COST COMPARISON OF BUILDING SECURITY COST IN NIGERIA
[CASE STUDY OF ABUJA, KATSINA, LOKOJA AND MINNA]

O.M. Anifowose, I.S. Lawal and K.S. Umoru
Department of Quantity surveying, School of Environmental Technology,
Federal University of Technology, PMB 65 Minna. Nigeria.
E-mail: *anifowosemo@futminna.edu.ng*

ABSTRACT

Over time in Nigeria, serious crime has grown to an alarming rate particularly in urbanized areas characterized by rapid increase in population and construction of new buildings. This research was carried out with the aim of investigating building security cost in Nigeria taking a case study of Abuja, Katsina, Lokoja and Minna and considering residential and commercial buildings. This was achieved by identifying the different building security components and establishing the relationship between total cost of building and total cost of security. The study achieved this by establishing the existence or otherwise of significant differences between total costs of security components in buildings in relation to the nature of the use of the buildings, and the location of the buildings. The study employed a survey approach, by utilizing a data collection proforma to capture nine (9) different variables spread over various elements in building and security components which includes total contract sum, total cost of security, anti-burglar proofing, fencing, gate house and external lightning substructure, walls and roofing. The research's method of data analysis was using descriptive analysis. The results showed that the total costs of security differed significantly amongst the various uses of the building and buildings located in Abuja had N 17,414/m2, while Katsina, Lokoja and Minna had N15,559/m2, N14,062/m2 and N 6,568/m2 respectively. The study also revealed that there is a significant relationship between total cost of building and total cost of security. The study recommended that appropriate designs that incorporate security components should always be the focus/priority of the building owners.

Keywords *building cost, crime prevention, built in security components*

INTRODUCTION

The downturn of the global economy has made the scope of the problems of crime and insecurity worse across the world. Social security systems should be developed in all countries including the poorest ones, in order to eliminate desperate conditions of crime and insecurity, to reverse growing inequality and to sustain economic growth. It is increasingly recognized that economic and social development are inextricably intertwined across countries, new security policies which would effectively help to reduce crime and insecurity and contribute to economic and social development. Crime committed out of helplessness and necessity is an important part of the total tally. Another perspective to crime and its upsurge in recent years, particularly

those committed at victims residence, is the volume of personal disposable incomes that is applied to forestalling such crimes. House owners are continuously seeking new ways of fortifying their buildings. Components of buildings intended for security/defense against criminals are built-in as the buildings are constructed. It is almost now an accepted practice to burglar proofs all external and internal doors and windows.

The security concerns of private individuals are expressed through the provision of built in security components in their houses, such components are intended to protect the buildings against external attacks by criminals, and include the provision of burglar proofing,

perimeter fencing, alarms system, guards hut and external flood lighting. Previous researchers such as Anifowose and Oke (2008), established that the security concern of private individuals is expressed through the provision of built-in security components in their houses. Other security devices such as anti-burglar alarms are usually not within the financial reach of the majority of low and medium income owners of houses. Furthermore, the proportions of total building costs that are devoted to security-related components in buildings were established in their previous studies (Anifowose, 2003, 2007).

Therefore, the motives of most crimes against property are economic; buildings that are involved in commercial uses might be targeted even more than residential buildings. Such buildings would need to be well fortified against criminal attacks with the implication that more funds can be expended in securing such commercial buildings.

BACKGROUND OF THE STUDY

No nation, not even the highly developed ones is crime free. Crimes takes place in various forms; cheating stealing in various degrees, armed robbery, advanced fee fraud, embezzlements and drug peddling . Crime takes place at different location: at offices, homes, banks, supermarkets etc. (Anifowose, 2008).

Previous researches on security have tended to reveal the increasing connections between capital and security. Neocleous (2007), does so by first exploring the rise of the security industry in the context of a parallel industry in policing and incarceration. There are three dimensions of security industry have tended to be understood through the notion of privatization and instead of taking this route, he tried to understand the security industry through the concept of commodification and fetishism (Neocleous, 2007).

Another recent writing on security is the convergence of internal and external security (no doubt influenced by the notion of the world as a global village). Lutterbeck (2005), considers that in post-cold war-era, Western Europe, the dividing line between internal and external security has become increasingly not in use. This convergence of internal and external security agendas points to a militarization and externalization of policing and an internalization and policization of soldiering: while police forces are taken on military characteristics and are extending their activities beyond borders of state. Military forces are turning to internal security missions and are adopting certain police features. Moreover, which have traditionally been located at the interface between police and military forces i.e. gendarmerie type or paramilitary forces are assuming an increasingly important role. According to Anifowose and Oke (2008), security is no longer only the concern of defense and humanitarian actors. In the aftermath of the Cold War, the security debate has become part of the international development agenda. Traditionally, it had focused on military activities, the control of military hardware, action against armed groups and networks and the reform of state military institutions. Yet increased attention is now being paid to other actors within the "security system" and the softer side of security including governance of security institutions, the links between security and insecurity, access to resources, well-being, poverty, environmental risk and security.

The security of lives and properties in the built environment is of great importance to the socio-economic, health and general wellbeing of people around the globe. Adequate security brings about safety and ensures social, economic and political order which enables the city to function well and which allows the citizen to succeed in life. On the other hand, insecurity has serious negative social, economic and political implications. It creates a situation of fear and anxiety which affects the people's psychological state of mind and the level of their productivity. Thus, urban security is an issue of global importance which concern government and stake holders across the world (Morenikeji, Jinadu, & Umoru, 2008).

STATEMENT OF PROBLEM

Due to the rate of crime in Nigeria, building constructions for various purposes residential, commercial, institutional, offices) now includes security components such as such as perimeter fences, gatehouses, external electrification, anti-burglar screens to doors and windows, burglar alarm system, monitoring cameras and electronic detectors, guard tour systems, surveillance systems, metal detector, automatic gate detector machine, access control systems, fire alarm systems

In Nigeria, violence and criminal activities are assuming increasing and dangerous tendencies as they threaten life, property, the national sense of wellbeing, peace, security and social order, eventually reducing the citizens' quality of life (Agbola, 2004). This neglect makes economics of crime a relatively new field for economic investigation that has been aided by the fact that in the last four decades, there has been an outstanding increase in criminal activities as some reports and studies have confirmed in Nigeria (Alemika & Chukwuma, 2007; Omotor, 2009). Crime incidents pose great threat to peace and security in Nigeria even though government and its security agencies are doing everything possible to arrest the situation; solution cannot be easily found without the cooperation and participation of all good citizens in policing the country (Lawal, 2012).

The rate of inclusion of these components in buildings tends to imply that they are so necessary and that the costs involved are no longer a deciding factor. Such costs do however increase the total cost of construction. The effect of such costs relative to the total building cost is so far unknown, and a model to accurately forecast these cost to enhance effective housing delivery is also unknown.

AIM AND OBJECTIVES OF THE STUDY

The research is aimed at comparing the cost of building security in Nigeria with a view of improving the level of security of lives and properties as well as the cost of securing the built environment.

The objectives of the study are as follows:
i. To determine the co-relation between total cost of building and cost of building security.
ii. To establish the significant difference between average cost of security in buildings and the nature of the use of the buildings (residential and commercial)
iii. To compare the cost of building security between locations (Abuja, Lokoja, Minna and Katsina).

STUDY AREA

Abuja

Abuja is situated between the coordinates: 9°4'0"N7°29'0"E.Abuja is the capital city of Nigeria. It is located in the center of Nigeria, within the Federal Capital Territory (FCT).Abuja is a planned city and was built mainly in the 1980s and has a total area of 713 Sq.km. It officially became Nigeria's capital on December 1991, replacing Lagos, which is still the country's most populous city. At the 2006 census, the city was having a population of 776,298 making it one of the ten most populous cities in Nigeria. Abuja has witnessed a huge influx of people into the city which has led to the emergence of satellite towns like Karu Urban Area, Suleja Urban Area, Gwagwalada, Lugbe, Kuje and other small settlements to which the planned city is sprawling towards, the unofficial metropolitan area of Abuja is well over three million. According to demographia, the population of Abuja's Urban Area as at 2012 is 2,245,000 making it the fourth largest urban area in Nigeria surpassed only by Lagos, Kano and Ibadan.

Lokoja

Lokoja is the capital of Kogi state. Kogi State was created by the then head of State General Badamosi Babangida on 27/08/1991.this lead to the deployment of Kogi State indigene from Kwara and Benue respectively. And also became a functional entity in the same year. It lies wholly within the physical and cultural zone of transition described as the North central Geo-political zone of Nigeria. The state consists of twenty one local government areas. The Kogi state capital Lokoja has

witnessed a gradual but steady physical transformation since its creation. These physical transformations include the provision of adequate infrastructure and social services with emphasis on the fact that it is the confluence state.

Katsina

Katsina is a state capital of Kastina state in the north-western part of the country bordering Niger republic, Kaduna, Kano and Jigawa states. Its capital is katsina and lies on coordinates 12°15'N7°30'E, the state was established on 23 September 1987.Katsina state was formed from part of Kaduna state .It has an area of 24,192km^2(9.314sq mi) and has a population of 5,801,584. The state has a large deposit of kaolin and asbestos. It is also known as "**home of hospitality**" The Hausa people (sometimes grouped with the Fulani as Hausa-Fulani) are the largest ethnic group. The state is made up of two emirate councils namely: katsina and Daura emirates which feature prominently in the establishment of the seven Hausa kingdom.

Minna

Minna, the capital of the power state (due to the presence of three hydro dams that powered the two main hydroelectric power station in Nigeria) lies on latitude 9° 37^1 North and longitude 6° 33^1 East, with a total land area of 76,000 Sq. Km. Minna passes through four main transformational stages before reaching its present stage. Minna became the capital of the newly created Niger state in February 1976, under the fourth stage of its transformation which also marked its final transformational stage. The state is bordered to the north by Zamfara state, to the northwest by Kebbi state, to the south by Kogi state, to the southwest by Kwara state; while Kaduna state and the Federal Capital Territory bordered the state to the northeast and southeast respectively. In addition, the state shares a common international boundary with the Republic of Benin by the western part of the country.

RESEARCH METHODOLOGY

The research methodology for this study is divided into two areas; (i) data collection and techniques, (ii) the method of analysis of data.

Data Collection Method and Sampling Technique

The data for the research was secondary data obtained from registered Quantity Surveying firms located in Abuja, lokoja, minna and Katsina. More than 90 BOQs were observed but a total number of 60 BOQs were found relevance and used for the study. According to Roscoe (1975) cited by (Rahim, Jalaludin, & Tajuddin, 2011), a sample size larger than 30 and less than 500 are recommended for most research study.

It is absolutely necessary at sampling technique stage to adopt a sampling process that is suitable for the target population. However, owing to the low level of construction of officially documented buildings in selected locations, therefore a non-probability sampling technique supported by snowballing methodology was adopted for data collection. Data keep on increasing as the Quantity surveyors were asked to recommend some of their colleague that can give useful or provides BOQs for the purpose of this study in a convenience manner (Heckathorn, 2002; Sekaran & Bougie, 2009; Umoru, 2012). All data that were relevant and suitable to the design of the study was collected.

Method of Analysis

The study employed both descriptive and inferential analysis. Statistical inferences were drawn from the result of descriptive analysis and graphs were plotted to show co-relation between variables. The descriptive method employed by the study consisted of frequency classification of data in tables and charts.

ANALYSIS AND DISCUSSION OF RESULTS

Research Data

The data employed by this study was collected under the following headings: use of building, height of building, location of building, anti-burglar proofing, closed circuit television, gate house and fencing. Other headings were contract sum, elemental cost for: substructure, wall and roof. Headings for

costs of built-in security included are burglar proofing, burglar alarm, security doors, external lighting, security alarm systems, and total costs of security components.

Table 1: Data Used for the Research

LOC	TCB	TCS	Substr	Wall	Roof	ABP	FN	GH	EL
Minna	11.92	1.85	0.88	1.50	0.53	0.12	0.72	0.83	0.18
	11.60	1.81	0.88	1.30	0.53	0.12	0.70	0.81	0.18
	9.20	1.44	0.81	0.62	1.02	0.12	0.55	0.64	0.12
	10.63	1.65	0.79	0.83	1.87	0.10	0.64	0.74	0.17
	9.57	1.66	1.20	0.73	1.44	0.34	0.57	0.67	0.08
	7.25	1.16	0.81	0.89	0.88	0.15	0.44	0.51	0.07
	5.64	0.88	0.89	0.39	0.24	0.09	0.34	0.39	0.06
	6.59	1.05	0.73	0.81	0.80	0.14	0.40	0.46	0.06
	17.94	1.81	0.90	0.54	0.64	0.11	1.30	0.39	0.20
	11.92	1.85	0.88	1.50	0.53	0.12	0.72	0.83	0.18
	11.60	1.81	0.88	1.30	0.53	0.12	0.70	0.81	0.18
	9.20	1.44	0.81	0.62	1.02	0.12	0.55	0.64	0.12
	10.63	1.65	0.79	0.83	1.87	0.10	0.64	0.74	0.17
	9.57	1.66	1.20	0.73	1.44	0.34	0.57	0.67	0.08
	7.25	1.16	0.81	0.89	0.88	0.15	0.44	0.51	0.07
Katsina	19.22	2.01	2.67	1.41	1.56	0.25	0.81	0.95	0.22
	5.69	1.75	1.28	0.58	0.52	0.13	0.97	0.65	0.06
	2.08	0.85	0.47	0.31	0.30	0.05	0.35	0.45	0.02
	21.10	3.72	4.42	2.61	2.22	0.45	2.35	0.92	0.24
	30.44	3.92	6.46	4.96	8.74	0.30	2.43	1.18	0.34
	6.83	1.27	1.30	0.68	0.64	0.07	0.75	0.45	0.08
	34.09	2.39	4.82	3.07	3.39	0.38	1.25	0.77	0.38
	7.35	5.20	1.03	0.77	1.11	0.20	4.23	0.77	0.08
	17.94	1.81	0.90	0.54	0.64	0.11	1.30	0.39	0.20
	7.88	2.60	1.12	0.76	0.95	0.15	1.50	0.95	0.09
	39.08	4.69	7.85	11.88	2.62	0.38	2.01	0.79	0.44
	38.56	8.24	5.19	4.68	4.39	0.13	4.88	0.79	0.43
	60.93	5.89	5.21	4.74	1.49	0.45	1.84	0.85	0.68
	20.68	4.60	5.63	2.07	1.78	0.20	0.60	0.75	0.23
	10.39	2.14	1.31	0.73	0.51	0.15	1.14	0.85	0.12
Lokoja	6.55	0.92	0.66	4.59	3.93	0.08	0.16	0.66	0.25
	8.82	2.06	0.88	6.17	5.29	0.07	0.24	0.88	0.50
	3.00	0.63	0.30	2.10	1.80	0.08	0.12	0.30	0.20
	7.40	0.92	0.74	5.18	4.44	0.09	0.25	0.74	0.20
	10.38	1.54	1.04	7.27	6.23	0.11	0.27	1.04	0.22
	8.10	0.90	0.81	5.67	4.86	0.10	0.16	0.81	0.25
	26.86	1.14	2.69	18.80	16.12	0.07	0.24	2.69	0.30
	120.15	15.04	12.02	84.11	72.09	4.48	6.40	12.02	0.65
	83.50	6.13	8.35	58.45	50.10	2.43	0.70	8.35	0.50
	12.70	1.19	1.27	8.89	7.62	0.20	0.35	1.27	0.20
	10.50	1.13	1.05	7.35	6.30	0.21	0.29	1.05	0.23
	16.78	2.32	1.68	11.75	10.07	0.21	0.32	1.68	0.22
	11.30	1.21	1.13	7.91	6.78	0.20	0.28	1.13	0.30
	12.50	1.13	1.25	8.75	7.50	0.20	0.30	1.25	0.28
	88.78	22.56	8.88	62.15	53.27	8.50	8.63	8.88	0.88
Abuja	69.38	5.94	6.06	4.58	4.23	0.94	4.23	0.77	0.78
	10.39	2.14	1.31	0.73	0.51	0.15	1.14	0.85	0.12
	15.21	2.60	1.63	1.22	0.51	0.35	1.25	1.00	0.17
	14.44	1.81	1.49	0.85	1.01	0.11	1.30	0.39	0.16
	129.12	5.76	9.37	10.69	10.94	0.40	4.63	0.72	1.45
	277.71	15.86	22.91	10.59	12.43	1.08	13.16	1.62	3.11
	53.92	8.92	6.59	4.89	5.18	0.29	5.90	0.90	0.60
	49.50	8.23	6.56	5.29	5.21	0.35	4.93	0.81	0.55
	34.37	6.47	4.14	4.49	2.30	0.29	2.52	0.92	0.38
	32.06	5.41	2.36	4.45	2.43	0.43	1.16	0.82	0.36
	64.35	8.12	7.32	2.69	3.55	0.77	3.28	0.83	0.72
	105.52	11.63	12.33	11.53	3.95	0.76	6.72	0.65	1.18
	72.93	9.56	13.21	7.98	4.11	0.84	4.52	1.45	0.82
	58.94	6.38	5.56	3.60	3.01	0.71	2.34	1.08	0.66
	96.76	8.72	10.60	4.75	5.00	0.87	4.39	1.45	1.08

Source: Authors fieldwork, 2012. Unit= [₦ millions]

Descriptive Analysis of Data

The data for this study was analysed using descriptive techniques in order to reveal any apparent patterns of location or dispersal of the data around the mean values as shown in Table 2 below. In addition, line graphs were produced which provided visual evidence of patterns within the data. The results are presented in Figs 1 to 3, under the discussion.

Figure 1 depicts the co-relation between the total cost of Building cost and total cost of security. It can be seen that with an increase in the total cost of security, there was a corresponding increase in the total cost of Building which portrays a relationship between the two variables.

Figure 2 shows the mean cost of security/m^2 of buildings used for the analysis based on the uses of buildings. Residential had lower average cost of N 13,401.00 per meter square, while commercial had the higher average cost of N 14,730.00 per meter square.

Figure 3 shows the mean cost of security per meter square of buildings used for the analysis based on the four selected location (either in Abuja, Katsina, Lokoja or Minna). The study employs a total number of 60 buildings, 15

Table 2: Descriptive Statistics

N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
60	457770.00	14879.00	471000.00	89998	86974.40020	7565000000	2.326	.309	6.620	.608
60	92220.00	1044.00	93210.00	14103	15993.16347	255800000	2.792	.309	10.026	.608
60	50400.00	1565.00	51995.00	10786	11197.57847	125400000	1.926	.309	3.521	.608
60	256000.00	948.00	257000.00	18345	33791.90290	1142000000	6.167	.309	43.432	.608
60	219000.00	1062.00	220000.00	15186	28834.48755	831400000	6.308	.309	44.777	.608
60	35000.00	164.00	35126.00	16039	4508.16778	203200000	7.214	.309	54.223	.608
60	35000.00	420.00	35645.00	62522	7331.63989	53750000	2.262	.309	5.920	.608
60	36400.00	335.00	36686.00	44192	5281.05879	27890000	4.541	.309	24.980	.608
60	5114.00	167.00	5281.00	11256	928.29583	861700	2.088	.309	6.293	.608

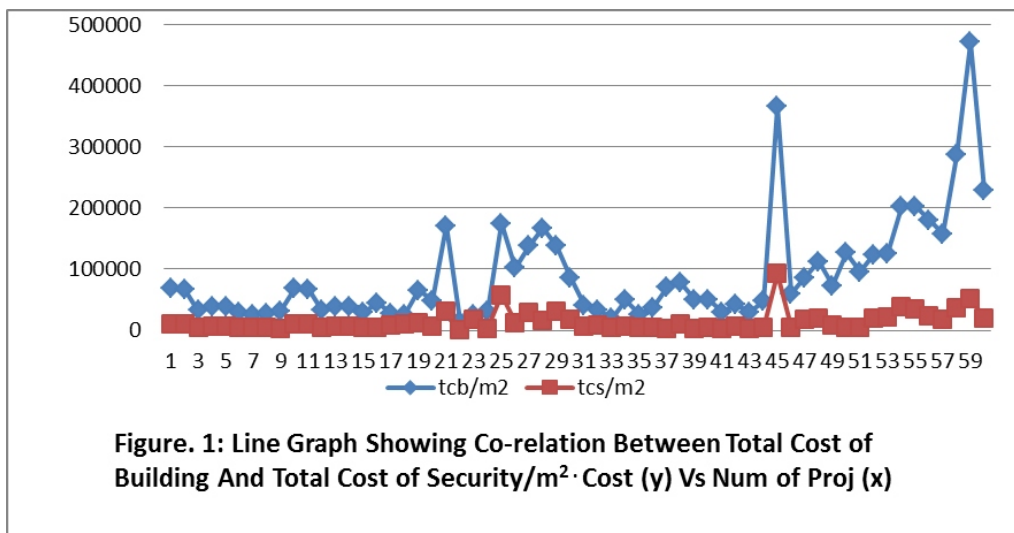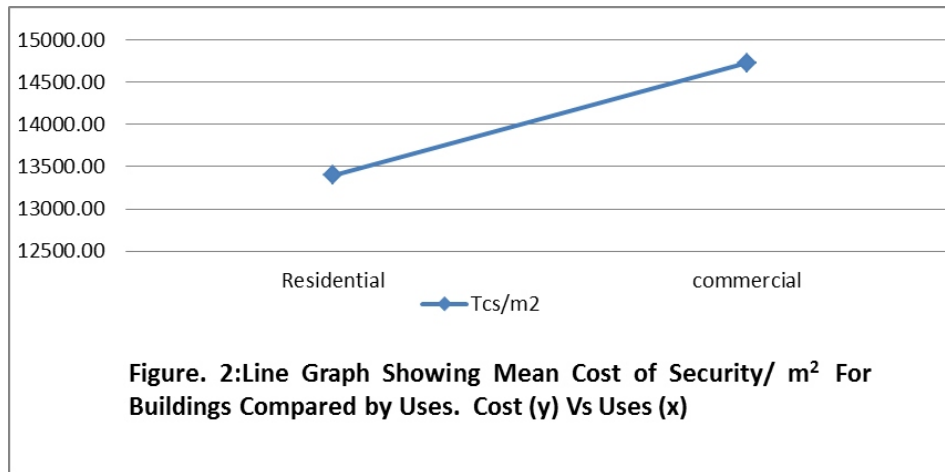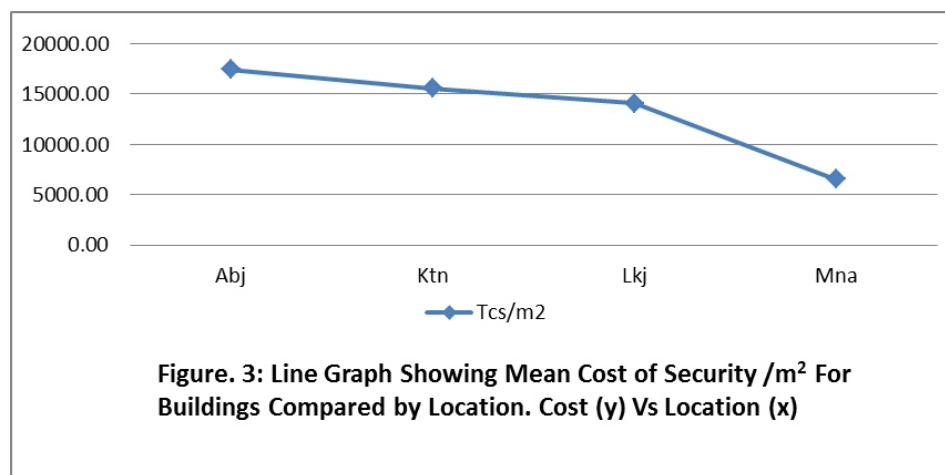**Source: Authors fieldwork, 2012**

Figure. 1: Line Graph Showing Co-relation Between Total Cost of Building And Total Cost of Security/m^2· Cost (y) Vs Num of Proj (x)

Source: Authors fieldwork, 2012

Figure. 2:Line Graph Showing Mean Cost of Security/ m² For Buildings Compared by Uses. Cost (y) Vs Uses (x)

Source: Authors fieldwork, 2012

Figure. 3: Line Graph Showing Mean Cost of Security /m² For Buildings Compared by Location. Cost (y) Vs Location (x)

Source: Authors fieldwork, 2012

from each location. It can be seen from the chart that the mean cost of security/m² for buildings located in Abuja was found to be N17,414.33., Katsina was found to be N15,559.03 given about 11% less than cost obtained in Abuja, Lokoja was found to be N14,062.10 amount to about 20% less than cost obtained in Abuja, while Minna was found to be N6,568.00 about 62% less than cost obtained in Abuja. However, the large margin observed between Minna and Abuja was as a result of the data on commercial buildings that are mainly on lockup shops obtained and used in analysis for Minna.

CONCLUSION
Abuja is experiencing high cost of building security when compared with other selected locations. This might be as a result of being the seat of government, as well as the home to high class people. More activities are going on in Abuja than all other state capital selected for

the study. Thus, burglars tend to focus more on a busy area like Abuja for their activities than other areas. This has led to fortification of buildings with security components to prevent the treat of crime in buildings. Another factor that might be contributing to variation in cost of security is cost of labour, the disparity in cost of labour is as a result of level of construction activities in different location and since it is buildup in the rate therefore location with high construction activities are expected to have high cost of labour rate than other areas with lower construction activities.

MAIN FINDINGS
The following constitute the main findings from the analysis of data carried out thus far by the study.
i. There was a co-relation between the total cost of building and total cost of security.
Ii. Cost of security in buildings were lowest for buildings subjected to residential than

commercial.

iii. Cost of security in buildings was highest for buildings located in Abuja than those located in Katsina, Lokoja and Minna. Moreover, the commercial buildings used for the analysis from Minna were mainly luck-up shops; this was responsible for lower cost/m^2 in Minna

RECOMMENDATIONS

i. It was revealed that there was a co-relation between total cost of building and total cost of security. Therefore, total cost of building and total cost security should always go hand in hand.

ii. It was also found out that cost of security was lowest for residential buildings than commercial buildings and as such, dwellers of residential buildings should make security a priority.

It was also revealed that cost of security was highest for buildings located in Abuja than the other locations, thus, buildings where ever they are located should make security a priority.

REFERENCE

Agbola, T. (2004). Urban Violence in Nigeria Cities, a case study of Abuja. *Journal of Nigeria Institute of Town Planners, XVII*(1), 59-77.

Alemika, E. E., & Chukwuma, I. (2007). *Criminal victimization, safety and policing in Nigeria: 2006*: CLEEN Foundation.

Anifowose, O. M. (2003). *Investment for Crime Prevention in Middle Income Residential Building: case study of Kwara state.* (B.Tech), Federal University of Technology Minna, Nigeria, Minna, Niger state.

Anifowose, O. M. (2007). Analysis of Investment for the Prevention of Crime in Residential Bungalow Buildings: Case Study of Kwara State. *Environmental Science and Technology Journal (ESTJ), 2*(2).

Anifowose, O. M. (2008). *An Analysis of Relationship Between Security and The Composition Housing Costs in Nigeria: case study of Niger and Abuja.* (Msc), University of Jos, Jos, Nigeria.

Anifowose, O. M., & Oke, A. A. (2008). *Infrastructure Security-related Construction costs: Case Studies of Commercial Buildings in Minna and Abuja, Nigeria.* Paper presented at the 3rd Biennial National Conference Federal University of Technology Minna.

Heckathorn, D. D. (2002). Respondent-driven sampling II: deriving valid population estimates from chain-referral samples of hidden populations. *Social problems, 49*(1), 11-34.

Lawal, I. S. (2012). *A quantitative investigation of building security cost: case study of Abuja and Katsina state.* (Bachelor of Technology Finer Year Project), Federal University of Technology, Minna .Niger state., Minna.

Lutterbeck, D. (2005). Blurring the dividing line: The convergence of internal and external security in Western Europe. *European Security, 14*(2), 231-253.

Morenikeji, O. O., Jinadu, A. M., & Umoru, E. T. (2008). *Urban Security Profile: A case study of the dimensions and characteristics of crime in Minna, Niger State.* Paper presented at the 3rd Biennial National Conference, Federal University of Technology Minna.

Neocleous, M. (2007). Security, commodity, fetishism. *Critique, 35*(3), 339-355.

Omotor, D. G. (2009). Socio-Economic Determinants of Crime in Nigeria. *Pakistan Journal of Social Sciences, 6*(2), 54-59.

Rahim, R. A., Jalaludin, F. W., & Tajuddin, K. (2011). The importance of corporate social responsibility on consumer behaviour in Malaysia. *Asian Academy of Management Journal, 16*(1), 119-139.

Roscoe, J. T. (1975). *Fundamental research statistics for the behavioral sciences* (2 ed.). New York: Holt, Rinehart and Winston

Sekaran, U., & Bougie, R. (2009). *Research Methods For Business: A Skill-Building Approach* (5 ed.). United kingdom: John Wiley & Son Ltd.

Umoru, K. S. (2012). *Cost comparism between built-in-security and some physical characteristics of buildings in nigeria: case study of Abuja and Lokoja.* (Bachelor of Technology Finer Year Project), Federal University of Technology, Minna .Niger state., Minna.