Authority.

However, apart from *Demarcation of the plot and siting of the buildings*, which 72.5% of respondents indicated that it was duly certified, 100% of the respondents however indicated that, the other stages of construction were never inspected and certified. They included: *foundations of buildings set out, foundations excavated and level pegs for concreting, foundations concreted, trenches for drainage work excavated to levels and gradients, reinforcing steel fixed in position before concreting, walls completed to wall-plate level and roof frame-work completed before covering*. This supports the findings of



Kahraman *et al.* (2006) that, most of building works have gone unchecked; and according to Ali and Sulaiman (2006), it is as a result of lack of logistics by the planning authorities. Thus, the survey evidenced the existence of unauthorized buildings. Therefore, the need to develop pragmatic measures to curb this practice.

**Table 4.9: Uncertified construction**

No	Uncertified Construction	Response	Frequency	Percentage
1	Demarcation of the plot and siting of the buildings	YES	132	72.5
		NO	50	27.5
2	Foundations of buildings set out	YES	0	0
		NO	182	100
3	Foundations excavated and level pegs for concreting	YES	0	0
		NO	182	100
4	Foundations concreted	YES	0	0
		NO	182	100
5	Trenches for drainage work excavated to levels and gradients	YES	0	0
		NO	182	100
6	Reinforcing steel fixed in position before concreting	YES	0	0
		NO	182	100
7	Walls completed to wall-plate level	YES	0	0
		NO	182	100
8	Roof frame-work completed before covering.	YES	0	0
		NO	182	100

Likewise, from *Table 4.10*: 37.9% of the sampled buildings were without permit or approval from STMA. Again, 31.3% of the buildings had extensions that were done without approval or permit from the authorities. Unauthorized extension to buildings suggests expanding an existing building horizontally without approval or permit from the appropriate authorities. From the same table, 36.8% of the buildings have had modification to their original building plans. However, the modifications were done without appropriate permit or approval thus, rendering it unauthorized. Again, unauthorized additions accounted for 2.7 % of the buildings inspected. Unauthorized

additions denote buildings which have been vertically expanded without approval or permit from authorities. Thus, **Table 4.10** evidenced the extent of construction of unauthorized buildings in Asakae.

**Table 4.10: Buildings with permit, unauthorized extensions, additions and modification.**

No	Description	Response	Frequency	Percentage
1	Buildings with permit	YES	113	62.1
		NO	69	37.9
2	Unauthorized extension	YES	57	31.3
		NO	125	68.7
3	Unauthorized modification	YES	67	36.8
		NO	115	63.2
4	Unauthorized additions	YES	5	2.7
		NO	177	97.3

#### 4.6 Strategies for Curbing Construction of Unauthorized Buildings

As part of the specific objectives of this research was, *to identify strategies that will curb the practice of construction of unauthorized buildings*. In view of this, during the literature review in chapter two, nine (9) key factors (variables or strategies) were identified to be very relevant in curbing construction of unauthorized buildings. Accordingly, to empirically ascertain the factors that will help eliminate the construction of unauthorized buildings in the metropolis, the nine (9) key variables, which were identified during literature review, were presented to the key informants to solicit their views. Accordingly, it was considered that, information of this kind would provide some basis to have an insight into the strategies to curb construction of unauthorized buildings in Ghana.

Similarly, the research was interested in strategies, in order of importance, to curb construction of unauthorized buildings. Hence, the mean score of the variables was

ranked accordingly (*c.f* Adinyira and Anokye, 2013; Kissi, 2013). Furthermore, out of the fifty-two (52) questionnaire that were administered, only fifty-one (51) were retrieved representing 98% and they were used for the analysis.

#### **4.6.1 Status of respondents**

The questionnaire was administered to Assembly-members, the head of Physical Planning Department and the head of Works Department, STMA to indicate the level of importance they attach to the strategies to curb construction of unauthorized buildings. A total number of forty-nine (49) representing 96.08% of the total fifty-one (51) were Assembly-members whereas, two (2) number, representing 3.92% of the total number of respondents, occupied the status as the head of physical planning department(PPD) and the head of works department. These were the stakeholders/key informants who were directly involved in the local governance of the Sekondi-Takoradi metropolis, thus, it was important that their views were sort so as to curb construction of unauthorized buildings.

Likewise, from **Table 4.11**, six out of the nine variables had mean values above the test mean of 3.5, it was reasonable therefore to conclude that, they constituted the strategies that would curb construction of unauthorized buildings. The standard error related with all the means were closer to zero indicating that, the sample chosen was an accurate reflection of the population. More so, from the distribution in **Table 4.11**, all the standard deviation values were less than 1.0 suggesting that, there was little variability in the data collected as well as, consistency in agreement among the respondents. Based on the descriptive statistics, it could be decided that the variables identified as strategies for

curbing construction of unauthorized buildings, through the literature review, reflected the consensus of the respondents (i.e. major stakeholders/key informants)

**Table 4.11: One-Sample statistics showing mean scores summary of strategies to curb unauthorized building construction**

No	Strategies	N	Mean scores	Std. Deviation	Std. Error Mean
1	Government must apply high penalties in case of detection of construction of unauthorized buildings	51	4.667	.554	.078
2	Automating permit acquisition, monitoring and detection of new buildings by authorities	51	4.373	.599	.084
3	There should be public-private partnership in curbing unauthorized buildings	51	4.529	.578	.081
4	Planning authorities should be well resourced and well paid	51	3.314	.678	.095
5	Regularizing/legalizing of existing, structurally sound unauthorized buildings	51	2.196	.800	.112
6	Skilled artisans-masons, carpenters and steel benders should be licensed and regulated by the assembly	51	2.039	.720	.101
7	Review of outdated and contradictory building and planning laws	51	4.353	.627	.088
8	Intensified public education on building regulations	51	4.118	.711	.100
9	Government should provide or facilitate affordable buildings accessible to all class of persons	51	3.843	.54305	.076

More so, from **Table 4.12**, the t-test showed the mean values (i.e., the test value) of the population mean,  $t$ , which was the one sample t-test,  $Df$ , which was the degree of freedom and the significance (that is, p-value). This p-value provided the basis for a statistical decision to be made as to whether or not the population mean and sample



mean were equal. From the t-test table, the p-value was for two-tailed test and since the study is interested in one-tailed test, the p-values were divided by two.

**Table 4.12: One-Sample t-test of strategies to curb unauthorized building**

Test Value = 3.5							
No	Strategies	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
						Lower	Upper
1	Government must apply high penalties in case of detection of construction of unauthorized buildings	15.045	50	.000	1.16667	1.0109	1.3224
2	Automating permit acquisition, monitoring and detection of new buildings by authorities	10.408	50	.000	.87255	.7042	1.0409
3	There should be public-private partnership in curbing unauthorized buildings	12.718	50	.000	1.02941	.8668	1.1920
4	Planning authorities should be well resourced and well paid	-1.962	50	.055	-.18627	-.3769	.0044
5	Regularizing/legalizing of existing, structurally sound unauthorized buildings	-11.633	50	.000	-1.30392	-1.5291	-1.078
6	Skilled artisans-masons, carpenters and steel benders should be licensed and regulated by the assembly	-14.489	50	.000	-1.46078	-1.6633	-1.258
7	Review of outdated and contradictory building and planning laws	9.717	50	.000	.85294	.6766	1.0292
8	Intensified public education on building regulations	6.202	50	.000	.61765	.4176	.8177
9	Government should provide or facilitate affordable buildings accessible to all class of persons	4.512	50	.000	.34314	.1904	.4959

The descriptive analysis of the results gave indication that, the respondents agreed with the identified factors to be the strategies for curbing construction of unauthorized



buildings. Nonetheless, there was the likelihood that these observations might be due to chance, rather than being the true reflection of the entire population (*c.f* Kissi, 2013). As a result, it became necessary to test the data with an appropriate statistical method; therefore, the mean scores were compared to a hypothesized mean of 3.5, to know the level of importance respondents regarded the strategies for curbing construction of unauthorized buildings.

Accordingly, the strategies were ranked with their mean scores as shown on **Table 4.13**; *Government must apply high penalties in case of detection of construction of unauthorized buildings* ranked the most important strategy. Likewise, *there should be public-private partnership in curbing unauthorized buildings* ranked second; this strategy makes monitoring of construction of buildings, in a particular neighborhood, a joint responsibility of the citizenry and the planning authority. This will efficiently help track down unauthorized buildings as the citizenry complements the efforts of the inspectorate division, which is understaffed and under resourced (Aryeetey *et al.*, 2007). Again, this will make the public feel part of the zoning of any area for construction; therefore, feel burdened to abide by the zoning (Owusu-Mensah, 2003). This will eliminate zonings that are unrealistic. More so, the partnership will efficiently foster, according to Ioannidis *et al.* (2007), sound update of land-use planning with regards to changing needs.

*Automating permit acquisition, monitoring and detection of new buildings by authorities* ranked the third important strategy for curbing construction of unauthorized buildings. According to Ioannidis *et al.* (2007), this system will foster periodic automatic monitoring and detection of new buildings in large areas. Thus, with field

control on specific locations, the immediate detection of unauthorized buildings becomes possible even before their completion. As a result, measures against their construction could be taken more easily and quickly. This strategy would also decrease the current high ratio of inspector-to-zone that has characterized metropolitan assemblies in Ghana. Thus, tracking down all unauthorized buildings using a coordinated system. Accordingly, this has the tendency of drastically reducing bureaucracy and corruption that has characterized operations of planning authorities (Kumar, 2002; Freiku, 2003).

The fourth important strategy was *Review of outdated and contradictory building and planning laws*. According to GNA (2013), this will make the planning and building laws more current to address contemporary issues and new trends in construction of buildings. The fifth important strategy was *intensified public education on building regulations*. This will create awareness on the existing national building regulation thus, there will be new breed of house-owners, over a period, who will build to conform to existing building regulations. Accordingly, Kings-Amadi (2004, cited in Adjei Mensah, 2010) observed that, lack of education on building regulations contributes densely to construction of unauthorized buildings.

More so, ranked sixth is, *Government should provide or facilitate affordable buildings accessible to all class of persons*. This will make legal housing accessible and affordable to all classes of people; because, a report by UN-habitat (2011) and Adjei Mensah (2013), has indicated a huge shortage of legal housing units or residential buildings to cater for the rising human population of the world at large, with the problem been severe in developing countries, of which Ghana is of no exception this

development; accordingly, Cheema (1993) and Ali and Sulaiman(2006) opined that, government interventions are best in addressing legal housing shortage. The seventh ranked important strategy is *Planning authorities should be well resourced and well paid*. According to Aryeetey *et al.* (2007), institutions do not live up to expectation because of poor logistics, and inadequate human and financial resources; accordingly, Kumar (2002) and Kumar (2012) observed that, this has contributed to many of the officials being corrupt; thus, if they are well paid and resourced, it has the tendency of reducing corruption and making the authority better equipped to track down unauthorized buildings.

*Regularizing/legalizing of existing, structurally sound unauthorized buildings* ranked eighth. This will also help eliminate the deficit of legal housing unit. Ranked ninth important strategy is, *skilled artisans-masons, carpenters and steel benders should be licensed and regulated by the assembly*. This strategy will eliminate unskilled labour from the construction sector, who exhibits low sense of professionalism and are easily influenced by house-owners to change specifications incorporated in building permits, with the intent of cutting down cost. In the same vein, it offers the Assembly the opportunity to efficiently organize knowledge upgrading programmes to artisans who undertake construction. In addition to this, artisans could easily be traced to works they might have executed which is not in consonance with the provisions of the national building regulations and accordingly sanctioned when deemed necessary.

**Table 4.13: Summary of mean scores showing results of 1-tailed test and ranking**

<i>No</i>	<i>Strategies</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Sig. (1- tailed)</i>	<i>Ranking</i>
<i>1</i>	<i>Government must apply high penalties in case of detection of construction of unauthorized buildings</i>	<i>4.6667</i>	<i>.55377</i>	<i>.000</i>	<i>1</i>
<i>2</i>	<i>Automating permit acquisition, monitoring and detection of new buildings by authorities</i>	<i>4.3725</i>	<i>.59869</i>	<i>.000</i>	<i>3</i>
<i>3</i>	<i>There should be public-private partnership in curbing unauthorized buildings</i>	<i>4.5294</i>	<i>.57803</i>	<i>.000</i>	<i>2</i>
<i>4</i>	<i>Planning authorities should be well resourced and well paid</i>	<i>3.3137</i>	<i>.67794</i>	<i>.000</i>	<i>7</i>
<i>5</i>	<i>Regularizing/legalizing of existing, structurally sound unauthorized buildings</i>	<i>2.1961</i>	<i>.80049</i>	<i>.028</i>	<i>8</i>
<i>6</i>	<i>Skilled artisans-masons, carpenters and steel benders should be licensed and regulated by the assembly</i>	<i>2.0392</i>	<i>.72002</i>	<i>.000</i>	<i>9</i>
<i>7</i>	<i>Review of outdated and contradictory building and planning laws</i>	<i>4.3529</i>	<i>.62685</i>	<i>.000</i>	<i>4</i>
<i>8</i>	<i>Intensified public education on building regulations</i>	<i>4.1176</i>	<i>.71125</i>	<i>.000</i>	<i>5</i>
<i>9</i>	<i>Government should provide or facilitate affordable buildings accessible to all class of persons</i>	<i>3.8431</i>	<i>.54305</i>	<i>.000</i>	<i>6</i>

## SUMMARY

This chapter provided information on the socio-demographic characteristics of respondents. Other sections of the chapter dealt with house-owners awareness on the national building regulations (L.I 1630), factors that have contributed to construction of unauthorized building at Asakae, the extent of unauthorized buildings in Asakae as well as strategies to curb the practice of construction of unauthorized buildings. The next chapter (chapter five) focuses on the summary of findings, conclusions and recommendations of the study.



## CHAPTER FIVE

### CONCLUSION AND RECOMMENDATIONS

#### 5.1 Introduction

The aim of this research was to explore the causes of unauthorized buildings in Asakae, a suburb of the Sekondi-Takoradi Metropolis, and identify strategies to curb them. Accordingly, to accomplish this aim, a number of objectives which were guided by research questions were set. In this chapter, the research questions and the objectives were revisited to ascertain to which extent the aim of the study has been achieved throughout the various phases of the study. More so, this chapter presented recommendations of the researcher based on the findings and conclusions of the study; and the extent of difficulties that were encountered throughout the study. Then, lastly, recommendations were made for further studies.

#### 5.2 Research Questions

From the foregoing, four main research questions were proposed:

- What is the extent of construction of unauthorized buildings in Asakae?
- What are the relevant factors that account for construction of unauthorized buildings in Asakae?
- Are house-owners aware of the national building regulations?
- What strategies are to be mounted to curb the practice of construction of unauthorized buildings?



### **5.3 Review of Research Objectives**

In pursuing the aim of the research, four objectives were established. The fulfillment of each of the four research objectives have been set out in the following subsections.

#### **5.3.1 Review of First Objective**

The first objective focused on assessing the extent of unauthorized buildings in Asakae. In achieving this, buildings in the study area were inspected and evaluated based on relevant sections of the national building regulations of 1996, (L.I 1630).

#### **5.3.2 Review of Second Objective**

The second objective of the research was to identify relevant factors influencing construction of unauthorized buildings. This objective was achieved by undertaking an extensive review on factors influencing construction of unauthorized buildings (see **chapter 2**). The literature exposed various factors and data on the factors were collected from research respondents to empirically ascertain, the relevance of the identified factors in Ghana. This was evaluated by the use of Likert scale: 1-5 to rate the level of significance of each identified factor. Principal component analysis was employed to reduce the factors into manageable size for detailed analysis.

#### **5.3.3 Review of Third Objective**

The third objective was to assess the awareness of house-owners on the national building regulations. Accordingly, to achieve this, relevant sections of the L.I 1630 were reviewed, 182 house-owners were then asked questions from the sections to assess their awareness level on the building regulations. The questions were under two main heading: *building permit and plot development*.

#### **5.4.4 Review of Fourth Objective**

The objective four was to identify strategies that will curb the practice of construction of unauthorized buildings. This objective was achieved by undertaking extensive review on factors to curb construction of unauthorized buildings (see chapter 2). The literature revealed various factors and data on the factors were collected from 52 respondents comprising of: Assembly-members, the head of planning department and the head of works department; to empirically ascertain the level of importance of the identified factors in curbing construction of unauthorized buildings in Ghana. This was evaluated by the use of Likert scale: 1-5 to rate the level of importance of each identified factor. For this, one sample t-test was used for the evaluation; and the research established nine strategies for curbing construction of unauthorized buildings in Asakae, Ghana.

#### **5.4 Limitations of the Research**

Problems were encountered in the course of conducting the study at the fieldwork phase, which posed serious constraints to the execution of the study. Meeting with large numbers of respondents involved in the study was time unbearable. Again, there was possibility of sampling and measurement errors and the effects of these errors on the data collected.

## 5.5 Summary of Findings

The main findings of the research were:

- This research identified that, the knowledge level of house-owners in Asakae on the National Building Regulations were very low level and as a result, significant percentages of the buildings in Asakae was found to be unauthorized. Accordingly, approximately 38% of the buildings were without permit or approval from authorities; 37 % of the buildings had unauthorized modification whilst, unauthorized additions accounted for 3% of the buildings.
- Moreover, the research revealed that, only about 8% of house-owners had no formal education thus, suggesting that, even the literates are even engaged in construction of unauthorized buildings.
- More so, the research identified Institutional, Education, Socio-economic and Physical factors to be the four (4) key factors that influenced construction of unauthorized buildings, with Institutional factors contributing to the most of the total variations explained.
- Furthermore, Bureaucracy (87.1%) and corruption (83.6%) were identified to be the two topmost institutional variables that contribute to construction of unauthorized buildings. As a result, nearly 100% of the buildings surveyed had their various stages of construction works unchecked.
- Accordingly, the survey identified nine strategies for curbing construction of unauthorized buildings with the three topmost strategies being, *Government must apply high penalties in case of detection of construction of unauthorized buildings; there should be public-private partnership in curbing unauthorized*

*buildings and automating permit acquisition, monitoring and detection of new buildings by authorities respectively.*

## **5.6 Summary of Conclusions**

Based on the findings and the objectives of the research, the following conclusions were drawn:

- Accordingly, approximately 38% of the buildings in Asakae were without permit or approval from authorities; 37 % of the buildings had unauthorized modification whilst, unauthorized additions accounted for 3% of the buildings.
- More so, construction of unauthorized buildings was as a result of largely interrelated multiple factors, key amongst them were Institutional, Educational, Socio-economic and Physical factors. In addition, bureaucracy and corruption has characterized the operations of the Sekondi-Takoradi Metropolis Assembly, specifically Physical Planning Department and the Works department, leaving most construction in the metropolis unsupervised.
- Furthermore, House-owner's level of awareness on the national building regulations (L.I 1630), specifically issues relating to Building permit and Plot development, was very low and this had largely contributed to construction of unauthorized buildings.
- Consequently, curbing construction of unauthorized buildings requires multiple strategies chiefly amongst them were: government must apply high penalties in case of detection of construction of unauthorized building; there should be public-private partnership in curbing unauthorized buildings and automating permit acquisition, monitoring and detection of new buildings by authorities.

## 5.7 Recommendations

In view of the above findings and conclusions, the study recommended the following:

- The Sekondi-Takoradi Metropolitan Assembly should organize educational campaigns to educate residents about the national building regulations (L.I. 1630). The educational campaigns could assume the form of one-on-one campaigns, workshops, radio and television shows or any other appropriate medium. In addition, education on L.I 1630 should be introduced in academic curricula from the primary schools to reduce the level of ignorance. When this is done, it is hoped that residents will become familiar and knowledgeable with the provisions in the L.I.1630 and hence abide by them thus, construction of unauthorized buildings will gradually face out in our societies.
- Unauthorized buildings should be regularized after portions that were not conforming to the provisions in the L.I 1630 were demolished, so as to decongest the Asakae town.
- Basic services such as, lights and water, should be extended to all plots of land that have been planned and zoned by authorities so that, buildings would be evenly distributed across the Asakae Township to avoid congestion of buildings around few places where there is accessibility to water and electricity.
- The assembly should automate their operations, with respect to permit acquisition and monitoring of buildings under construction, to avoid bureaucracy and corruption that has characterized their operations.
- Government must apply high penalties in case of detection of construction of unauthorized buildings and there should be public-private partnership in

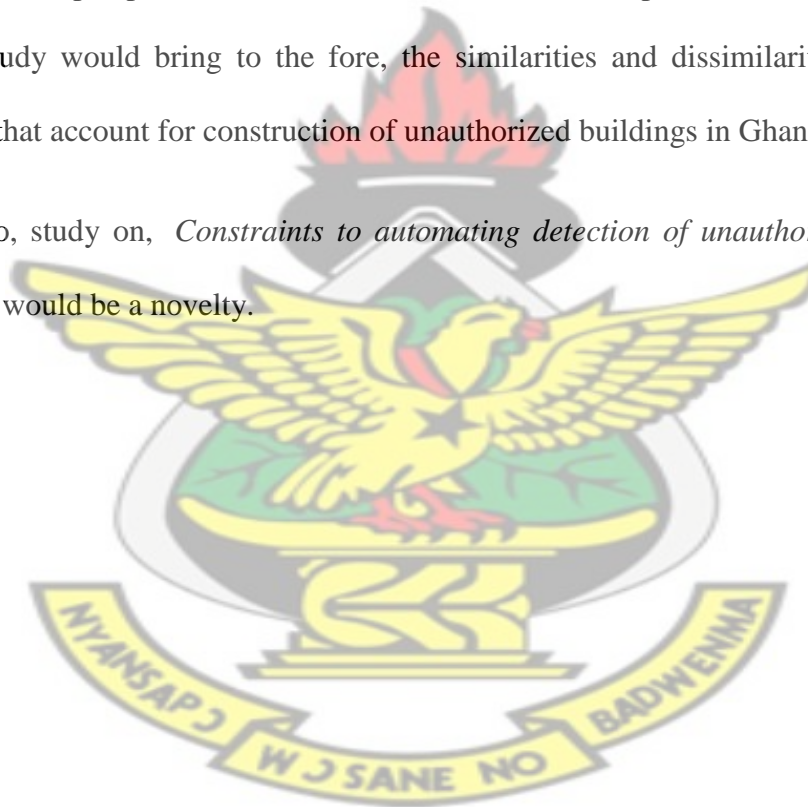


monitoring and detecting construction of unauthorized buildings. This could be accomplished by reviewing outdated sections of the L.I.1630 and government inculcating the *will-power* to strictly implement the L.I 1630.

### **5.8 Areas for Further Research**

This study, *factors that account for construction of unauthorized buildings in Ghana*, situated largely on the perspective of house-owners. Therefore, further research could focus on the perspective of local authorities who are responsible for local governance. Such study would bring to the fore, the similarities and dissimilarities in views, the factors that account for construction of unauthorized buildings in Ghana.

More so, study on, *Constraints to automating detection of unauthorized buildings in Ghana*, would be a novelty.



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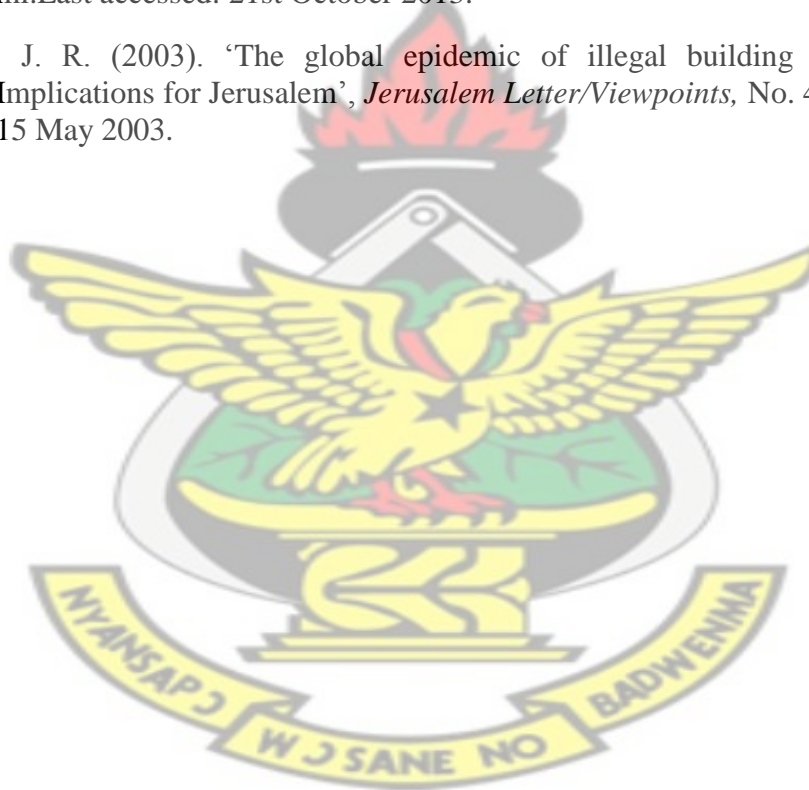
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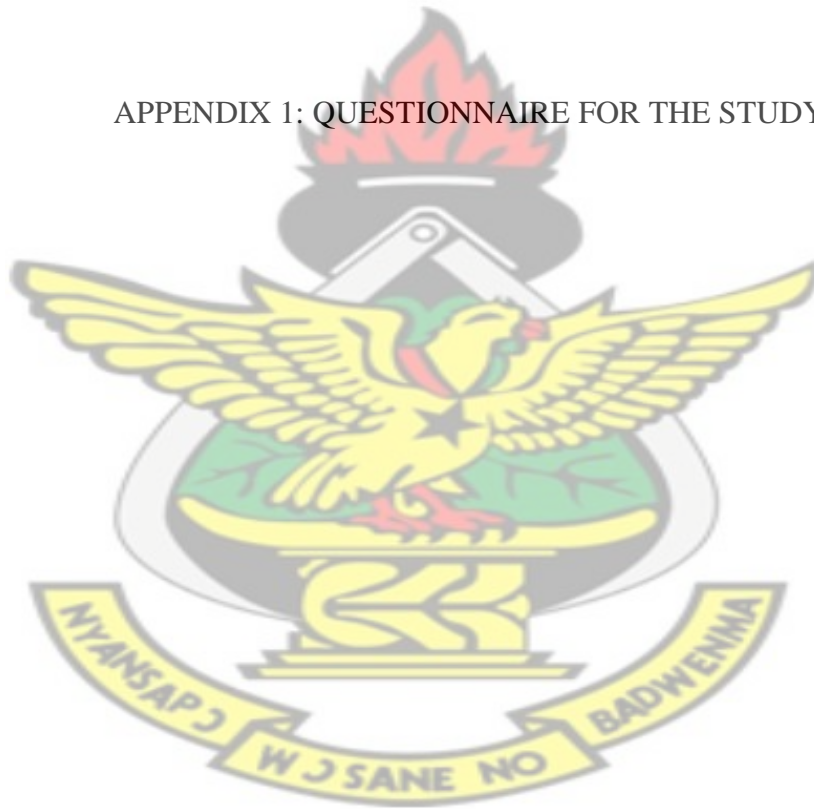
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# KNUST

## APPENDIX 1: QUESTIONNAIRE FOR THE STUDY





**Kwame Nkrumah University of Science and Technology**

**College of Architecture and Planning**

**KNUST**

**Department of Building Technology**

**TOPIC:**

**FACTORS THAT ACCOUNT FOR CONSTRUCTION OF UNAUTHORIZED  
BUILDINGS IN GHANA**



## Preamble

Construction of unauthorized buildings has become a major problem in towns and cities of most developing countries in the world of which Ghana is of no exception. Despite numerous efforts at both the international and local levels to address this problem, its existence keeps on rising.

We are conducting this study to explore the causes of unauthorized buildings in Ghana and identify strategies to curb them.

The attached is the survey of questionnaires and information obtained from this survey will be kept private, anonymous and completely confidential. There is no correct or wrong • answers. Information given will solely be used for this research. You should therefore be at liberty to give me the right information to ensure the success of this work.

Your participation in this survey is much needed and we will be grateful if you could answer these few questions.

We would like to convey our appreciation for your cooperation in completing these questions. If you have any questions and contributions about this research, please mail me at [brokwaw@yahoo.com](mailto:brokwaw@yahoo.com) or call me on 277054286.

Thank you in advance for your participation and assistance with this study.

Somiah, Matthew Kwaw

## QUESTIONS

Please make a tick [ •√ ] in the box against your response. Thanks for your cooperation.

### Section A: Socio- demographic characteristics of house-owners at Asakae

1. Sex:            Male [ ]            Female [ ]

2. Age .....

3. Level of education:

(a) No formal education [ ]

(b) Basic education [ ]

(c) Secondary education [ ]

(d) Tertiary education [ ]

(e) Other [ ], Specify.....

4. Occupation; .....

5. Are you the house owner? Yes [ ] No [ ].

6. Do you have permit for your building? Yes [ ] No [ ].

## Section B: Awareness on building regulations (House owners)

Please indicate the extent to which you agree to the statements below: where: 1

represents strongly disagree, 2 – disagree, 3 – Undecided or uncertain, 4 – Agree; and 5

– Strongly Agree

Statement(Variable)	1	2	3	4	5
<b>BUILDING PERMIT</b>					
One must be notified on the receipt of his/her permit application by 7 days and decision on his/her permit application by 3 months					
Anyone who wants to build any structure must inform the Planning Authorities on the date he intend starting					
I can proceed to build without building permit, since the land is my own property					
There is validity period after which my permit expires					
Every stage of construction must be certified by Authorities before another stage's works commences					
A building completed to the satisfaction of the District Planning Authority would be issued with a certificate of completion for use before you assume occupancy					
Once I have building permit I can choose to construct any building on the land					
Planning authorities can stop me from building, if I don't have the required land documents					
Approval is needed for extension, modification and additions to buildings					

Continuation:

Statement(Variable)	1	2	3	4	5
<b>PLOT DEVELOPMENT</b>					
No site liable to flooding must be built upon without adequate provision for flood control.					
No building should be erected inside/over a drain, culvert, or watercourse, under a high tension cable or near a sewer					
Boundary walls shall be erected 2 metres from the building in question					
Total floor area of residential buildings must be within 80% of the total area of the plot					
No building shall be allowed to intrude into areas reserved for improvement lines					

**Section C: Factors that account for construction of unauthorized buildings (House owners)**

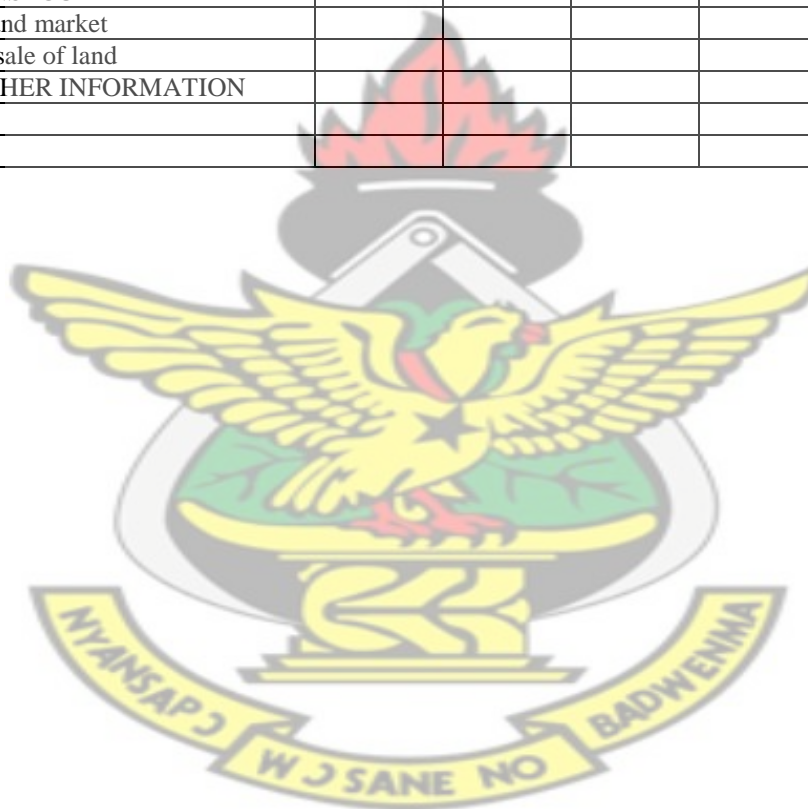
Please indicate the extent to which the following factors account for construction of unauthorized buildings: scale where: 1-highly insignificant, 2- Insignificant, 3-Neither, 4-Significant and 5-highly significant.

FACTORS	1	2	3	4	5
<b>PHYSICAL</b>					
location of land					
nature of land					
<b>POLITICAL</b>					
lack of political will to enforce building regulations					
inadequate policy on housing					
<b>SOCIO-ECONOMIC</b>					
High rent					
high cost of land					
high cost in getting land document and building permits					
unwillingness to accept laid down regulation					
population growth					
<b>EDUCATION</b>					
ignorance on planning schemes					
ignorance on building regulations					
<b>INSTITUTIONAL</b>					
unrealistic zoning					
logistic and capacity gap					
Corruption					
Bureaucracy					
high enforcement cost					



Continuation:

	1	2	3	4	5
LEGAL					
obsolete and contradictory laws					
lack of public private partnership in controlling unauthorized buildings					
non punitive sanctions against offenders					
overlapping institutional roles and responsibilities					
PROFESSIONALISM					
labour force are easily influenced by house-owners					
cheap labour					
LAND INSECURITY					
litigant land market					
multiple sale of land					
ANY OTHER INFORMATION					



### Section D: Uncertified construction works

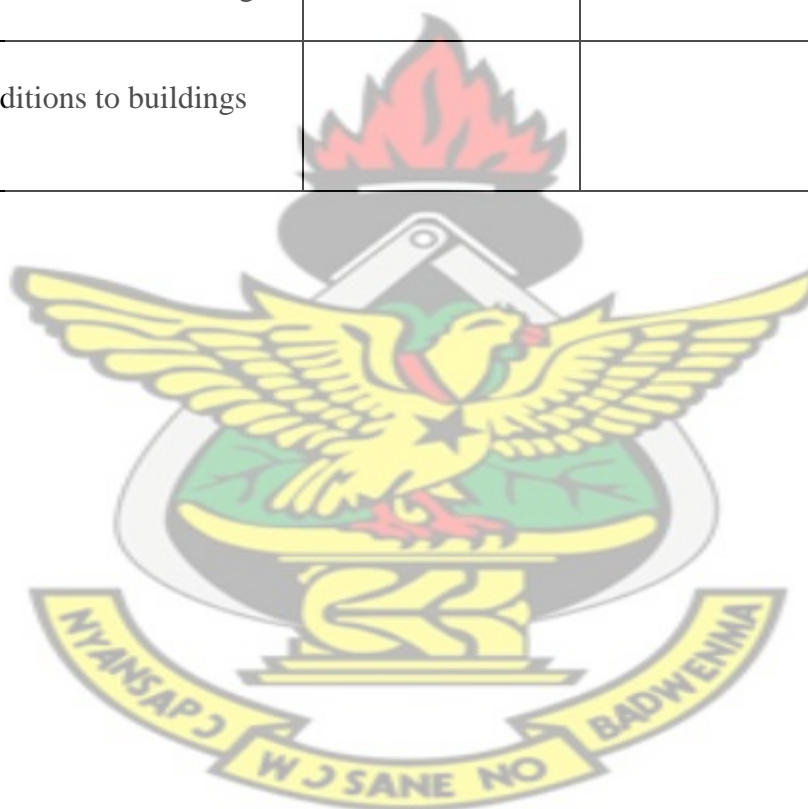
Please indicate if any of the following stages were inspected and approved by authorities

Uncertified construction	INSPECTED	NOT INSPECTED
Demarcation of the plot and siting of the buildings		
Foundations of buildings set out		
Foundations excavated and level pegs for concreting		
Foundations concreted		
Trenches for drainage work excavated to levels and gradients;		
Reinforcing steel fixed in position before concreting;		
Walls completed to wall-plate level		
Roof frame-work completed before covering.		

### Section D: unauthorized buildings

Please indicate if any of the following works were done with/without permit

DESCRIPTION	WITH PERMIT	WITHOUT PERMIT
extension to buildings		
Modification to buildings		
Additions to buildings		



## UNAUTHORIZED SITING OF BUILDINGS

OBSERVATION CHECKLIST/BUILDING INSPECTION FORM			
Observation checklist for Asakae, February -March, 2014.			
	DESCRIPTION	FOUND	NOT FOUND
1	Area of building does not exceed 80% of the total plot area		
2	Buildings sited on access roads/lanes		
3	Buildings sited on waterways		
4	Buildings sited on agriculture land		
5	Any other		

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We are conducting this study to explore the causes of unauthorized buildings in Asakae, a suburb of the Sekondi-Takoradi Metropolis, and identify strategies to curb them.

The attached is the survey of questionnaire and information obtained from this survey will be kept private, anonymous and completely confidential. There is no correct or wrong • answers. Information given will solely be used for this research. You should therefore be at liberty to give me the right information to ensure the success of this work.

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Thank you in advance for your participation and assistance with this study.

Somiah, Matthew Kwaw

## QUESTIONS

Please make a tick [ •√ ] in the box against your response. Thanks for your cooperation.

### Section A: Socio- demographic characteristics of house-Key Informants

1. Sex:            Male [ ]            Female [ ]

2. Office/Position; .....

### Section B: Strategies to curb construction of unauthorized buildings (Key Informants)

Please indicate the level of importance you will attach to the strategies to curb unauthorized buildings in Ghana below: where: 1 represents Not Important, 2 – Less Important, 3 – Moderately Important, 4 – Important; and 5 – Most Important.

Statement(Variable)	1	2	3	4	5
<b>BUILDING PERMIT</b>					
Government must apply high penalties in case of detection of construction of unauthorized buildings					
Planning authorities should be well resourced and well paid					
There should be public-private partnership in curbing unauthorized buildings					
Automating monitoring and detection of new buildings by authorities					
Review of outdated and contradictory building and planning laws					
Intensified public education on building regulations					
Government should provide or facilitate affordable buildings accessible to all class of persons					
Regularizing/legalizing of existing, structurally sound unauthorized buildings					
Skilled artisans-masons, carpenters and steel benders should be licensed and regulated by the assembly					