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ACHIEVING SUSTAINABLE TOURISM DEVELOPMENT IN NIGERIA: URBAN AND REGIONAL PLANNING APPROACH.

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ABSTRACT

A critical assessment of tourism situation in Nigeria shows a country blessed with enormous opportunities and potentials for tourism development. This is manifested in the various tourists’ resources scattered all over the country such as beautiful beaches, games, forest reserves, rich cultures, historical monuments, and natural features. However, this resource has remained undeveloped over the years. For Nigeria to achieve sustainable tourism development these tourist resources must be tapped and for them to be tapped they must first be identified, then, mapped, investigated and packaged for both local and foreign consumptions. Therefore, the paper examine how planning can assist in identifying, investigating, mapping and packaging tourism resources for sustainable development in Nigeria.

Keywords: Sustainability, Tourism, Development, Urban and Regional Planning

Introduction

Tourism is one of the growing sectors in Nigerian economy. It has the potential of making Nigeria one of the largest and best economies in Africa and by so doing achieving one of the presidential 7-point Agenda of wealth creations. This is because according to Ohakweh 1999, Nigeria has enough tourist reserves to make her one of the best tourist attraction and destination centres in Africa. However, many of these tourist reserves are still largely untapped. For these tourist reserves to be tapped and harnessed they must be identified, investigated, mapped and packaged for both local and foreign consumption. This is where urban and regional planning becomes relevant.

Urban and regional planning is an activity concerned with the spatial ordering of land, use both in the rural and urban setting for the purpose of creating functionally efficient and aesthetically pleasing physical environment for working, living, circulation and recreation (Keeble, 1969). Urban and regional planning is capable of creating functionally efficient and aesthetically pleasing tourist attraction and destination centres. Urban and regional planning is a universally acceptable-instrument of environmental change.

The concept of sustainability involves the deliberate use of today's environmental resource in a beneficial manner to the present and at the same time allowing the future generation to meet their own needs i.e maintenance of environmental capacity over time.

It is therefore the objective of this paper to examine the relevance of urban and regional planning to sustainable tourism development in Nigeria.

CONCEPT OF TOURISM

Tourism is a broad and complex concept and as such easier to describe than defined. Despite this, scholars have been able to provide definition to the term tourism. Thus, Theobald (2007) defined tourism as the movement of people from one place to another in the act of traveling which does not lead to permanent residence. It is the movement of people outside their normal business routine for pleasure. It is an expenditure driven phenomenon, not a receipt driven one. Also, the World Tourism Organization (WTO) in 2005 defined Tourism as the act of travel for the purpose of recreation and the provision of services for this act. The body also defines a tourist as someone who travels at least eight kilometer from home for the purpose of recreation. However, as tourism business grows its definition became modified to include those who travel for business, sport and health purpose. Thus, Fagbohun (2005) defined tourism as temporary and short term movement of people to a destination, including movement for all legitimate purposes (Leisure, Sport, Business, Health) as well as day visits or excursions. He stressed further that before a traveler could be regarded as a tourist, he or she must make use of tourist facilities such as visit to places of attractions making use of accommodation and restaurants.

CONCEPT OF URBAN AND REGIONAL PLANNING

In 1969, Keeble gave one of the foremost definitions of urban and regional planning which he defined as an activity concerned with the spatial ordering of landuse in both rural and urban setting for the purpose of creating functionally efficient and aesthetically pleasing physical environment for living, working, circulation and recreation. Losch (1964) and Adedibu (1995) submit that urban and regional planning, is an art and science concerned with the balanced opportunities between various sections of the population and the space available with a view to matching suitable location with the right events. Defined in this way, it is obvious that urban and regional planning is a science and instrument of environmental change capable of creating functionally efficient and aesthetically pleasing tourist attractions and destination centres and thus achieves sustainable tourism development.
CONCEPT OF SUSTAINABILITY

The seventh goal of the Millennium Development Goal is to ensure environmental sustainability for development. Thus, the concept of sustainability whether of the environment or development in Tourism, is as developed by the 1991 World Conservation Strategy as improving the quality of life while living within carrying capacity of the eco-system (IUCN, 1991).

AN OVERVIEW OF TOURISM SITUATION IN NIGERIA

Tourism is one of the growing sectors of the Nigerian economy. The sector was accorded priority in 1990 when the National policy was launched. The main thrust of this policy on tourism was to generate foreign exchange earnings, create employment and wealth, and promote rural enterprises and national integration among others.

As a follow up to the policy launch, the country's vision 2010 set the year 2005 as the nation's year of tourism when Nigeria would have become the ultimate tourism destination in Africa. However, year 2005 has come and gone and Nigeria is yet to become the ultimate tourism destination in Africa despite its great endowment and potentials.

Nigeria today offers a wide variety of tourist attractions such as extended rivers, beaches, wildlife, unspoiled nature ranging from tropical forest, magnificent waterfalls, traditional way of life preserved in local customs, with handicrafts etc. These attractions can be grouped into natural places, games reserves, historic and cultural festivals as done in table 1-4.

Table 1: Natural Places of Attraction

<table>
<thead>
<tr>
<th>Natural places of attraction</th>
<th>Location by state</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beach</td>
<td>Lagos and all coaster states</td>
</tr>
<tr>
<td>Bar Beach, Lekki Beach, Badagry Beach</td>
<td>Lagos (are particular development)</td>
</tr>
<tr>
<td>Assop water falls</td>
<td>Plateau</td>
</tr>
<tr>
<td>Rock formation</td>
<td>Plateau</td>
</tr>
<tr>
<td>Olumo Rock</td>
<td>Ogun</td>
</tr>
<tr>
<td>Tongeji Island</td>
<td>Ogun</td>
</tr>
<tr>
<td>Aso Rock</td>
<td>FCT</td>
</tr>
<tr>
<td>Killan Hill</td>
<td>Gombe</td>
</tr>
<tr>
<td>Udi Hill</td>
<td>Enugu</td>
</tr>
<tr>
<td>Ikogosi warm spring</td>
<td>Ondo</td>
</tr>
</tbody>
</table>


Table 2: Games Reserve/National Park in Nigeria

<table>
<thead>
<tr>
<th>Games Reserve/National Park</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kanji lack national park</td>
<td>Kwara-Niger</td>
</tr>
<tr>
<td>Ebbazilampe games reserve</td>
<td>Kwara</td>
</tr>
<tr>
<td>Falgore games reserve</td>
<td>Niger</td>
</tr>
<tr>
<td>Old Oyo national park</td>
<td>Oyo</td>
</tr>
<tr>
<td>Okpara games reserve</td>
<td>Edo</td>
</tr>
<tr>
<td>Ologbu games reserve</td>
<td>Edo</td>
</tr>
<tr>
<td>Olosu games reserve</td>
<td>Edo</td>
</tr>
<tr>
<td>In-ada-obi games reserve</td>
<td>Delta</td>
</tr>
<tr>
<td>Oban Hills games reserve</td>
<td>C/River</td>
</tr>
<tr>
<td>Okwango games reserve</td>
<td>C/River</td>
</tr>
<tr>
<td>Cross river national park</td>
<td>C/River</td>
</tr>
<tr>
<td>Yankari games reserve</td>
<td>Bauchi</td>
</tr>
<tr>
<td>Lack Chade basic national park</td>
<td>Borno</td>
</tr>
<tr>
<td>Kamuku national park</td>
<td>Kaduna</td>
</tr>
<tr>
<td>Gashaka-gumti national park</td>
<td>Gongola</td>
</tr>
<tr>
<td>Plateau games reserve</td>
<td>Plateau</td>
</tr>
<tr>
<td>International youth Tourist Centre</td>
<td>Plateau</td>
</tr>
<tr>
<td>Gorilla Sanctuary</td>
<td>C/River</td>
</tr>
</tbody>
</table>

However, many of these attractions are still largely untapped because of lack of required modern infrastructural facilities, acute conditions of underdevelopment in some parts of the country, lack of investment in the tourism sector, low level of government interest in tourism and too recent and few researches in tourism. All of these constitute impediments to sustainable tourism development as reflected in the state and level of development of the tourist attraction centres in tables 1-4. With reference to table 1, of all the natural places of attractions listed only Olumo rock in Abeokuta is developed and well packaged for tourists. While Asop falls in Plateau State has just being privatized and commercialized and is being developed. Others have remained mere potentials and latent tourism resources.

In table 2, where Games Reserves and National Parks are listed, it is interesting to note that only Obudu Cattle ranch is properly developed to international standard while Yankari Games reserve, Old Oyo National Park, Kanji lake National Park are just fairly developed, and not properly packaged as obtained in East and Southern Africa.

Table 3: Some Historical-Cultural Place of Attraction

<table>
<thead>
<tr>
<th>Historical Cultural Place of Attraction</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slave House</td>
<td>Badagary, Lagos.</td>
</tr>
<tr>
<td>First Story Building</td>
<td>Badagary, Lagos.</td>
</tr>
<tr>
<td>Dying Pits</td>
<td>Kano</td>
</tr>
<tr>
<td>Traditional Architecture</td>
<td>Kebbi</td>
</tr>
<tr>
<td>National Theatre</td>
<td>Igunmu, Lagos.</td>
</tr>
<tr>
<td>National Stadium</td>
<td>Abeokuta, Ogun.</td>
</tr>
<tr>
<td>M.K.O. Stadium</td>
<td>Abeokuta, Ogun.</td>
</tr>
<tr>
<td>Adire Cloth Dying Pits</td>
<td>Abeokuta, Ogun.</td>
</tr>
<tr>
<td>National Museum</td>
<td>Lagos, Lagos.</td>
</tr>
<tr>
<td>University of Ibadan Zoo</td>
<td>Ibadan, Oyo</td>
</tr>
<tr>
<td>Obafemi Awolowo University Zoo and Museum</td>
<td>Ile-Ife, Osun</td>
</tr>
<tr>
<td>Oronna Shrine</td>
<td>Ile-Ife, Ogun.</td>
</tr>
<tr>
<td>Lishabi Shrine</td>
<td>Abeokuta, Ogun.</td>
</tr>
<tr>
<td>The Site of Ruined Old Ijaiye City</td>
<td>Oyo North, Oyo.</td>
</tr>
<tr>
<td>Audu Bako Zoo</td>
<td>Kano, Kano.</td>
</tr>
<tr>
<td>Oranmiyan Shrine</td>
<td>Ile-Ife, Osun.</td>
</tr>
<tr>
<td>Oshun Shrine</td>
<td>Osogbo, Ogun.</td>
</tr>
<tr>
<td>Ija Orummilà Sanctuary</td>
<td>Ile-Ife, Osun.</td>
</tr>
<tr>
<td>Obedu Shrine</td>
<td>Oba-Ile, Osun.</td>
</tr>
</tbody>
</table>


Table 4: Some Cultural Festival in Nigeria

<table>
<thead>
<tr>
<th>Cultural Festival</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egungun-Masquerade</td>
<td>Southen State</td>
</tr>
<tr>
<td>Eyo</td>
<td>Eko, Lagos.</td>
</tr>
<tr>
<td>Sangbetoh</td>
<td>Badagary, Lagos.</td>
</tr>
<tr>
<td>Gelede/Efe</td>
<td>Yewa-Awori, Ogun.</td>
</tr>
<tr>
<td>Igwnuko</td>
<td>Egob, Yewa-Awori, Ogun.</td>
</tr>
<tr>
<td>Ija-Orummilà</td>
<td>Yoruba, South-West.</td>
</tr>
<tr>
<td>Osun-Oshogbo</td>
<td>Osogbo, Ogun.</td>
</tr>
<tr>
<td>Agemo</td>
<td>Ijebuland, Ogun.</td>
</tr>
<tr>
<td>Oronna Dy</td>
<td>Iiaro, Ogun.</td>
</tr>
<tr>
<td>Obedu</td>
<td>Oba-Ile, Osun.</td>
</tr>
</tbody>
</table>

In table 3 where historical and cultural places of attractions are listed, the condition of these places are such that, apart from the National and M.K.O. Stadia that are relatively modern, the rest are in a state of disrepair such that international tourist could hardly consider a visit.

Finally, table 4 listed Cultural Festival. Out of these festivals, only Osun-Oshogbo, Argungun fishing festival and Durbar Festival are developed, others are not developed and infact nationally unknown. The aparty and general neglect of tourist centres as demonstrated above has led to a situation whereby, in terms of percentage of GNP direct tourism receipts in most developing countries (including Nigeria) do not exceed 1% (Stuart Corlrett, 2001).

However, this is not the situation in other countries even developing countries like Nigeria. This takes us to the next section of the paper, Tourism experience in other countries.

INTERNATIONAL TOURISM EXPERIENCES IN SELECTED COUNTRIES

SOUTH AFRICA  Tourism is the fourth...
largest and the fastest growing industry in South Africa. It attracted 6.6 million visitors in 2002. That same year the industry contributed 8.2 percent, or $10.3 billion of South Africa’s GDP.

CAMEROON Tourism infrastructure in Cameroon had steadily improved. For instance, the country offered 899 hotel rooms in 1960 but this has risen to 7,500 hotel rooms by 1980. 29,500 tourists visited Cameroon in 1971 but this number had risen to 130,000 in 1980. Cameroon also boasts of several wildlife reserves including the largest and best run in West Africa, Waza National Park. All these have been made possible by the special status given to tourism industry in the country.

GHANA In May, 2003 Ghana commenced the Ghana Tourism Capacity Development Initiative (GTCDI) project. The TCIDI resources are expected to be invested in five (5) major component area. These are

- **Marketing and Product Development**
- **Human Resources Development**
- **Institutional Capacity Development**
- **Policy and Regulation Enhancement and**
- **Tourism Management Information System**

This initiative has improved overall efficiency and performance of the tourism industry in the country, through increased jobs, income level and foreign exchange earnings.

**Urban and Regional Planning Approach to Sustainable Tourism Development**

Urban and regional planning would approach tourism development in the following ways and order:

- Identification and inventories of attraction centres
- Mapping of these centres for easy location
- Investigation and research into these centres for the purpose of gathering information about them
- Formulation, review and enforcement of environmental laws and planning standards for cities including attraction centres
- Policy formulation and review for tourism development
- Packaging tourism projects to make it appealing to both local and foreign consumption
- Protection of natural heritage and attraction centres

**a. Identification and Inventories of Tourist Centres:**

- **The starting point** in this approach to sustainable tourism development is to first identify and take inventories of all tourist centres in Nigeria. It may be discovered that there are still more exciting tourist centres yet unknown until such identification and inventory exercise is done. This kind of exercise will enable tourists and Nigerian to know how many centres there are, their names and locations. This will also include identification and inventories of tourism resources such as hotels and restaurants.

For instance, Table 1.4 listed the National places of attraction, Games Reserves/National Park, Historical/Cultural attractions, and cultural festivals that are found in Nigeria. However, these attraction areas/sites may not be exhaustive, thus a comprehensive survey as usually done in urban and regional planning will reveal and discover any hidden sites.

**b. Mapping of Attraction and Resources Centres:**

Closely related to the identification and inventories of attraction centres is the mapping of same. Thus, the location by name, town, state, and local government of each attraction centre can be known. Their distances and sizes from each other can also be shown. The Hotels can also be mapped to serve as guide to tourists. With the movement guide provided by urban and regional planning, tourists are equipped with the instrument to plan their itinerary having the knowledge of the locations and distances of the attraction centres.

**c. Investigation and Research about the Attraction Centres:**

**Planning is known to be an investigative discipline.** Thus, urban and regional planning will carry out surveys to gather information of different kinds that may be of interest to tourists about the tourist centres. Information ranging from the location, climate, economy, culture, number and standard of available facilities in the centres can be provided. This will enable the potential tourist to decide whether it is a place for him/her to visit and when.

**d. Formulation, Review of Environmental Laws and Planning Standards:**

**Urban and regional planning is an environmental discipline.** In fact, it is a universally acceptable instrument of environmental change. Thus, urban and regional planning formulates, review environmental laws and planning standards. In doing this the planner will monitor and control the environment including the tourist centres by establishing environmental criteria, guidelines, specification and standards for the approval and development of tourist centres and tourist development project. Among such laws are Environmental Protection Agency (FEPA) Decree no 58 of 1988, Environmental Impact Assessment (EIA) Decree No 86 of 1992 and the urban and regional planning decree no 88 of 1992.

**e. Packaging the Tourist Centres for Local and Foreign Consumption/Patronage:**

- Designing for infrastructural upgrading, rehabilitation, redevelopment, landscaping and securing of tourist centres.
ii. Preparation of feasibility, technical and financial studies and proposals for tourism project and investment. Such proposals can attract foreign aids, bank loans and foreign investments.

When Urban & Regional Planning has achieved (i) & (ii) above and it has been implemented, it will make the tourists centres attractive in terms of development and packaging.

f. **Planning of Tourism Development:** Growth and development must be planned. Thus, urban and regional planning can plan for tourism development by studying the trend and making projections for future proposes. This is because the key to orderly and acceptable development of tourism lies in careful planning (Irabor 1991).

g. **Protection of Natural Heritage:** Urban and regional planning can equally protect natural heritage composed of ecosystems and biodiversity, preserve endanger species of wildlife Etc. This can be done through design, planning legislative and various emerging concepts in planning. Such concepts include conservation, environmental planning and management (EPM), sustainable development (SD) and Geographic Information System (GIS). These can be used to monitor, protect, preserve and conserve the natural heritage for tourism purposes.

**CONCLUSION**

Nigeria is a vast country with great diversity of people, culture and remarkable range of physical beauty in her land. This is a potential for tourism development as an alternative to the over concentration on the oil sector of the economy. However, the current underdevelopment in the tourism sector has brought the urban and regional planning approach to tourism development. Therefore the paper submits that urban and regional planning can turn around the tourism sector of the economy following the approach discussed above.

**RECOMMENDATIONS**

Government and other stakeholders should embrace the urban and regional planning approach to sustainable tourism development by:

i. Showing more interest in tourism development and investment as packaged by urban and regional planners. This is because at the moment the interest and investment in the tourism industry is low. This is reflected in the number of the tourist centres (listed in table 1–4) that are developed and properly packaged for tourists.

ii. Structuring policies that will give clear roles for planners in tourism development. Within the National Tourism Policy launched in 1990, there is need to give clear role for urban and regional planners.

iii. Employing professional planner in the institutional framework created for tourism development. These include Nigeria Tourism Development Authority (NTDA), Hotels and restaurants, as well as the tourists centres.

iv. Imbibe the culture of maintenance to protect and prolong the usage of the tourist centres as they will be developed.

v. Strict adherence to the Global Code of Ethics for Tourism (GCET) for Tourism as approved by the World Tourism General Assembly, in 1999. These codes outline the “rules of the game” for stakeholders in the tourism industry.

vi. As it is common in recent times, the policy of privatization and commercialization could be extended to the industry, i.e. the tourist centres. For instance, Olumo Rock in Abeokuta Ogun State and Asop fall in Plateau State were privatized to be developed and packaged.

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Www.world-tourism.org
DEVELOPMENT CONTROL METHOD AND STRATEGY IN LAGOS STATE:
THE NEED FOR A NEW POLICY APPROACH TOWARDS SUSTAINABLE URBAN DEVELOPMENT

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&

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ABSTRACT

The role of effective development control in sustainable urban and infrastructure development cannot be overemphasized. The paper examines the level of effectiveness of urban development control in Lagos Metropolitan Area, using empirical and conceptual methods. The paper discovered that there is diversionary in the application of development control legal provision. It is also identified that the level of efficiency of development control agencies is insignificant to curb the malaise of contravention occasioned by high rate of building collapse. Development control mechanism in the area of building construction is very weak, and limited to a less-magnitude proportion of development control codes, and regulations. This, however, has a significant negative impact on sustainable urban development, which includes congested urban built environment, high rate of building collapse resulting in destruction of lives and properties, encroachment into road setbacks lead to accessibility and parking problems, and destruction of cities aesthetics, among others. Some impediments to effective development control were identified to include inadequate qualified personnel, inadequate working tools, corruption, political interference, official negligence, and urban poverty, such as ignorance and illiteracy. The research concludes that in order to build a sustainable urban environment, towards achieving Habitat Agenda and Millennium Development Goal, there is need to review the existing policy-guides and applications, and reform the urban development control mechanism so as to be able to face a new challenge of building a veristic urban environment.

1.0 INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Development control plays a significant role in urban planning adequacy and effective management and maintenance of urban infrastructure. As an instrument to control development, it can be described as the process by which an authority responsible for town planning exercises its statutory power to control all development activities through strict adherence to planning rules and regulations. However, the essence of development control in urban area is therefore to maintain acceptable standards of physical development and to monitor, coordinate and order the use of land.

The modern development control in Nigeria took its origin from colonial era, when the first historic Nigeria Town and Country Planning Law was promulgated in 1946. This is not to say that there had been no efforts prior the advent of this law. The 1946 law set a framework on which Nigerian urban development is based. Such laws as Land Proclamation of 1900, Land Native Ordinance of Northern Nigeria, and the Building Adoptive Bylaw of 1936 were made at different time to address a specific planning problem.

Promulgation of Decree 88 of Urban and Regional Planning in 1992 and Lagos Urban and Regional Planning Board Edict in 1997 was a landmark to development control activities in the Metropolitan Lagos. In spite of these efforts, Lagos Metropolitan Area is still growing and expanding at a fast rate, remains the fastest growing urban settlement in the country. A number of socio-economic and environmental problems particularly, housing, traffic, parking and transportation, threat to lives and properties have accompanied this accelerated growing rate, which have called for a complexity and competition in the use of land. It is against this background the government has continued intensifying its efforts to ensure that the level of urban decay in the metropolis is reverted through urban development control.

This research work aims at assessing the existing legal instruments for planning and development control in the area of adequacy and effectiveness; and by examining the efficiency of development control agencies in executing the existing law. The essence of this is to identify the shortcomings of the existing planning law and its implementation with the aim of recommending solution to any identified problems.

1.2 HISTORICAL BACKGROUND OF LAGOS STATE

What became Lagos State today started from the then Colony of Lagos in 1861. It grew from this status and from the Federal Capital Territory to become a full fledged state on 27th May 1967, when the Federal Government created the country into 12 states. A substantial proportion part of the old Western Region became part of this state. Such parts included Mushin, Irupeju, Ikeja, Agege, Alimosho, Ikorodu, Epe, and Badagry area. After the Civil War, other states in the country were split to create more states, but Lagos remained as an entity. Since colonial era, the state had become commercial and administrative centre for the country. Majority of the pioneer elites based there and acquired their Western Education.

The government policies since colonial era positively favoured Lagos State. Creation of Town Planning Committee, Municipal Board, and Township Ordinances are good examples of colonial policies in this regard. Due to the presence of employment opportunities in administrative and industrial sectors,
Lagos became the focus of the youths, both graduates and non-graduates, especially since 1950s. This incidence however increased the Lagos propensity for business in both secondary and tertiary sectors. Both the local and foreign entrepreneurs would rather like to, at least have their headquarters offices in this state, in spite of high competition for land and social amenities. The Oil Boom of early 1970s promoted the state economic environment. Rapid exodus of people witnessed this phenomenon. In 1972, the population of Lagos rose to 1.6m; in 1991, its population was 5.7million. However, 2006 census provisional results put the state annual growth rate at 3.2 with a total population of 9.01million. Already, the state is a mega city, and was identified to be among such fastest growing cities in the world, as Seoul (7.8%), Bogotá (5.5%), Mexico City (5.5%), Aruma (10.5%), Yaoundé (8.7%), and Baghdad (7.5%) (UN, 1982).

In Africa, Lagos ranked first among these cities such as Kampala, Ouagadougou, Yaoundé, Douala, Addis Ababa, Bamako, Antananarivo, Maputo, Dare es Salaam, Nairobi, Luanda, N’Djamena, Lumumbashi, and Mogadishu (Nigeria, 2003). The estimate indicates that Lagos will by itself accounts for another 10 million people, growing to 23 million by the year 2015, and will become the third largest city in the world after Tokyo and Mumbai (Bombay). Its population density, based on 1991 census report was 1,712 persons per Km Sq, with 94% urban area. Resulting from this urban rapid growth, coupled with land acquisition problem in Lagos are unplanned urban environment, pollution, dirt, inadequate land use planning and development control problems, resulting in slums, over crowding, high crime rate, over-stretching of available facilities, and intra-city mobility problem. In spite of the government effort to promote environmental quality of the state, as a means towards the realization of Habitat Agenda, the Metropolitan Lagos is one of the world mega cities where the problems mentioned here persist.

1.3 RESEARCH METHODOLOGY
The research was conducted, using empirical and conceptual methods. Physical survey and interview method were employed to collect the data. The former included inspection of development in both traditional-public housing and the government housing areas. This was to determine the level of contravention and compliance to planning codes and regulations, and the level of effectiveness of development control. The latter involved the use of designed questionnaire, which was administered on the development control stakeholders: the professionals, the government planning agencies and the public. The essence of this was to identify the inherent problems to effective planning and development control, strategies adopted for development control, and the level of planning codes awareness among the public and willingness to comply with these codes. It was also used to determine the gap between the existing planning laws and their executions. There was a review of literatures to conceptualse development control strategies, purpose, origin, and legal frameworks. Government agencies on planning and development control were identified and questionnaire was administered on them. The variables collected include types of contravention, problems resulted from contravention, stakeholders in development control, composition of the existing planning law, level of adherence to planning law, and contributing problems to effective development control. Data collected were analyzed with the use of syntax and table. It was based on the analysis the drawing of conclusion and recommendation was made.

2.0 CONCEPTUAL FRAMEWORK OF DEVELOPMENT CONTROL
Two main strategies can be identified for controlling development: direct and indirect. The former is the actual implantation of development control policies and laws. While the latter is the enabling laws that are impetus to planning. It is the legal instrument used as a tool by planning authority to exercise its statutory powers to achieve the latter, which is essentially to control development. Precisely, the former is derived from the latter. Effective implementation of the former provides an avenue for refurbishment of the latter. Direct strategy comprises the following: comprehensive development plan, master plan, urban redevelopment plan, neighbourhood plan, zoning and land subdivision plan. Indirect strategy on the other hand comprises urban development control associated laws and edicts. Some of these laws in Nigeria include the Town and Country Planning Ordinance of 1946, Urban and Regional Planning Decree No 88 of 1992. However, the activities of some of the professional bodies cannot be overemphasized. Some of these bodies such as NITP, NIOB, NSE and NIESV initiate laws and polices useful for development control, by submitting proposals to the government, by making publications in journals, and newspapers. They also help in enlightening the public on the planning issues through public lectures, workshops, seminars, and conferences organized from time to time (Fagbohun, 2007).

3.0 THE EXISTING LEGAL FRAMEWORK FOR DEVELOPMENT CONTROL
What could be termed as the most recent legislation for Urban and Regional Planning in the country is Decree No. 88 on Urban and Regional Planning of 1992, which replaced the 1946 Town and Country Planning Law after 42 years of its operation. Lagos State derived its planning instrument from this decree. The state enacted its own edict in 1997 tagged Lagos State Urban and Regional Planning Edict, became operational in January 1998, and has the following features: the establishment of Urban and Regional Planning Board, now Lagos State Physical Planning Development Authority (LASPHYDA), to perform the
The edict also made provision for establishment of local planning authority in each local government area as the main urban development controller at the grassroots level to perform the following functions:

- Preparation of town, rural, local and subject plans
- Preparation and submission of annual report of the national physical development plan and state regional plan to the board
- Undertaking of development control within its area of jurisdiction with approval, delegate planning power to the Chief Executive Officer, other offices or a duly registered professional for the purpose of planning and development control.

The local planning authorities were expected to approve plan for the following developments:

- Residential development of not more than 2000 sq. m.
- Residential structure of not more than six flats.
- Residential structure of not more than three floors.

Other developments outside these three are the responsibilities of LASPHYDA, such as:

- Skyscraper building of more than three floors or larger than 2000 sq. m.
- Development plans applications for commercial, industrial, recreational, institutional and civic or public buildings
- All plans applications made by the federal, state, and the local governments or their agencies such as LSDPC housing estates.

LASPHYDA has seven main departments with adequate representation of professional bodies. The departments include Development Permit, Physical Development Intervention, Physical Development Monitoring, District and Local Plans, Finance and Administration, Accounts, and Physical Planning, Research and Statistics.

4.0 THE EXISTING SITUATION OF DEVELOPMENT CONTROL STRATEGY AND METHOD IN LAGOS STATE

The responsibilities of looking after development and environment in Lagos State are generally the duty of three ministries: the Ministry of Physical Planning and Urban Development, the Ministry of Environment and the Ministry of Housing. These responsibilities are carried out specifically by the following agencies constituted at different time to handle a specific planning or environmental problems, in addition to the inputs of these three ministries. That is, the responsibilities of development control in Lagos State are straddled to many government agencies, rather than the one stipulated by Decree 88 of 1992, and the Lagos State Edict of 1997. In addition, some agencies that were not created for development control purpose also got involved in the activities, which include the state Development and Property Corporation, Environmental Protection Agency, Waste Management Authority, Urban Renewal Board and New Town Development Authority. Others include Wema Board, an Oodua Investment company, and the Federal Ministry of Housing and Urban Development. 

Federal Ministry of Housing and Urban Development is one of the key actors in development control in Lagos State. This has been defeated by the Supreme Court judgement of 13th, June 2003 on the case instituted by the Lagos State Government joined by other 35 states of federation. The case sought among other things to determine which tier of government was responsible for urban and regional planning in Nigeria. The judgement nullified several portions of Decree 88 of 1992 Aduwo (2005). In spite of this landmark judgement, developers and some beneficiaries of the federal lands are in dilemma of seeking development approval from two authorities i.e. the federal and Lagos State planning agencies.

The NTDA is saddled with the responsibility of establishing new towns and monitoring development in them by ensuring that the developers strictly comply with the approved plan LSDPC is charged with the responsibility of property development, especially housing provision. Layouts are usually prepared to guide the development. Just like NTDA
LASPHYDA was specifically constituted to perform a specific function in facilitating effective development control. Specifically, the Lagos State Physical Development Monitoring Department (PDMH) has the following functions to perform:

- Monitoring physical development in the state
- Detecting, serving of notices and removal of illegal structures
- Sealing of illegal structures
- Stage certification of structures under construction
- Issuance of certificate of fitness for habitation
- Arrest and prosecution of contraveners of planning laws and regulations

Alimosho District Planning Area or zone was specifically studied. It was discovered that the area had four local planning offices. The district office is in Agege headed by a District Town Planning Officer, an Engineer, and Clerical Officer. The former three are graduates of relevant fields with professional qualifications.

### 4.1 Building Plan Submission for Approval

The Lagos State Physical Development Offices such as District Planning Office and Local Planning Office requested any developer seeking for approval for development in the state to provide the following documents as indicated here:

- Proof of ownership of land or title document
- Acopy of survey plan;
- Five sets of architectural drawing; Structural drawing prepared in A-3 format calculation sheets, letter of supervision by a Registered Engineer;
- Current income tax clearance certificate;
- Current special development levy receipt;
- Tenement rate;
- Clearance letter from relevant government agencies;
- Two copies of technical report prepared by a registered Town Planner where applicable;
- Clearance letter from special application unit where applicable.

The local planning office neither created an area of jurisdiction for its officers nor applied zoning system in development control exercises, none of the officer was saddled with a specific responsibility, except the CEO who was to approve the planning and the engineer who was to assess the structural drawing. The CEO and the Recommending Officer may not inspect the site for the purpose of plan approval.

### 4.1.2 Approval of Building Plan Proposal

Both the District Planning Office and the Local Planning Office adopted the same process in planning approval. These processes are usually taken after the developer has submitted all the necessary documents as identified in the preceding subheading. These include:

- Assessment of the quality and adequacy of the proposal(drawing);
- Working of assessment fee;
- Payment for assessment fee;
- Site inspection;
- Registration of the proposed plan with a number;
- Recommended by the Recommending Officer;
• Application of stamp and seal on planning proposal at District Planning Office;
• Approval signature by the appropriate CEO as the case may be.

4.1.3 Method Adopted For Monitoring Development
Development monitoring is a follow-up approach to ensure that developer complies with approved plans. In the state, it was neither the duty of District Office nor the Local Planning Office to monitor or control development. Physical Development Monitoring Department (PDMD) was established for this purpose. The department was expected to monitor, inspect, and control development and ensure that all physical developments in its jurisdiction have an approved plan, comply with the approved plan, and notifying the appropriate authority of any contravention detected. The contravention in this case is of two types. If it is of main building, it was expected to be handled by the District Planning Office or Local Planning Office as the case may be. Any types of contravention such as corner shops, kiosk and erection of container shops on open spaces such as road setback and road intersection area, fences and any type of temporary or permanent structures are the responsibility of PDMD. It should be noted that for these types of development, preparation of drawing for approval was not mandatory. In this case, PDMD may ask the affected developer to pay the required assessment fee. If the structure obstructs road or poses danger to life and property, the PDMD may carry out demolition of the structure in line with the existing legal provision.

In monitoring development, the area of concern for PDMD was to ensure that the site coverage, number of floor, building height, and window and door sizes constructed in line with approved plan. However, compliance with structural and material specifications was not the ultimate. Individual developer was expected to contact qualified engineer to supervise the construction project.

Development control method and tradition in this regard in the traditional housing, which contained the structures built by the individual community members was the PDMD to visit the site and request the construction engineer to fill a form to monitor development stages and progress, and to know the person in charge of the construction. This was done after the normal inspection have been carried out for planning approval purpose. The essence of the form was for record purpose in case of structural failure. However, there was a failure in the implementation of this development control method as shown in Table 1.

In the state housing areas, such as LSDPC development control was the responsibility of Local Planning Office or the District Planning Office. Hence, Development Monitoring Department was expected to contact qualified engineer to supervise the construction project. However, there was a failure in the implementation of this development control method as shown in Table 1.

In the state housing areas, such as LSDPC development control was the responsibility of Local Planning Office or the District Planning Office. However, Local Planning Office and District Planning Office approved plan for physical development in every segment of the state. PDMD monitored development and identified contraventions in the public and traditional housing areas. It is to be noted that in some cases developers were expected to seek approval from the Local Planning Office or District Planning Office as well as the FHA or Wema Board as the case may be. Construction in the government housing area was mostly handled by the qualified personnel or qualified contractor. District Planning Offices granted approval for any development such as industrial and commercial, as well as mighty buildings. The basic requirement for these types of development is that the developer would be required to produce approval for change of use from the appropriate authority before the approval could be granted. The two planning offices in performing their development control activities have no link with the local government where they are situated, except that the junior staffs up to level 05 in the Local Planning Offices were the local government staff.

4.2 DEVELOPMENT CONTROL SITUATION IN OJOKORO-MEIRAN LSDPC HOUSING ESTATE
In order to determine the nature of development control, Ojokoro housing area, which is one of the state government housing areas was identified and investigated. The housing estate was built during the second civilian regime in early 1980s however, the estate comprised 156 blocks, where each flock contained six flats of 3-bedroom type. In total, there were 936 housing units in the estate. There were about 5,600 occupants in this estate. In addition with this number, there were some people who were working in both government office and in petty trading and service works. The intention of the state government was to provide affordable housing for the yarning population, and majority of the housing units built by then was low cost: including Ojokoro Housing Estate. The project of building the housing estate was supervised by the LSDPC.

At the end of the investigation, 65% of the housing units were conclusively investigated, while 98 inhabitants were successfully interviewed, and the findings are as follow:

- LSDPC Ojokoro Housing Estate was initially built in conformity with its approved plans. It had adequate open space, road network work for circulation, while the open spaces were landscaped. The occupancy ratio during this period was estimated at five persons per dwelling unit.
- The present environmental situation of LSDPC Ojokoro Housing Estate as identified above has changed dramatically, as indicated in the next subheading.
- Originally, the estate was purely residential.
- There was little provision for such facilities as market shops, because of the estate closeness to the larger urban community of metropolitan Lagos such as Ojokoro-Meiran and Agbado. Nonetheless, there
was provision for nursery and primary school to take care of the kids within the estate. A centrally located open space was reserved for sport activities, particularly football. There was a designated small open space for shopping.

Table 1: Types of Contravention and Their Uses

<table>
<thead>
<tr>
<th>Land Use</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car Park</td>
<td>4</td>
<td>3.3</td>
</tr>
<tr>
<td>Car Wash</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td>Generator</td>
<td>13</td>
<td>10.5</td>
</tr>
<tr>
<td>Canteen</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>Provision Store</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>Boutique</td>
<td>2</td>
<td>1.5</td>
</tr>
<tr>
<td>Food Stuff Store/Shop</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>CD Selling</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td>Recharge Card Selling</td>
<td>11</td>
<td>9.5</td>
</tr>
<tr>
<td>Business Centre</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Scaffolding For Overhead Tanks</td>
<td>20</td>
<td>16.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>120</td>
<td>100</td>
</tr>
</tbody>
</table>


4.2.1 Nature of Building under Contravention in Ojokoro LSDPC Housing Estate

Structures under contravention in the estate are of the following types:

- Kiosks of different sizes made up of metal building materials.
- Shops constructed with cement blocks.
- Construction of additional structures such as car parks to the residential building.
- Construction of generator rooms on the open space.
- Digging of boreholes on the open space.
- Erection of project roof.
- Erection of scaffolding to carry overhead tanks

The data analyzed as indicated in Table 1 were confirmed on other three LSDPC Housing Estates in Iba, Isolo, and Amuwo-Odofin. The types of contravention were the same, the number only varied from 18% to 23%.

4.3 DEVELOPMENT CONTROL IN THE TRADITIONAL HOUSING AREA

The development control in the traditional housing area was solely under the control of LASPHYDA and the affected local planning authority, as explained earlier. The analysis of data collected from the field is explained here.

4.3.1 The Level of Awareness on Development Control among the Residents

Table 2 shows the residents level of awareness on town and country planning, and the agencies to execute development control laws in the state. Out of 110 respondents, 32% had higher qualification (ND, HND, NCE, and Degrees). The level of education however reflected in their planning awareness as indicated in the table here. Table 3 explains the impression of the residents on the creation of local planning authorities and other allied agencies.

Table 2: The Level of Residents Awareness on Town Planning In Lagos State

<table>
<thead>
<tr>
<th>Awareness</th>
<th>No. (110)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existence of Planning Authorities</td>
<td>62</td>
<td>56</td>
</tr>
<tr>
<td>Duties of Town Planning Authorities</td>
<td>44</td>
<td>40</td>
</tr>
<tr>
<td>Existing Planning Laws</td>
<td>37</td>
<td>34</td>
</tr>
<tr>
<td>The Importance of Development Control</td>
<td>49</td>
<td>45</td>
</tr>
<tr>
<td>General Level of Planning Awareness</td>
<td>92</td>
<td>48</td>
</tr>
</tbody>
</table>

Source: Interview with the Lagos Residents (2006)

Table 3: Residents Impression on the Establishment of Local Planning Office and Others

<table>
<thead>
<tr>
<th>Impressions</th>
<th>No. (110)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>To Generate Money</td>
<td>51</td>
<td>46</td>
</tr>
<tr>
<td>Means of Exploitation and Embezzlements</td>
<td>48</td>
<td>44</td>
</tr>
<tr>
<td>To Crate Employment</td>
<td>44</td>
<td>40</td>
</tr>
<tr>
<td>To Protect Lives and Properties</td>
<td>36</td>
<td>33</td>
</tr>
<tr>
<td>Lack of Knowledge</td>
<td>38</td>
<td>35</td>
</tr>
</tbody>
</table>

Source: Interview with the Lagos Residents (2006)

Note: Some respondents indicated more than one impression, as it appears in Table 3.

Table 4: The Level of Building Collapse in Lagos State

<table>
<thead>
<tr>
<th>Area</th>
<th>No. Of Collapse Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lagos Island</td>
<td>4</td>
</tr>
<tr>
<td>Eko Ijora Metta</td>
<td>3</td>
</tr>
<tr>
<td>Ojueke-Iganmu</td>
<td>1</td>
</tr>
<tr>
<td>Agege</td>
<td>1</td>
</tr>
<tr>
<td>Amuwo-Odofin</td>
<td>1</td>
</tr>
<tr>
<td>Ikeja-Alimosu</td>
<td>1</td>
</tr>
<tr>
<td>Oshodi</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
</tr>
</tbody>
</table>

The level of contravention in the state varied from place to place, and depended on the population density and the level of commercial activities. Table 5 shows this scenario and building density level in some areas.

The common types of contravention are mostly redevelopment and conversion, attachment buildings such as boys-quarters, fence walls and corner shops. Others include erection of kiosks; container shops, wood shops, and borehole constructed beside and in front of buildings. Some of these on their plots exhibited densities higher than the required size as indicated in Table 5. Substantial number of them obstructed the roads, while some were ratified illegal structures. Larger proportion of setbacks to roads and to adjacent buildings was built up. Among the buildings sampled for inspection as indicated in Table 5, an average 29 buildings in the sampled areas were redeveloped, originally from residential to commercial buildings. Out of this average number, 9 (31%) had parking lots, where only2 (6.9%) of the buildings with parking lots had adequate parking space.

### Table 5: The Level of Contravention and Building Density

<table>
<thead>
<tr>
<th>Location</th>
<th>Contravention in %</th>
<th>40-50</th>
<th>50-60</th>
<th>60-70</th>
<th>70-90</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yaya Abatan</td>
<td>82</td>
<td>27</td>
<td>0</td>
<td>3.3</td>
<td>7</td>
</tr>
<tr>
<td>Ishga-Jju Road</td>
<td>90</td>
<td>30</td>
<td>0</td>
<td>3.3</td>
<td>10</td>
</tr>
<tr>
<td>Orile-Oshodi Road</td>
<td>96</td>
<td>40</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Isolo-Mushin Road</td>
<td>96</td>
<td>40</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Isolo-Ikotun Road</td>
<td>81</td>
<td>33</td>
<td>0</td>
<td>3.3</td>
<td>10</td>
</tr>
<tr>
<td>Capitol Road Agege</td>
<td>80</td>
<td>33</td>
<td>0</td>
<td>3.3</td>
<td>7</td>
</tr>
<tr>
<td>Borno Way Egbute-Metta</td>
<td>81</td>
<td>23</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Mile2-Badagry Expressway</td>
<td>96</td>
<td>40</td>
<td>0</td>
<td>3.3</td>
<td>7</td>
</tr>
<tr>
<td>Average Total</td>
<td>88</td>
<td>33.3</td>
<td>0</td>
<td>2.1</td>
<td>8.1</td>
</tr>
</tbody>
</table>


#### 4.3.2 The General Nature of Contravention in Lagos State

Generally, in Lagos, there are numerous types of contravention in both public and government own housing areas. This generalization was made from the data collected and the researchers’ physical survey:

- Encroachment on setbacks to roads and adjacent buildings.
- Exceeding coverage and density requirement.
- Illegal addition, convention and alteration both internal and external to an existing building.
- Building in contradiction to the approved plan.
- Building of fence walls without permission.
- Erecting temporary structures, sheds, and kiosks on vacant plots and open space and setbacks.
- Blocking access roads with building materials, motor spare parts and other merchandise.
- Starting development before securing approval from the relevant authority.
- Affixing billboards, notice board, and postal.
- On road parking.
- Abandoning of damage vehicles on roads.
- Illegal conversion open places to garages and motor-park.
- Building of fence walls without permission.
- Encroachment on setbacks to roads and adjacent buildings.
- Exceeding coverage and density requirement.
- Illegal addition, convention and alteration both internal and external to an existing building.
- Building in contradiction to the approved plan.
- Building of fence walls without permission.
- Erecting temporary structures, sheds, and kiosks on vacant plots and open space and setbacks.
- Blocking access roads with building materials, motor spare parts and other merchandise.
- Starting development before securing approval from the relevant authority.
- Affixing billboards, notice board, and postal.
- On road parking.
- Abandoning of damage vehicles on roads.
- Illegal conversion open places to garages and motor-park.
- Building of fence walls without permission.

The level of contravention in the state varied from one area to another according to population density, location and the level of commercial development, as earlier discussed.

#### 4.4 SUMMARY OF PROBLEMS MILITATING AGAINST EFFECTIVE DEVELOPMENT CONTROL

Here is the summary of findings based on the data collected. Some of these are observation of the government officials.

- Economic situation of the people
- Land acquisition problem resulted in high cost of acquiring land.
- Low level of public awareness on the relevant and the need for development control.
- Political interferences in development control affairs
- Corruption and favouritism of the stakeholders
- Inadequate number of qualified professional planners
- Inadequate working tools for the development control agencies
- There was constitutional defective and failure of planning law to respond to urban socio-economic changes
- Decentralization and fragmentation of development control power
- Ineffective development control even in the government housing area
- Non-conformity with both federal and state laws on development control
- The law in itself is not responsive to social and economic changes in the country. The edict that was enacted in 1997 is yet to be reviewed after 9 years of its implementation
- Due to a long period before the new planning laws were enacted in the state, there had been a compounding urban development control problems, which the presented methodological approach cannot resolve

#### 5.0 RECOMMENDATION AND CONCLUSION
Considering the level and nature of development control problems in the state, review of the laws and edits on development control regularly, at 5 years interval is very important and desirable. The existing law is weak it cannot bring a drastic change to development control situation. There should be a yardstick for measuring acceptable size of development control agency in term of personnel. The laws in this regard should stipulate the number of required personnel to monitor development per urban land hectare or per certain urban population number. This will help in a long way to determine the acceptability, adequacy, and effectiveness of any town planning authority.

Development control is at the grassroots. The grassroots are the receivers of both sides of development control. Therefore, they should be involved in controlling development. This can be done by taking town planning education to the grassroots from the classroom and conference room. With this, formation of a committee or town planning vigilante under the community development association, or community leader will be possible.

Violation of development control by the developers in some ceases usually results in demolition or great adjustment to the affected structure. Developer may be ordered to demolish the structure and pay fine. Since some of the developers that contravened did it knowing-fully before taking such an economic risk, contravention should therefore be taken as criminal and be treated as economic crime. This will make developers to take planning rules and regulation so seriously.

The existing strategy employed to development control in the state is too decentralized, un-coordinated, and fragmented. Instead of straddling development control power into many hands, legal and economic power of the local governments should be strengthened to enable them handle development control as being done in UK. The state government should act as policy maker and research coordinator on urban problems. The new law should be enacted to recognize the local governments as an active executor of development control policy, with different planning code according to the peculiar nature of their planning problems.

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ECO-DAMAGE VALUATION FOR OSHODI WASTE TRANSFER STATION USING THE CONTINGENT VALUE APPROACH

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ABSTRACT
Willingness-to-Accept (WTA) elicitation framework is a chief instrument of the Contingent Valuation Method (CVM). This research work examines a quantitative model and elicits the WTA compensation for externality effects from Oshodi Waste Transfer Site (WTS) operations. Using the cross-sectional design, multi-stage sampling, and structured interview; we asked the dichotomous choice WTA questions directly from a total of 440 respondents resident within three kilometers to the WTS. Multiple regression analyses of data show that WTA values are significantly determined by income, occupation, level of education of residents and distance to the WTS. Trimmed mean and median WTA/Household number synthesis indicate that damages to the local residents at Oshodi area is in the order of N14.25 billion. The work justifies the WTS. The use of economic valuation for non-market environmental goods and services, and the values of impacts resulting there from is little known in Nigeria, whereas the use of contingent approaches is increasingly being recognized by the World Bank, United Nations Environment Program, and the US Congress, as important in natural resource damage assessment for cost-benefit analysis and decision making. The use of economic valuation for non-market environmental goods and services, and the values of impacts resulting there from is little known in Nigeria, whereas contemporary environmental valuation approaches are increasingly being recognized by the World Bank, International Finance Corporation (IFC) United Nations Environment Program, and the US Congress, as important in natural resource damage assessment for cost-benefit analysis and decision making (Breedlove, 1999).

Table 1.0 Impact and Cost of Unsustainable Development in Nigeria

<table>
<thead>
<tr>
<th>Priority Environmental Problems</th>
<th>Economic Growth Impact</th>
<th>Distributional Equity Impact</th>
<th>Resource Integrity Impact</th>
<th>US $ millions Per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil degradation</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>$3,000</td>
</tr>
<tr>
<td>Water Contamination</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>$1,000</td>
</tr>
<tr>
<td>Deforestation</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>$750</td>
</tr>
<tr>
<td>Coastal erosion</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>$150</td>
</tr>
<tr>
<td>Gully Erosion</td>
<td>Moderate</td>
<td>Moderate</td>
<td>High</td>
<td>$100</td>
</tr>
<tr>
<td>Fishery Losses</td>
<td>Moderate</td>
<td>Low</td>
<td>Moderate</td>
<td>$50</td>
</tr>
<tr>
<td>Water Hyacinth</td>
<td>Moderate</td>
<td>Low</td>
<td>High</td>
<td>$50</td>
</tr>
<tr>
<td>Wildlife Losses</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>$10</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>$5,110</td>
</tr>
</tbody>
</table>


The use of economic valuation for non-market environmental goods and services, and the values of impacts resulting there from is little known in Nigeria, whereas contemporary environmental valuation approaches are increasingly being recognized by the World Bank, International Finance Corporation (IFC) United Nations Environment Program, and the US Congress, as important in natural resource damage assessment for cost-benefit analysis and decision making (Breedlove, 1999). The environment has unknown resilience and resistance, but impacts on the environment are difficult to predict with reasonable certainty, besides, environmental impacts are difficult to measure. The valuation, in monetary terms, of environmental resources and damages, is amenable to special techniques, though not perfect in themselves.

Economic analysis can show, albeit imperfectly, how different resource allocations affect the welfare of society as a whole and of different groups in society whether in the market place or not. Non-market resources have monetary value as long as people are willing to trade some of their income and wealth for them. In this
way monetary values do not depend upon whether people actually trade money for the benefits received, but also, on anticipated benefits.

**Study Objectives and Significance**

The objectives of the study are to assess the total environmental damage value from Oshodi WTS operations using the contingent valuation approach; indicate that total damage/economic value basis is a rational and equitable approach to appraising environmental benefits; and to suggest policy considerations in these directions. The significance is to aid decision making for establishing socially efficient waste transfer sites.

**Hypotheses**

**Hypothesis 1.**

WTA is not statistically determined by income of residents, distance to waste disposal site, and social characteristics of residents.

**Hypothesis 2.**

WTA values do not significantly state compensation for loss in environmental quality.

**The Study Area**

Oshodi WTS is located along the Ikeja-Apapa Expressway near Charity, some 1.5kilometres to the Murtala Muhammed International Airport. Lagos, Nigeria. It houses one of the existing waste incinerating plant facilities constructed in 1979 to improve the collection/disposal system but never actually operated. The unit is not suitable for treatment of the waste profile in Lagos, and does not correspond to the state-of-the-art. Site conditions have deteriorated and Plant corroded, broken down and vandalized. Waste from the south west and south east of Lagos are transferred to the WTS, and from there to Olusosun and Agege WDS. The average quantity of solid wastes delivered to Oshodi is 51,840tons per annum (Lavalin, 1992)

**Review of Related Literature**

WTS operations have various environmental effects such as dust, noise, litter, odour and presence of vermin (Reihert et al, 1992) risks of accidents (McClelland et al, 1990; European Commission Report, 2000) leachate emission to soil and water (WHO, 1993; Ibiyemi, 2002) disruption to access roads and gaseous emissions to air (Dragojevic and Dragojovic, 1997) and declining property values (Gunterman, 1995) According to Ibiyemi (2006) resultant damages from these effects can be assigned monetary values.

Mishra (1998) categorized the techniques for the monetary valuation of environmental damage or externalities into three: Market Value Approaches, Surrogate Market Approaches, and Simulated Approaches (Non market) methods based on market valuation of physical effects seek to value environmental changes by observing physical changes in the environment and estimating what difference these changes will have on the value of goods and services.

The contingent valuation method is a very versatile method which can be applied to valuation of almost any kind of environmental goods and services irrespective of their being marketed or not marketed. It can be used to estimate use value, non-use (passive) value, option value (reserved for one's future use) or bequest value (reserved for the use by the future generation). On the other hand, it is also the most controversial among the non-market valuation methods, mainly on account of its shaky assumption: that there is some significant association between saying and doing (Breedlove, 1999:2, Mishra, 1998:8). According to Spash (2000) Contingent valuation method (CVM) surveys places a monetary value on various aspects of the environment with the aim of determining whether the benefits of a proposed project outweigh the costs. Litigation over natural resource damages has used CVM results as evidence of the size of compensation required. Most CV studies in developing countries have relied on in-person, one-on-one interviews conducted by local enumerators, usually trained by an international team (FAO, 2000) The reason for exclusive reliance on face-to-face interviews is simple: The literacy...
levels in some developing countries are still too low to permit mail or self-administered surveys; telephones are not available to much of the population (especially in rural areas), even when education and telephone connections permit - it is unclear whether the residents of certain developing countries would be willing to participate in mail or telephone survey. Contingent valuation surveys conducted in developing countries have for the most part used a dichotomous choice format, with one or more follow-up questions. In some cases, the sequence of dichotomous choice questions has been closed with a final open-ended question.

Certain aspects of contingent valuation survey could influence responses and lead to biased results. But conscious efforts were made to minimize biases. Biases can arise in numerous ways, because individuals behave differently in various settings. Respondents may interpret the questionnaire differently, may be motivated by different aspects of the scenario when making decisions, may respond based on inferences about the use of their answers, or may use different cost-minimizing procedures or rules-of-thumb to make decisions when they know little about the good. Carson et al., (1992) describe four types of biases (1) incentives (a)Preparation of the Questionnaire interview in such a way as to minimize biases. 

- Designing a hypothetical scenario.
- A willingness-to-accept elicitation framework has been used.
- Decided on the payment vehicle (cash payment) for the WTA question.
- Stated the WTA question as a dichotomous choice question (Referendum Format)

Research Methods
The following are the outline of the steps followed when conducting the CVM study:
(a) Preparation of the Questionnaire interview in such a way as to minimize biases.
(b) Designing a hypothetical scenario.
(c) A willingness-to-accept elicitation framework has been used.
(d) Decided on the payment vehicle (cash payment) for the WTA question.
(e) Stated the WTA question as a dichotomous choice question (Referendum Format)

Administration of the survey was to a sample of the general adult population living within a radius of influence (up to 5 km) of the WTS. The first stage of sampling involved a stratification of the three kilometer radius into four concentric zones (wards). The sampling design is multi-stage. The first stage of sampling involved a stratification of the three kilometer radius into four concentric zones (wards). With the WTS as a centroid, four wards were demarcated at 0.0-0.5km, 0.5-1km, 1-2km, and 2-3km from the WTS. Within each ward, stratification was done according to house types: Tenements/Flatlets, Flats/Duplexes, and Detached houses/Semi-detached houses/Bungalows.

Selection of sample households was made randomly from each stratum as shown in Table 2.0.
- Calculated the mean and median WTA from the responses.

Table 2.0 - Household Sample Sizes in Oshodi Area

<table>
<thead>
<tr>
<th>DISTANCES FROM WTS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-0.5km</td>
<td></td>
</tr>
<tr>
<td>Tenements/Flatlets</td>
<td>18950</td>
</tr>
<tr>
<td></td>
<td>(60)</td>
</tr>
<tr>
<td>Flats/Duplexes</td>
<td>7800</td>
</tr>
<tr>
<td></td>
<td>(60)</td>
</tr>
<tr>
<td>Detached/Semi Detached/Bungalows</td>
<td>1575</td>
</tr>
<tr>
<td></td>
<td>(60)</td>
</tr>
<tr>
<td>0.5-1km</td>
<td></td>
</tr>
<tr>
<td>6700</td>
<td></td>
</tr>
<tr>
<td>(32)</td>
<td></td>
</tr>
<tr>
<td>4995</td>
<td></td>
</tr>
<tr>
<td>(32)</td>
<td></td>
</tr>
<tr>
<td>2287</td>
<td></td>
</tr>
<tr>
<td>(12)</td>
<td></td>
</tr>
<tr>
<td>2183</td>
<td></td>
</tr>
<tr>
<td>(16)</td>
<td></td>
</tr>
<tr>
<td>3910</td>
<td></td>
</tr>
<tr>
<td>(16)</td>
<td></td>
</tr>
<tr>
<td>35733</td>
<td></td>
</tr>
</tbody>
</table>

TOTAL 71250
(440)

Field Survey (2008)
The figures in brackets represent the sampled population of household units. Two types of data analyses are used:

Descriptive Analyses: Summary Statistics for WTA, Distance, Income, and social characteristics as defined by WTA; and other respondents' characteristics.

Inferential Analyses: Pearson's Correlation (WTA and Qi,Yi,Si) and Regression analyses \[WTA = f (Q_i, Y_i, S_i)\] for theoretical and construct validity; Chi-square test for content validity.

Valuation Model

Perman, et al (1999) and FAO (2000:9) reaffirmed an established WTP/WTA model and stated as follows

\[WTP/WTA = f(Q, Y, S)\]

Where \(V\) denotes the indirect utility function, \(y\) is income, \(p\) is a vector of prices faced by the individual, and \(q_0\) and \(q_1\), are the alternative levels of the good or quality indexes (with \(q_1>q_0\), indicating that \(q_1\) refers to improved environmental quality) In the above equation, utility is allowed to depend in a vector of individual characteristics influencing the tradeoff that the individual is prepared to make between income and environmental quality. An important consequence of the model is that WTA should, therefore depend on (i) The initial and final level of the good in question \((q_0, q_1)\) (ii) Respondent income (iii) All prices faced by the respondent, including those of substitute goods or activities, and (iv) The respondent characteristics.

Results and Analyses

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>MEAN (STANDARD DEVIATION)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WILLINGNESS TO ACCEPT (WTA)</td>
<td>N295,054.75 (N296717.69)</td>
</tr>
<tr>
<td>Did not answer the WTA Question dummy</td>
<td>0.173</td>
</tr>
<tr>
<td>AGE</td>
<td>35.52 (13.20)</td>
</tr>
<tr>
<td>HOUSEHOLD SIZE</td>
<td>5.22 (2.22)</td>
</tr>
<tr>
<td>MALE dummy</td>
<td>0.594</td>
</tr>
<tr>
<td>SELF EMPLOYED dummy</td>
<td>0.455</td>
</tr>
<tr>
<td>EMPLOYED dummy</td>
<td>0.396</td>
</tr>
</tbody>
</table>

The average age of respondent in the Oshodi area is about 36 years old, has completed secondary and has a household income range of N15000 – N30,000 a year. Most of the respondents are men (59.4%) and about 95% are employed; 5.9% are retired, and another 8.9% are unemployed. Average number of persons per household size 5.22. Over 96% of the respondents are aware of the presence of the WTS, while 63.2% have been resident in the area for over five years. All the respondents live within three kilometers distance to the WTS. 34% live in Flatlets/Tenements, 42.5% in Duplexes/Flats, and 23.5% in Detached houses-semi-detached houses. Only 10.8% of the respondents earn below the minimum wage of N7,500 per month or N90,000 per annum.

Table 3.0 - Descriptive Statistics of The Respondents
Table 4.0. Correlations Analysis of WTA, Income, Occupation, Distance & Education at Oshodi

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>192994634180.267</td>
<td>4</td>
<td>482498658545.067</td>
<td>6.591</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>85857771760.910</td>
<td>436</td>
<td>73209721484.511</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7786772352941.180</td>
<td>440</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Predictors: (Constant), educational level of respondent (Oshodi), Distance from residence to Oshodi disposal site, occupation of respondent (Oshodi), income of household (Oshodi)
b Dependent Variable: Willingness to Accept (Oshodi)

If we consider the multiple linear regression analysis of WTA on income, distances of respondents to the WTS, and their social characteristics because it is not a realistic conjecture. The alternative hypothesis is accepted by declaring the coefficient of determination R².

Table 5.0. - Regression Results of WTA on Income, Distances and Social Characterizer ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>192994634180.267</td>
<td>4</td>
<td>482498658545.067</td>
<td>6.591</td>
<td>.000</td>
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<td></td>
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</tr>
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<td></td>
</tr>
</tbody>
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a Predictors: (Constant), educational level of respondent (Oshodi), Distance from residence to Oshodi disposal site, occupation of respondent (Oshodi), income of household (Oshodi)
b Dependent Variable: Willingness to Accept (Oshodi)

If we consider the multiple linear regression analysis of WTA on income, distances of respondents to the WTS, and their social characteristics because it is not a realistic conjecture. The alternative hypothesis is accepted by declaring the coefficient of determination R².

Discussion

F-value (critical value) i.e. F_{critical} was determined and compared with F-value (observed), and take a statistical decision. F-cal < F-tab ; Accept Ho: F-cal ≤ F-tab; Reject Ho. F-value (cal) = 6.591, Degree of Freedom (nk1) = 435: Level of Significance = 0.05 Based on one-sided F-test at 0.05 significant level: Critical Value i.e. F-value (tab) = 1.45 Since F-cal > F-tab, for P (.000) ≤ α (.05), we reject the null hypothesis, Ho; that WTA values are not statistically determined by income, distances of residents to WTS and their social characteristics because it is not a realistic conjecture. The alternative hypothesis is accepted by declaring the coefficient of determination R² significant. Similarly, X²-value (critical value) i.e X²_{critical} was determined and compared with X²-value (observed value) in order to take a statistical decision. Based on X² distribution test at .05 and (k-1) i.e (2-1) degree of freedom X²-cal (42.75) > X²-tab (10.83) for P (.000) ≤ α (.05), we reject Ho; that the WTA values do not significantly state compensation for loss in environmental quality from WTS operations

Total Damage Value

The use of an a-trimmed sample mean where a is set at a predetermined percentage. An a-trimmed is essentially a weighted average that attaches a weight of zero to the largest and lowest ax 100 percent of the observations, thus effectively disregarding them. The sample average is the best (i.e. lowest-variance) estimator of the true population, making the mean WTA/WTP statistically efficient (Carson, 1991) The median is a resistant statistic particularly where there are extreme values in the low and high directions (Exan and Okafor, 1995:25) The median WTA has been adopted for this study. The median WTA for Oshodi is N200,000. The value of environmental damage resulting from WTS Operations at Oshodi is N14.25billion, made up as follows: Median WTA = N200,000 Estimated no. of households = 71250 Total Damage Value = Median WTA x Estimated no. of households = 71250 x 200,000 = N14,250,000 neighborhood of USD 5 billion annually if corrective measures are not taken.

Table 6.0. - Chi-square Test of Adequacy of Compensation and Content Validity Test Statistics

<table>
<thead>
<tr>
<th>Adequate Compensation</th>
<th>Chi-Square</th>
<th>df</th>
<th>Asymp. Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>42.752</td>
<td>1</td>
<td>.000</td>
</tr>
</tbody>
</table>

b 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 48.0. The Yaba Journal of Environmental Research (June 2008) (1), (2) 32 - 45
This study has been able to prove that: Willingness to accept values as compensation for loss in environmental quality from WDS operations are determined by the income of respondents, relative distances to the WTS, and to a large extent, by the residents' social characteristics; and that monetary values can be assigned to environmental damages. This is in agreement with economic theory and principles (Georgiou, et al 1998; Mansfield 1998) WTA bids increase with income \((r = 0.156)\) level of education \((r = 0.065)\) and occupation \((r = 0.187)\) but decreases with increasing distance to the WTS \((r = -0.440)\) as nuisance effects diminish. According to Breedlove (1999:11) and FAO (2000) CVM validity evaluates whether the results are consistent with theoretical expectations; this typically involves a regression of the willingness-to-pay/accept with other, independent variables to check whether the direction, magnitude, and strength of the relationships among variables are consistent with what would be expected under economic theory. The lack of criteria and truly comparable methods makes some of these tests of the validity of contingent valuation difficult, but surveys can usually be evaluated for their content and theoretical validity.

**Conclusion and Recommendations**

**Summary of Findings:**
This study has looked into the relationship of WTA with some variables, such as income of respondents, their social characteristics (Occupation and education) and distances to WTS in relation to the established and accepted WTA model expounded by Perman, et al (1999) and FAO (2000). Also, the value of environmental damage from the WTS operations were assessed at N14.25billion. The WTA measuring instrument measures conceivable damages that may result from waste disposal site operations in the study areas; an approach which is cognizant of market and non market values.

The study validated the WTA model by expressing WTA, the dependent variable, as a function of independent variables such as income of residents, distances to WTS, occupation and educational level of residents.

**Conclusion**
Knowledge content of the concept of WTA as a tool for environmental damage value estimate and decision making is limited in Nigeria, hence, resource use optimization through cost-benefit appraisal are seldom commonplace. Resultantly, compelling empirical studies for sustaining the delicate eco-balance are scanty. Also, environmental damage valuations of WTS operations have not been carried out since establishing the WTS. Environmental damages can be quantified using appropriate valuation methodologies. socio-economic development decisions might be unsustainable.

**Implications of the Research Findings**
The total estimated value of environmental damage is phenomenal, and result in cost-savings in environmental conservation. The value of the ecosystem as a guide to socio-economic development decisions might be underestimated. Therefore, there will be in the areas under study. Unless positive steps are taken to ecologise economic policies, socio-economic development decisions might be unsustainable in Nigeria.

**Recommendations**
These recommendations are aimed at minimizing costs relating to environmental damage and encouraging cost-benefit appraisal of environmental resources through the application of contemporary rational environmental valuation models.

There is need for governments, environmental resources managers, and stakeholders to exercise greater rationality in economic decision-making that ensures an integration of economic development, socio-cultural and environmental protection in an efficient allocation of scarce resources for sustainable development. These can be achieved through pollution control, environmental impact assessment, environmental audit and accounting, development planning and resource conservation.

Sustainable development can only be pursued if demographic developments are in harmony with the changing productive potential of the ecosystem. Where they are not, society compromises its ability to meet the essential needs of its people by overexploiting resources.

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Sustainable development can only be pursued if demographic developments are in harmony with the changing productive potential of the ecosystem. Where they are not, society compromises its ability to meet the essential needs of its people by overexploiting resources.
It is recommended that further research be carried out to determine possible relationships between Willingness to Accept (WTA) compensation for loss in environmental quality and Willingness to Pay (WTP) to avoid loss in environmental quality from WDS operations; and also whether WTA/WTP is dependent on age of residents, visits to WDS, risk perception, attitude to health, illness episode, ethno-cultural beliefs and membership of Environmental Groups.

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EFFECTIVE TRANSPORT SYSTEM: A PANACEA FOR SUSTAINABLE TOURISM

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ABSTRACT
Generally the word tourism is a major force in a global trade which plays a vital role in the social economic development of most nations. In fact, it is multifaceted activities geographically complex as different services are sought and supplied at different stages from the origin to the destination. The development of tourism is closely associated with advances in transport technology which have facilitated access between markets and destinations. The paper therefore takes note of these facts to examine the tourism potential together with the level of transport development system in the country. The findings revealed that the country is blessed with abundant tourism potentials which lack of poor transportation system serves as an obstacle for the development. Finally the paper suggested sustainable national transportation system.

Key words: Tourism, Transportation, Development and Sustainability.

INTRODUCTION
Tourism in all embracing terms involves the movement of people from their places of permanent residence for a temporary leisure in a different location. It is also considered as the relationship and phenomenal arising out of the journey and temporary stay of people traveling primarily for leisure or recreation purposes.

Historically tourism traced it origin to medieval period when the elite found interest in the promotion of spa development, pilgrimage to famous shrine and high regard for traveling as a means of education. This was changed to social tourism of camping, Sporting and conferences that spread across the European continent in the 20th centuries. Finally the removal of all barriers and constrains of free World movement for marketing tourism and proper development of tourism made it a global phenomenon. (Burkhart 1981) This eventually made tourism to become the leading industries of revenue generation and the greatest employer of labours in the World. The World Travel and Tourism Council report (WTTC) pointed out that tourism alone generates more than $2 trillions which is over 10% of the World GDP. (Awake, 2005).

One major and important factor of tourism development is transportation system. From history; transportation has developed hand in hand with tourism. The early development of spas and the sea side resort depended largely on the development of railway. According to Burkhart (1981), the estimated people traveling by train were around two million in the 20th century. In the post war period, the rapid rise in automobile ownership was responsible for increase in domestic tourism in Western countries while improved air craft technology led to a boom in international travel. For instance, the World Tourism Organization (WTO), in 1994 put the record of tourist world wide to 456 million for 1990, and projected the population for 660 million in 2010.

The tourism development has no doubt affected the social, cultural and physical environment of the host country. According to Boniface (1994), the social cultural impacts is based on tourist host country interrelationship, change in moral behaviors as a direct result of tourism and the cultural changes on custom, traditional skill and hand craft. The impact on physical environment depends on the understanding of bearing capacity of the environment as well as degree of stress the environment experienced in the area of permanent restructure, the generation of waste products from tourist activities and the tourist population growth. It is also a function of conservation with particular reference to protection, transformation and rehabilitation for a well sustainable development.

Based on the above fact the paper takes a look at various tourism opportunities in Nigeria. It also critically appraised the predicaments of transport system in the country and made the necessary recommendation.

The conceptual issues:
The concepts germane to the paper are the spatial interaction and the sustainable tourism.

- Spatial interaction: The basic principle of spatial interaction is based on three components namely the generating region, the destination region and the transit route. The spatial differentiation is between the destination area that is blessed with tourism potentials and the generating area having a deficit to demand for the commodity, therefore create a tourist flows through the transit route.

The tourist flow is actually on the gravity model that was in line with the Newton's law of universal gravitation which states that two bodies attract each other in proportion to the product of their masses and inversely by the square of their distance apart. Therefore the gravity model has two major factors that influence tourist flow. The first is the pull and push factors which generate flows, by this, the gravity model state that the larger the mass of pulling and pushing region, the greater the flow between them. The second factor is on restriction or constraint on the distance which is greatly affected by cost and time implications.
Sustainable tourism: According to Pearce (1988) sustainability in its simplest term means making things last which could be ecosystem, an economy, a culture, an industry etc. It is also the kind of development that meets the need of the present without compromising the ability of future generation to meet their needs (The Bruntland Commission Report 1978).

The fact the principle is relates to all aspect whether ecological, natural resources, social culture and economics environment make it relevant to tourism. Hence, a “charter on principle and objective for sustainable tourism, was advocated. In fact Pigman (1983) identified seven sustainable dimensions that are relevant the principle and practice of sustainable management of tourism, namely culture, political, economic, social-culture and government.

Tourism potential/window of Opportunities:
Many different attractions induce tourist to visit particular area or spend their holiday in specific regions. There is no doubt that the country is blessed with numerous and varieties of tourism potentials. These are abundantly distributed across the states of country. However, they are classified into five major areas that tourists can come to see. These are centers and occasion of cultural display; attractive landscape features; natural reserve and park; site of indigenous technology and archeological and historical remains.

The Cultural display: The ethnic diversity made the country to be blessed with into different cultural display as expressed through language, music, folk, story and custom. However, see the table 1 below.

Table 1: cultural displays and destination states.

<table>
<thead>
<tr>
<th>Type of Cultural display</th>
<th>Destination state</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boat Regatta</td>
<td>River State</td>
</tr>
<tr>
<td>Argungun festival</td>
<td>Kebbi</td>
</tr>
<tr>
<td>Osun Festival</td>
<td>Osun State</td>
</tr>
<tr>
<td>Eyo Festival</td>
<td>Lagos</td>
</tr>
<tr>
<td>Egungun Festival</td>
<td>Yoruba State</td>
</tr>
</tbody>
</table>

Source: Author’s (2008) compilation

Landscape features: The country is blessed with many different land forms such as rock, lake and water fall. See table 2 below.

Table 2: major landscape feature

<table>
<thead>
<tr>
<th>Type of landform</th>
<th>States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocks and iceberg</td>
<td>Abuba, Ekiti, Ogun and Ondo</td>
</tr>
<tr>
<td>Warm spring</td>
<td>Ekiti, and Bauchi</td>
</tr>
<tr>
<td>Water fall</td>
<td>Osun, Ekiti and Plateau</td>
</tr>
<tr>
<td>Lake/dam</td>
<td>Yobe, Eningu and Anambra</td>
</tr>
</tbody>
</table>

Source: Author’s (2008) compilation

The landscape features: The country is blessed with many different land forms such as rock, lake and water fall. See table 2 below.

Table 3: The indigenous technology

<table>
<thead>
<tr>
<th>Type of technology</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal craft work</td>
<td>Niger, Edo, Anambra</td>
</tr>
<tr>
<td>Wool craft work</td>
<td>Edo</td>
</tr>
<tr>
<td>Adire / cloth weaving</td>
<td>Abia, Kano, Oyo, Ogun</td>
</tr>
<tr>
<td>Leather work</td>
<td>Sokoto, Borno, Kano</td>
</tr>
<tr>
<td>Pottery work</td>
<td>Abuja</td>
</tr>
</tbody>
</table>

Source: Author’s (2008) compilation

Natural reserve / park: In order to maintain the natural environment of our fauna and floral the country has many forest reserves scatter across the states.

Table 4: natural reserve / park.

<table>
<thead>
<tr>
<th>Type of reserve</th>
<th>Destination state</th>
</tr>
</thead>
<tbody>
<tr>
<td>National park</td>
<td>Cross river, Oyo, Samfara</td>
</tr>
<tr>
<td>Forest reserve</td>
<td>Borno, Nassarawa</td>
</tr>
<tr>
<td>Games reserve</td>
<td>Gombe, Benue, Bauchi, Plateau</td>
</tr>
</tbody>
</table>

Source: Author’s (2008) compilation

Archeological remains: These are places of historical events. See the table bellow.

Table 5: archeological remains

<table>
<thead>
<tr>
<th>Type of archeological remain</th>
<th>Destination state</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural museum</td>
<td>Cross river, Jigawa, samfara</td>
</tr>
<tr>
<td>War museum</td>
<td>Imo</td>
</tr>
<tr>
<td>Historical buildings</td>
<td>Kogi, Ogun</td>
</tr>
<tr>
<td>Slave deports museum</td>
<td>Lagos</td>
</tr>
</tbody>
</table>

Source: Author’s (2008) compilation
The windows of opportunities: The tourism potentials also provide other window of investment opportunities in the area of trades and services. These include varieties of shops which are oriented tourist such as sporting, jewelries and clothing shops others are cafes, and grocers, stores for daily use. The threshold tourist services equally varied according to the frequency of use. However, restaurant, banks, hair dresser and medical centers are among the essential auxiliary services and facilities that go along tourism development.

Problems of transport systems
Transport stands out as the major pre-requisite of efficient function of an area and it is noted to be the most important feature for the development of Nigeria economy. According to Emeolu (1991), transport facilities help in opening up are of development, making a country to accomplish her industrial goals and stimulate economic growth. Hence, the development of inheritance tourism potential across the country depends much on the spatial accessibility.

In spite of the fact that transportation plays a significant role in any national development, the major modes of transport in Nigeria was able to contribute about 2.4 percent to the Gross National Product (GNP) in 2004. This is as a result of poor condition of transport system.

Road network which stated in 1905 covered Ibadan and Oyo, a distance less than 50km has extended rapidly within a century to almost 200,000km, cutting across many settlements. This however, represents less than 10% of the (920,000km²) total land mark and makes the whole network grossly insufficient. The fact that the available record proved that the road network is not properly maintained worsens the situation. Oyesiku (2003) noted that in many cities of the country, over 55% of the road network is unpaved. While the condition of the road keep deteriorating over the years due to lack of maintenance. The situation is more pronounced in the rural environment where the condition of most rural road in the country is very poor. In fact the condition deteriorate to the point of impassable, cutting off many rural areas from lager settlements during the rainy season. (Ademiluyi 2002).

As at 2003, there are 3975km of rail line across the country. This made the system grossly in adequate and made cities and towns not to be connected to the rail system. In fact, Oyesiku (2006) noted that the present tail network passes through less than 10% of the whole Nigeria cities. The networks are also of old guage system, which are absolute and sub-standard. Terminal is an essential ingredient of air and water transport system. In Nigeria, these terminals are neither sufficient nor in good condition. Available record revealed than the country has 13 major water ports, 5 international air ports, 19 domestic Airports, These ports fall below international standared. Almost all the air port hand been abandoned. Unlike the air and water ports, the road and rail terminal is either absent or totally neglected. In Nigeria terminals are not properly planned and designed for road transports. Except in few urban area, many towns lack route terminal and for the few ones, the facilities are not there to
enhance and promote the connectivity of modes of transport. Likewise the rail terminals have been neglected.

**Modes of transport**: This involves the transport service and management which in Nigeria is faced with multiple of problems. In Nigeria public transport is mostly used to carry people and goods across the country. For many years' mini-buses and a lesser extent taxi is the prime mover of passenger within Nigeria town and cities. (Adeniyi 1983). According to Oyesiku (2003) the country witnessed about 50 percent decrease in the total no of fleet of vehicle between 1989 and 1998. This no doubt made the use of motorcycle to dominate the public transport in our towns and cities (Adeoti 2006). The inadequate use of steam locomotive train and poor performance for mass movement of people and goods across the country led to the abandonment in the early 1980s. While the popularise domestic air transport in the late 1980s still receive low patronage.

The transport modes in the country are characterized by Para-transit transport services which Oyesiku (2003) considered as proliferation of uncontrolled private operation. As result of their profit oriented services, they do not have specific route or time schedule. They do not only contribute to the high level of congestion but made service to all transport system to be undependable. It has also led to maximum traveling time and cost in unit cities. These no doubt mean contributes a lot for intervention business that controlled during.

**The contributing factors**

The increasing population growth of our cities reflects not only the physical expansion of urban from but also increase rate of movement of people which call for more vehicles patronage. Unfortunately, the level of motorisation in urban area increased beyond that of transport infrastructure. This was based on general data on population as transport infrastructure density, this has led to low operation efficient of road network.

The economic crisis of the country is characterized by over dependence of the country on crude oil which the international markets dictates the output production and price. It is also the failure of the government to brake-up agriculture to make it more relevant to the ailing industries has definitely led to the unprecedented depreciation of naira value that affects vitally all aspect of transportation. The manifestation of the poor state of economy in the country according to Adeoti (2006) is as a of dearth of transport infrastructure and the astronomical jump in price of vehicle together with their spare parts.

Undue political interference and poor co-ordination of government policy have a negative influence on government projects including the development of road infrastructure. For instance, the negative attitude of successive government to complete the predecessor project has led to the abandonment and uncompleted projects Omirin (1986) also attributed the failure of our infrastructure to the general attitude of people to maintenance culture.

**The sustainable Transport Measure**

In order to achieve a long term goal of sustainable development in transportation system, there is a need for a transport reform. The reform must be holistic in approach to overhaul and integrate the entire transportation system. To this end government must pursue with vigor, the implementation of revitalization of rail system that will serve the entire country effectively and promote safety, and efficiency. At the same time, government must build more roads in our cities to ease urban congestion and connect rural areas with good motorable roads. For the existing good one, the government must develop the spirit of maintenance culture active participation of all tiers of government and other stake holders in the provision and maintenance of road infrastructures.

There is also a need for comprehensive policy that will improve the quality of the public transport system through a better co-ordination and management of all mode of transport in the country.

**Conclusion**

Tourism is now a popular and global trade. Many developing countries particularly Africa takes the advantage of the opportunity to participate in the business. Therefore, it is not only timely but imperative for the country to improve the ailing transport system in order to fueling tape and promote numerous tourism potentials of the country.

This will no doubt increase the revenue generation of the country, and at the same time improve the rate of unemployment in the country.

**REFERENCES**


AN ANALYSIS OF THE INVESTMENT PERFORMANCE OF SELECTED MULTI-STOREY COMMERCIAL PROPERTIES IN KANO METROPOLIS.

OKOH, VICTOR PHILIP OKORIE
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DEPARTMENT OF ESTATE MANAGEMENT
SCHOOL OF ENVIRONMENTAL STUDIES
YABA COLLEGE OF TECHNOLOGY
YABA LAGOS.

ABSTRACT
This research analysed the investment performance of multi-storey commercial properties in Kano metropolis with a study of eleven properties. The objectives include to establish the occupancy ratio of the properties determine the returns on the properties determine the efficiency of income collection and to establish the investment performance of multi-storey office properties in Kano metropolis. The research tested two hypotheses firstly whether the investment performance of multi-storey commercial properties was expected to vary inversely with location, occupancy status, attitude of property owner(s), facilities provided and level of rent charged. Secondly whether the reason for the recent high investment in multi-storey commercial properties in Kano was expected to vary inversely with return on investment, high rental growth, high demand for commercial properties, prestige, political factors and others. Questionnaire was the main instrument for data collection. This was supported with physical inspection and oral interviews. A sampling size of 50% of a total of 110 respondents, made up of Estate Surveyors and Valuers and Property Management Agents was adopted and 100% return rate was achieved. The questionnaire was analysed with percentages, frequency formula for return on investment and that of efficiency of income collection while the t-test and chi-square (χ²) were used to test the hypotheses. It was found out that the vacancy ratio was very high among the properties surveyed and the return on investment was too low to attract investments and in most instances no investment appraisal was prepared before developments. It was recommended among others that the rent charged should be competitive and the management of these properties should be professionalized by engaging the services of the Estate Surveyors and Valuers as well as conducting feasibility and viability study before investment.

Key words: investment performance, multi-storey, commercial properties.

1.0 INTRODUCTION
Real estate development and investment is capital intensive. Hence great care should be taken in its procurement and management to ensure that the resources put into it are harnessed for maximum benefits with minimum risks. The aim of any rational investor is to achieve maximum returns which may be expressed in financial terms or social status, prestige, political power, continuity or other goals or group of goals.
property type in the area notwithstanding stimulating the investment of such prevailing property market conditions complex on Zoo Road is unprecedented, Kano metropolis particularly along Zoo Road, commercial properties in Kano development of multi-storey components of the portfolio and the allocation of funds among the various guide the investor as to the optimal return with minimum risks measured against a set of objectives and targets. It involves drawing conclusions from analyzing past performance, historical data, and assessing future prospects. The main objectives of performance measurement and analysis are to improve the future performance of the portfolio, guide the investor as to the optimal allocation of funds among the various components of the portfolio and the effective management of individual assets in the portfolio.

The development of multi-storey commercial properties in Kano metropolis particularly along Zoo Road, Zaria Road and around the Trade Fair complex on Zoo Road is unprecedented, hence the need to investigate the prevailing property market conditions stimulating the investment of such property type in the area notwithstanding the fact that some pockets of effective office spaces still lie vacant.

The aim of this research is to analyse the investment performance of multi-storey office properties in Kano metropolis. The following objectives will help to achieve the aim to:

i) establish the occupancy ratio of the properties
ii) determine efficiency of income collection
iii) determine the returns on the multi-storey commercial property investment
iv) establish the investment performance of multi-storey office properties in Kano metropolis.

Two hypotheses were tested in this research. Firstly Ho: investment performance of multi-storey commercial properties in Kano was expected to vary inversely with location, occupancy status, attitude of property owners(s), facilities provided and level of rent charged. Secondly Ho: The reason for the recent high investment in multi-storey commercial properties in Kano was expected to vary inversely with return on investment, high rental growth, high demand for commercial properties, prestige, political factors and others say social benefits, status.

The research covered the available multi-storey (five-storey buildings and above) office properties in Kano metropolis. The focus of the research is the performance appraisal of eleven (11) multi-storey office properties which adorn the popular streets in Kano and represents high class real estate development and investment in the area. Kano metropolis is chosen as a study area because apart from being the capital of Kano state of Nigeria, it is also one of the commercial nerve centres in the country. Kano is a centre of attraction stimulating residential, commercial, industrial and numerous other economic activities.

The research work is to provide comparative analysis of the performance of these properties in terms of occupancy status, return on investment and rent collection efficiency. However, it did not include viability appraisal.

### 2.0 REVIEW OF LITERATURE

#### Investment

Property investment relates to the commitment of capital to land to create development with expectation of fair return, which may yield financial returns or for social status, prestige, political power or other satisfaction. Property development and investment can produce residential, office, industrial, recreational developments as well as schools, hospitals, churches, physical infrastructures, etc. Whatever form it takes, property development represents all man-made efforts to change the use of land, to create structures and shelter for himself by spending money. According to Sirota (1983) real estate development forms the greater asset of numerous other economic activities. It was Liechfield (1978) who put the estimate of real estate to be more than 75% of every nation's assets. Since it is capital intensive, it is important that great care is taken in its procurement to ensure that the resources put into its development are harnessed for the maximum benefit not only for the developer but also for the nation.

#### 2.2 Property Investment Performance Measurement and Analysis

The typical questions that any good property investment performance analysis should seek to answer include (Ajayi, 1998):  

i) Should fund be invested in landed property at all?

ii) What factors affect performance?

iii) What are the risks associated with property development and investments and how can they be managed?

iv) How can further investment in property be justified?

v) When, how much, in what location and what type of landed property should further capital investment be made?

The reason adduced for the exclusion of the property element of the investment portfolio from the standard techniques for investment performance measurement and analysis were the special investment characteristics of landed property and of the property investment market. The techniques for property investment performance measurement according to Findlay and Tyler (1991) include income...
yield on cost, income yield on value, the
efficiency of income collection, income appreciation, rate of growth in full rental value, imminent rate of rental growth, reversionary potential and capital appreciation. Landed property was seen by investors as a means of obtaining security and a regular income while decisions were made on the basis of intuition and past experience. There was little understanding of risk.

Other reasons why property elements were excluded from the standard techniques for investment measurement include the absence of an adequate reliable database, problems of interpretation, the absence of a reliable index of property values against which to compare landed property performance, cost of regular valuation and absence of pressures upon landed property analysis to prove such measures.

As observed by Ajayi (1998) in recent times, landed property as an investment medium has been found to share many similarities as well as compare with other forms of investment. For instance, computerized valuation systems are now available, thus, enabling historical data on landed property to be compiled and stored while also facilitating the measurement of performance quickly, accurately and at a reasonable cost. There have been massive institutional involvement and capital injection into property assets, coupled with an economic environment characterized by endemic inflation. These have resulted into increasing competitiveness and growing pressure for accountability of fund managers. As rightly pointed out by Heterington (1984), there is, however, need for more detailed measurement and analysis of the performance of landed property sector of investment portfolio to justify the flow of funds into property investment.

Three of the techniques for property investment performance measurement identified earlier can now be discussed briefly as follows:

i) **Income yield on cost:**

The basis of this simple measurement of performance is that the return or yield that the annual income provides is presented as a percentage of the original cost of the investment (inclusive of any additional capital expenditure since acquisition) Ajayi (1998). It is expressed as:

\[
\text{Income yield on cost} = \frac{\text{Current Income}}{\text{Original Cost + Subsequent Capital Expenditure}} \times \frac{100}{1}
\]

The disadvantage of this method is that it ignores timing or holding period of investment. Thus false conclusions may be drawn between two properties, one with a higher income yield on costs but with a much longer holding period than the other.

ii) **Reversionary Potential**

Ajayi (1998) defined it as being

\[
= \frac{\text{Estimated Current full Rental value}}{\text{current Income}}
\]

Rental incomes and rental values can be aggregated and compared to derive reversionary potential measures for sectors or the entire portfolio.

iii) **Rate of Capital appreciation/Depreciation**

Capital appreciation is measured by the percentage difference

\[
= \frac{\text{Change in capital value during measurement period}}{\text{capital value at start of the measurement period}} \times \frac{100}{1}
\]

The validity of capital appreciation measurement rests upon the accuracy of the valuation. Its usefulness as a measure is also limited by the fact that it ignores income component of an investment in assessing an investment's overall performance.

3.0 **RESEARCH METHODS**

The questionnaire was the main instrument for data collection in this research. This was supported with physical inspection of the properties. A sampling size of 50% (fifty percent) of the Estate Surveyors and valuers including Property Management Agents conducting their business at Kano metropolis which were counted by Hamed (2006) to be one hundred and ten (110) were administered with the questionnaire concerning the eleven multi-storey commercial properties in the area. The 55 (fifty-five) Estate Surveyors and Valuers Cum Property Management Agents administered with questionnaires were randomly selected which ensures that every respondent had equal opportunities...
of being selected.

The Estate Surveyors and Valuers/Property Management Agents concerned were asked questions on the location of the properties, no. of floors, net and gross floor areas, current average rent charged on the properties, construction cost index, level of depreciation, functionality of services and vacancy ratio. Others are ranking the reasons for the recent high investment in commercial properties as well as factors affecting the investment performance of commercial properties in Kano among others. The techniques for data analysis include the techniques mentioned earlier in the preceding section of this research work as well as t-test and chi-square (X²) used for testing the hypotheses.

4.0 DATA ANALYSIS

Data gathered through field survey, questionnaire administration and personal interviews, were presented and analysed in this section.

Table 4.1 Property Gross And Net Floor Areas And Occupied spaces

<table>
<thead>
<tr>
<th>Property Location</th>
<th>No of Storey</th>
<th>No of Building</th>
<th>Gross floor area M²</th>
<th>Net floor Area M²</th>
<th>Space Occupied M²</th>
<th>Vacancy Ratio</th>
<th>Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 Airport Road Kano</td>
<td>9</td>
<td>1</td>
<td>8000</td>
<td>5380</td>
<td>2638</td>
<td>52.72%</td>
<td>5</td>
</tr>
<tr>
<td>K Muritala Mohammed Way</td>
<td>6</td>
<td>3</td>
<td>3650</td>
<td>2250</td>
<td>1430</td>
<td>48.00%</td>
<td>13</td>
</tr>
<tr>
<td>24C Muritala Mohammed Way</td>
<td>8</td>
<td>4</td>
<td>3680</td>
<td>2460</td>
<td>1010</td>
<td>58.94%</td>
<td>13</td>
</tr>
<tr>
<td>34B Post Office Road, Kano</td>
<td>2</td>
<td>1</td>
<td>3880</td>
<td>2680</td>
<td>1298</td>
<td>51.57%</td>
<td>3</td>
</tr>
<tr>
<td>34 Ibrahim Tawo Road</td>
<td>7</td>
<td>1</td>
<td>4200</td>
<td>3625</td>
<td>1380</td>
<td>61.93%</td>
<td>5</td>
</tr>
<tr>
<td>57 Airport Road, Kano</td>
<td>3</td>
<td>1</td>
<td>2400</td>
<td>1490</td>
<td>762</td>
<td>45.22%</td>
<td>3</td>
</tr>
<tr>
<td>K Muritala Mohammed Way</td>
<td>9</td>
<td>3</td>
<td>3250</td>
<td>2050</td>
<td>960</td>
<td>38.79%</td>
<td>13</td>
</tr>
<tr>
<td>44 Muritala Mohammed Way</td>
<td>7</td>
<td>5</td>
<td>2810</td>
<td>1850</td>
<td>1064</td>
<td>45.73%</td>
<td>23</td>
</tr>
<tr>
<td>77 Ibrahim Tawo Road</td>
<td>4</td>
<td>3</td>
<td>4300</td>
<td>3600</td>
<td>2583</td>
<td>58.25%</td>
<td>5</td>
</tr>
<tr>
<td>14B Post Office Road</td>
<td>8</td>
<td>4</td>
<td>2414</td>
<td>1720</td>
<td>1635</td>
<td>3.90%</td>
<td>5</td>
</tr>
<tr>
<td>77 Niger Street</td>
<td>5</td>
<td>1</td>
<td>4010</td>
<td>3238</td>
<td>1997</td>
<td>43.40%</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>55</td>
</tr>
</tbody>
</table>

Source: Field Survey 2006

Table 4.1 showed gross and net floor areas of the eleven multi-storey buildings in Kano.

4.2 Analysis of Other Data

From physical inspection of these properties and oral interviews conducted with respondents along with the questionnaire administered, it was discovered that 7 or 63.64% most of these properties were not under the management of professional Estate Surveyors and Valuers. This situation led to many maintenance problems that were not attended to. Also 54.55% or 6 of these properties do not have ample space for free car parking and the security of life and properties were not adequate in 8 or 72.73% of these premises.

Table 4.2 Construction Cost Rates From Practicing Quantity Surveying Firms

<table>
<thead>
<tr>
<th>NO. OF STOREY</th>
<th>RANGE OF COST INDEX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>N50,000/m² - N60,000/m²</td>
<td>Appropriate and sound buildings foundation</td>
</tr>
<tr>
<td>6</td>
<td>N70,000/m² - N75,000/m²</td>
<td>Columns and beams and sand Crete block walls and panels</td>
</tr>
<tr>
<td>7-9</td>
<td>N80,000/m² - N85,000/m²</td>
<td>Good floor finishes. Good internal and external finishes. Modern doors and windows. Appropriate and sound roof and roofing materials</td>
</tr>
</tbody>
</table>

Source: Quantity Surveying Firms in Kano 2006

Table 4.2 showed that multi-storey buildings similar in construction details vary in construction cost according to number of storey. Average construction cost index of N57,000/m² was used in the performance appraisal for five storey buildings, N72, 500/m² was used for six storey buildings and N82,500/m² for seven to nine storey buildings.

Table 4.3 Annual rental Values of the Properties in Kano.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Property</th>
<th>No of floors</th>
<th>Net Floor Area M²</th>
<th>Occupied space M²</th>
<th>Average Rent N/m²</th>
<th>Gross annual Rental Value N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F1 Airport Road</td>
<td>9</td>
<td>5580</td>
<td>2638</td>
<td>5,000</td>
<td>13,190,000</td>
</tr>
<tr>
<td>2</td>
<td>A3 Airport Road</td>
<td>6</td>
<td>1,800</td>
<td>1,032</td>
<td>5,000</td>
<td>5,112,000</td>
</tr>
<tr>
<td>3</td>
<td>4C Muritala Mohammed Way</td>
<td>8</td>
<td>2,750</td>
<td>1,430</td>
<td>5,000</td>
<td>7,150,000</td>
</tr>
<tr>
<td>4</td>
<td>7C Muritala Mohammed Way</td>
<td>6</td>
<td>1,405</td>
<td>860</td>
<td>5,000</td>
<td>4,300,000</td>
</tr>
<tr>
<td>5</td>
<td>14C Muritala Mohammed Way</td>
<td>6</td>
<td>1,850</td>
<td>1,004</td>
<td>5,000</td>
<td>5,020,000</td>
</tr>
<tr>
<td>6</td>
<td>24C Muritala Mohammed Way</td>
<td>8</td>
<td>2,400</td>
<td>1,010</td>
<td>5,000</td>
<td>5,050,000</td>
</tr>
<tr>
<td>7</td>
<td>77 Ibrahim Tawo Road</td>
<td>6</td>
<td>3,600</td>
<td>2,583</td>
<td>5,000</td>
<td>12,915,000</td>
</tr>
<tr>
<td>8</td>
<td>64 Ibrahim Tawo Road</td>
<td>7</td>
<td>3,625</td>
<td>1,380</td>
<td>5,000</td>
<td>6,900,000</td>
</tr>
<tr>
<td>9</td>
<td>14B Post Office Road</td>
<td>8</td>
<td>2,680</td>
<td>1,298</td>
<td>5,000</td>
<td>6,490,000</td>
</tr>
<tr>
<td>10</td>
<td>13B Post Office Road</td>
<td>6</td>
<td>1,720</td>
<td>1,653</td>
<td>5,000</td>
<td>8,265,000</td>
</tr>
<tr>
<td>11</td>
<td>37 Niger Street</td>
<td>5</td>
<td>3,528</td>
<td>1,998</td>
<td>5,000</td>
<td>9,990,000</td>
</tr>
</tbody>
</table>

Source: Field Survey 2006
Table 4.3 showed the occupied spaces in each of the eleven properties, the current average rent per metre square and the gross annual rental value. The properties are similar in constructional details and occupy various sizes of land. Their constructions are of reinforced concrete columns and beams with sandcrete blockwalls and panels. The walls were well finished internally and externally either in tiles txcotes, santex, emulsion and/or gloss paints. Doors and windows were aluminium sliding types with flatroof decks.

Table 4.4 showed the gross floor area of each property, the adopted construction cost index, external works, professional fees and the depreciation as well as the depreciated replacement cost of each property. The construction cost index was obtained from practicing reputable Quantity Surveying firms at Kano. The average current construction cost for multi-storey commercial properties from reputable Quantity surveying firms practicing in Kano were N57,500 per metre square for five(5) storey buildings, N72,500 per metre square for six (6) storey buildings and N82,500 per square metre for seven(7) to nine (9) storey buildings.

Average construction cost rates were applied to the gross floor area of buildings to obtain their cost of construction. Added five per cent for external works and the total of this two were added twelve and half(12.5%) per cent for professional fees to obtain the construction cost of each buildings which was depreciated by (15%) fifteen per cent to obtain the depreciated replacement cost (DRC) of each structure.

### Table 4.3 Annual rental Values of the Properties in Kano.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Property Address</th>
<th>No. of floors</th>
<th>Net Floor Area M²</th>
<th>Occupied space m²</th>
<th>Average Rent N/ m²</th>
<th>Gross annual Rental Value N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>F1 Airport Road</td>
<td>9</td>
<td>55.80</td>
<td>26.38</td>
<td>5,000</td>
<td>13,190,000</td>
</tr>
<tr>
<td>2.</td>
<td>A1 Airport Road</td>
<td>6</td>
<td>1,800</td>
<td>1,022</td>
<td>5,000</td>
<td>5,110,000</td>
</tr>
<tr>
<td>3.</td>
<td>4C Muritala Mohammed Way</td>
<td>8</td>
<td>2,750</td>
<td>1,430</td>
<td>5,000</td>
<td>7,150,000</td>
</tr>
<tr>
<td>4.</td>
<td>4C Muritala Mohammed Way</td>
<td>6</td>
<td>1,405</td>
<td>860</td>
<td>5,000</td>
<td>4,300,000</td>
</tr>
<tr>
<td>5.</td>
<td>14C Muritala Mohammed Way</td>
<td>6</td>
<td>1,850</td>
<td>1,004</td>
<td>5,000</td>
<td>5,020,000</td>
</tr>
<tr>
<td>6.</td>
<td>24C Muritala Mohammed Way</td>
<td>8</td>
<td>2,460</td>
<td>1,010</td>
<td>5,000</td>
<td>5,050,000</td>
</tr>
<tr>
<td>7.</td>
<td>77 Ibrahim Taiwo Road</td>
<td>6</td>
<td>3,600</td>
<td>2,583</td>
<td>5,000</td>
<td>12,915,000</td>
</tr>
<tr>
<td>8.</td>
<td>64 Ibrahim Taiwo Road</td>
<td>7</td>
<td>3,625</td>
<td>1,380</td>
<td>5,000</td>
<td>6,900,000</td>
</tr>
</tbody>
</table>

Source: Field Survey 2006

Table 4.5 showed the return on investment of each of the properties. Commercial property at no.24C Muritala Mohammed Way Kano had the lowest yield of 1.31% and the highest yield of 3.57% from the property at 77 Ibrahim Taiwo Road, Kano. The return on investment of each of the properties was very insignificant. The yield from multi-storey commercial properties of 1.31% to 3.5% cannot be compared with the investment yield of 25% in the investment market and the Central Bank minimum rediscount rate of 13%. The yield of these properties were too low and not attractive to any prudent investor.

The unprecedented investment in multi-storey commercial properties in Kano metropolis was not a function of their investment performance.

### Table 4.6. Efficiency of Income Collection

<table>
<thead>
<tr>
<th>S/N</th>
<th>Property Address</th>
<th>Lettable floors M²</th>
<th>Rate N/m²</th>
<th>Potential Income N</th>
<th>Actual Income Received N</th>
<th>Vacancy Occupancy Ratio</th>
<th>Level of Income Generation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>F1 Airport Road</td>
<td>9,580</td>
<td>5,000</td>
<td>27,900,000</td>
<td>16,190,000</td>
<td>52.72</td>
<td>47.28</td>
</tr>
<tr>
<td>2.</td>
<td>A1 Airport Road</td>
<td>5,000</td>
<td>5,000</td>
<td>5,000,000</td>
<td>500,000</td>
<td>50.00</td>
<td>50.00</td>
</tr>
<tr>
<td>3.</td>
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<td>6</td>
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<td></td>
</tr>
</tbody>
</table>

Source: Field Survey 2006

Table 4.6 shows that the highest level of rent collection of 96% was from property at No. 13B Post Office Road Kano while the lowest of 41.06 % was from property at No.64 Ibrahim Taiwo Road, Kano.  

**TESTING OF HYPOTHESES**

The two hypotheses generated in the study were tested using the t-test and chi-square (x²) statistical tools to measure the relationships among variables.

Correlation of Variables on Hypothesis 1
Since the calculated value of 16.9 was less than the tabulated value of 11,070, we accept the null hypothesis that the reason for the recent high investment in multi-storey commercial properties in Kano vary inversely with return on investment, high rental growth, high demand for commercial properties, prestige, political factors and others.

5.0 FINDINGS, RECOMMENDATIONS AND CONCLUSION

**Findings**

i) The multi-storey commercial properties surveyed in Kano in this research were drawn from five (5) streets namely; 2 Nos properties from Airport Road representing 18.13%, 4 Nos. properties from Muritala Mohammed Way representing 36.37%; 2Nos. properties from Ibrahim Taiwo Road representing 18.18%; 2 Nos. Properties from Post Office Road representing 18.18% and 1 No. property from Niger Street representing 9.09%.

**Reasons for investing**

<table>
<thead>
<tr>
<th>Pearson correlation</th>
<th>Factors affecting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sig. 2-tailed</td>
<td>-0.204</td>
</tr>
</tbody>
</table>

**Factors affecting**

<table>
<thead>
<tr>
<th>Pearson correlation</th>
<th>N</th>
<th>Sig. 2-tailed</th>
</tr>
</thead>
<tbody>
<tr>
<td>-0.682</td>
<td>5</td>
<td>-0.204</td>
</tr>
</tbody>
</table>

**Source:** Computation 2006

The correlation coefficient was -0.682 and its p-value significance 2-tailed 0.204 ($r$ is significant at 1% level). Since correlation between investment performance and factors affecting multi-storey property was negative and was less than one, with negative t-test, we accept Ho, that commercial properties value in Kano metropolis vary inversely with location, occupancy status, attitude of property owner(s), facilities provided, level of rent charged and reject alternative hypothesis.

**Hypothesis Two.**

This hypothesis was tested using chi-square tool for goodness of fit, since the test relates the observed with expected values.

<table>
<thead>
<tr>
<th>Observed And Expected value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reasons for investment</td>
</tr>
<tr>
<td>Observed value</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>Return on Investment</td>
</tr>
<tr>
<td>High Rental Growth</td>
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<tr>
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</tr>
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</tr>
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</tr>
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<td>Others</td>
</tr>
</tbody>
</table>

\[ X^2 = \frac{\sum (O-E)^2}{E} \]

\[ X^2 = 999.83 \]

\[ T_{cal} = 16.9 \]

\[ T_{tab} = 11.070 \]

At $\alpha = 0.05$

Since the calculated value of 16.9 was less than the tabulated value of 11.070, we accept the null hypothesis that the reason for the recent high investment in multi-storey commercial properties in Kano vary inversely with return on investment, high rental growth, high demand for commercial properties, prestige, political factors and others.

ii) It was discovered that the vacancy rate/ratio was very high among the properties producing an average vacancy/occupancy rate/ratio of 45.56%. The highest vacancy ratio of about 61.93% was found in property at No.64 Ibrahim Taiwo Road, followed closely with 58.94% of property at No.24C Muritala Mohammed Way, and 52.72% occupancy rate was recorded by property at No. F1. Airport Road. Others include 51.57% for property at No.14B Post Office Road, 48%, 45.73%, 43.22% and 43.40% for properties situated at Nos.4C Muritala Mohammed Way, 14C Muritala Mohammed Way, 13 Airport Road, and 37 Niger Street respectively. The lowest vacancy ratio/occupancy rate being in 7C Muritala Mohammed Way, 77 Ibrahim Taiwo Road and 7B Post Office Road with 38.79%, 28.25% and 3.90% vacancy ratios respectively.

**Reasons for investing**

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iii) The return on investment produced by the properties was found to be very insignificant when compared with what obtained in the investment market and the Central Bank of Nigeria (CBN) rediscount rate. For instance, the highest return on investment among the properties of 3.57% was found in No.77 Ibrahim Taiwo Road while the lowest of 1.3% was found in property at No.24C Muritala Mohammed Way.
iv) The efficiency of income collection of 54.44% was found to be on the average, which was not good enough. The highest level of rent collection from the properties of 96.10% was from property at No.13B Post Office Road and the lowest of 38.07% from property at No.64 Ibrahim Taiwo Road. Those properties with efficiency of income collection above 50.0% include Nos. 77 Ibrahim Taiwo Road, 14C Muritala Mohammed Way and 4C Muritala Mohammed Way respectively. Those properties which produced return on investment below 2.0% include 7C Muritala Mohammed Way, 14C Muritala Mohammed Way, F.1 Airport Road, 14B Post office Road, and 64 Ibrahim Taiwo Road and 4C Muritala Mohammed Way respectively. These low return on investment produced by these properties compared with 25% investment yield in the investment market and CBN rediscount rate of 13% showed that return on investment was definitely not the main reason for investment in them.

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The calculated value of 16.9 was less than the tabulated value of 11,070; it was therefore inferred that the reason for the high investment in multi-storey commercial properties in Kano vary inversely with return on investment, high rental growth, high demand for commercial properties, prestige and political factors.

i) No investment appraisals were prepared.

ii) In 63.64% of the cases the Estate Surveyors and Valuers were not involved in the management of these properties.

**RECOMMENDATIONS**

The investment performance of these multi-storey commercial properties can be enhanced if the following recommendations are followed.

i) The issue of rent must be looked into so as to retain tenants in occupation of these buildings and attract more users to them. The rent of N5,000/m² is not competitive as other low-rise buildings with better facilities attract lower rents.

ii) Good marketing strategies byway of advertisement and personal contacts in promoting the facilities available, other benefits enjoyed as well as the good name of the buildings can be excellent ways of enticing tenants and prospective users to the buildings so as to reduce vacancy rates on the structures.

iii) Good management of multi-storey buildings is very crucial to the realization of expected returns. The problems such as water shortage, facility lift, and or incessant electricity outage usually occur. Adequate security and cleaning services must be provided as well as adequate parking spaces which must be attended to at the time of seeking for suitable site to purchase.

Physical outlook of these buildings attract the public from which tenants are to be drawn. Some of the buildings surveyed were due for redecoration. It is further recommended that it is important that investment appraisals or feasibility and viability appraisals be prepared before embarking on any investment of such magnitude. That Estate Surveyors and Valuers should be employed to manage these properties.

**5.2 CONCLUSION**

The investment performance of this class of property is far below expectations judged by the poor returns to huge capital investment. The resultant yield was a disappointment to any prudent prospective investors. The average vacancy rate of forty-five point five six percent (45.56%) of this type of properties, poor rental income generation and stiff competition from numerous low-rise modern office buildings are posing bleak future for the investment in multi-storey commercial properties in Kano Metropolis.

It is important that investors must prepare investment appraisals for each development before proceeding on their development to avoid these dangers and also the Estate Surveyors and Valuers must be put in charge of the...
**1.0 INTRODUCTION**

Housing can be defined as a social function which transcends beyond the traditional function of human habitation to include the provision of security, privacy, protection and social status to the owner. Furthermore, housing could be viewed as a structure that includes provision of all the auxiliary facilities and services which are useful for human's wellbeing. The United Nations Organisation defines housing as “the environment of a residential neighbourhood which includes the physical structures used for human habitation and all the essential facilities and services necessary to maintain good public health and social well-being of every individual family members living in the neighbourhood”. Housing is one of the three basic needs of man coming after food and, clothing. Babalola (2002) observed that housing provides more than shelter for man because it encompasses all the social services and utilities that are needed for a liveable environment in order for any community to be worth living in. He affirmed that housing in most countries of the world is an important economic sector and the manner in which resources were mobilized for housing had a major impact on the economy.

For any nation, the performance of the housing sector is often the barometer by which the health or ill-health of a nation is measured or determined. Therefore any nation, housing is a set of durable asset which account for higher proportion of a country's income and as such is accounted for higher proportion of gross national product.
wealth and on which households spend a substantial part of their income. Any analysis of housing problems, including those being encountered by the different players in the sector, therefore, is a study of a nation's attempt to adapt its inheritance to new needs and to this inheritance in ways that accord with a changing economic and social structure and rising human aspirations (Stafford, 1978).

1.2 AIM AND OBJECTIVES

The study is aimed at evaluating the various housing finance strategies in Nigeria with particular reference to:

1) Victoria Garden City, Lekki
2) Crown Estate, Lekki Peninsula
3) Femi Okunnu Estate, Lekki Osapa Area II
4) M.K.O. Abiola Gardens, Alausa, Ikeja

In order to achieve the stated aim, the following objectives were observed:

- Identify the sources of finance opened to financing housing development
- X-rayed housing finance strategies in Nigeria with respect to housing development.
- X-rayed finance sources on the study areas.
- Make valuable recommendations.

2.0 LITERATURE REVIEW

2.1 REAL ESTATE FINANCE

Bello (2002) defined finance as the “pecuniary resources used in the acquisition of goods and services either for consumption or for the production of goods and services”. The issue of finance in housing is an important factor that determines the success or failure of the project. It also determines whether the idea, no matter how lofty it may be, will take off at all or die at the drawing board. Finance is, perhaps, the most important factor in the ultimate success of any type of housing delivery, no matter how simple or sophisticated a project may be and whether it is a private dwelling or a vast estate development project, without the solid financing arrangement it will either remain on the drawing board as monumental graveyard of uncompleted project.

The term, cost and availability of finance, is fundamentally important to the success of any investment proposal real estate inclusive. Real estate finance can be obtained from external sources (loans) or internal from the developer's equity. The developers is seldom able to single handedly provide the required capital from internal source only hence the need to seek supplementary sources of funds in addition to the developer's equity, hence the debt option. Mortgage loan is normally adopted by developers consequent upon the capital intensive nature of real estate development. On the other hand, an experienced developer often utilizes the advantage of leverage when the cost of financing is lower than the opportunity cost of equity capital.

2.2 METHODS OF FINANCING HOUSING ESTATE DEVELOPMENTS

The word “financing” refers to the process of obtaining funds or capital, generally for the purpose of developing and/or investing by gaining control over assets. Housing estate is an area of land on which many houses with basic infrastructural facilities, security and protection are built either by private enterprise or by public authorities. Generally, housing estate in Nigeria could be owned either by the public or the private sector. Public sector includes the federal, state and local governments, while the private sector includes individuals, group of individuals as well as corporate organizations. Housing Finance can be classified into two:

2.2.1 Sources of Housing Finance

There are broadly two sources of housing financing in Nigeria. These are:

- Internally generated funds
- External sources

Funds from internal sources include:

- Equity capital or personal saving and investment
- Realization of assets i.e. cash realized from sales of certain assets or goods by the developers.
- Retained profit: profits that are not spent but re-invested in housing.
- Communal contribution: self help projects.

External sources are either loan secured, either on short or long term basis from banks and other financing institutions: These include

- Commercial banks
- Merchant banks
- Mortgage institutions, saving and loans companies.
- Insurance companies
- Various employers loan schemes
- Housing corporations / property development companies of the various State Governments
- National provident fund / social insurance schemes
- Foreign aids / donors

2.2.2 Housing estate finance - the Nigeria options

Housing estate is a kind of housing provision measure in which conglomerates of prototype or dissimilar houses are built on a single expanse of land. The main goal is to provide a habitable, affordable and conducive residential accommodation for the people alike, particularly, low-income or those who may want to opt for the purchase of newly completed buildings in such setting.

As earlier mentioned, capital is the most important factor in housing estates delivery, thus the funding of housing estates, which is the way and manner by which capital can be sought for housing projects. However, there opens lot of ways or means of raising funds for housing estate delivery among which are:

- Mortgage institutions: These are organizations which is responsible for the provision of loans to the general public in respect of housing delivery. Mortgage institutions carry out these lending functions to capable borrowers with at least 30% of the equity capital available and good collateral security and guarantor of high integrity. These mortgage institutions are in two levels of authorities, that is, primary mortgage institutions and secondary mortgage institutions; and both under the direct supervision of the Federal Mortgage Bank of Nigeria (FMBN).

- Aids and grants: This is another source of finance for house delivery. These aids and grants could come from the Federal Government, State Governments, public corporations, private institution, philanthropists, non-governmental organizations (NGO) and host of other humanitarian and welfare organizations.

- Allocations from federation accounts: This is another important mode of funding housing estates. This could come in the form of budgetary allocations to that sector of the
v) Operation of National Housing Fund (NHF): This is another strategy through which funds could be raised for housing delivery. The modus operandi under this scheme is that there is the requirement for 2.5% of annual earning of workers to be contributed towards NHF, while 10% of loans and advances of the commercial and merchant banks are expected to be contributed. Furthermore, insurance companies are to remit a minimum of 20% of their non-life insurance funds and 40% of life insurance fund invested in real estate development of which not less than 50% must be channeled through Federal Mortgage Bank of Nigeria (FMBN).

vi) Invitation of participation and partnership funding of housing estates with private (governmental and non-governmental) institutions: Through public/private partnership effectively tailored towards achieving the goal of “adequate shelter for all”, the governments as “enabling partners” are expected to create and strengthen effective partnerships with all stakeholders, including local authorities, NGOs and private sector. Holistic and inclusive participatory approaches are seen as essential to the implementation of successful shelter programmes and policies; such approaches also form the basis of what is commonly referred to as “good urban governance”.

vii) Cooperatives societies have played significant roles in serving as the source of funds and guaranteeing of their individual members in raising of loans for housing projects from mortgage institutions. The operation of these societies have really improved the lots of the people living in the rural area by encouraging them to pool their little and otherwise idle funds together to fund either their respective or collective building projects.

2.2.3 PROBLEMS OF FINANCE
Finance is the life wire of any investment. Apart from personal or equity fund, it is very difficult to come across housing loans. If available, it is always at cut-throat interest rate, say, between 25% to 30%. The creation of National Housing Fund and Primary Mortgage Institutions have not really helped the intending house owners in getting the required housing loans due to very stringent conditions attached to getting loan under this scheme. Housing estate as a scheme is a demanding task that requires lots of human efforts and financial resources. In other words, it requires the co-ordination of the all factors of production in seeing to its (housing estate) acceptable delivery.

Now talking about those factors of production which consist of land, labour, capital and the entrepreneur (investor), their contributions in house delivery cannot be push aside. Thus, adequate attention must be paid to each of them in the housing delivery efforts. In most urban centres in Nigeria, land acquisition for large scale housing estate development is not a problem, courtesy of the Land Use Act, but the most impeding factor is the availability of funds.

Consequent to the non-delivery of all these housing estates, most cities have now several pockets of slums and squatters developments. Further to this and many other problems of housing, most State Governments of the day are not doing much towards initiating new programmes aimed at redressing the housing problem in their respective States.

3.0 CASE STUDIES

3.1.1 The historical background of its development
In 1989, when the Lagos State Private Development Scheme was implemented by the Lagos State Government, 16 private developers among them, Victoria Garden City Limited, were granted sub-leases on some land parcels in Lekki Peninsula. This was done on the condition that the layout plan prepared in respect of any land allocated under the scheme is submitted to the Government for approval. Furthermore, such developers were mandated to provide the requisite infrastructural facilities in such layout. Nine years after the allocation of such land to the respective developers by the Lagos State Government, Victoria Garden City stands out as one of the first housing estate to emerge under the scheme and till date, the estate stand out as one of the best private housing estate in Lagos State.

The model residential development covers area approximately 200 hectares of land, which is under 99-year lease from the Lagos State Government. The site on which the residential estate is built is basically marsh, swamp and mangrove in nature and it is encumbered by the influence of the Lagoon. Part of the land available for development was reclaimed from the Lagoon and sand filled.

3.1.2 The master plan of Victoria Garden City
The overall concept of the master plan centered on the creation of an environment which would promote healthy and first class living environment for its residents, while at the same time, create a definite character and identity. In the estate master plan, the whole estate was divided into various land uses, notable among which are residential uses, industrial uses, and recreational areas. The residential areas were planned with distinct house designs, with each design type having its own identity and character. They are namely, block of flats (2 and 3 Bedrooms), park house, new garden house, may fair house, victoria house, lagoon house, regency house, gemini house and topaz house (photographs 4 to 6 below are examples of these house design types).
Furthermore, some of the social amenities provided within the housing estate were effectively segregated from the quiet residential neighbourhoods so as to maintain and guarantee privacy and tranquility for the residents. These amenities include elementary school, recreational park, service industries, sport center, dispensary, country club, shopping mall, places of worship, community bank, post office, and hotel. Other amenities include interlocking paved stone surfaced roads, drainage system, side-walk ways, street lighting with underground cables, treated water supply, electricity services and telephone facilities.

3.1.3 The estate infrastructures
The Estate Infrastructures consist of recreational parks, wide roads and sidewalks, street lights, fire fighting equipments, NEPA sub-station/transformers, church, mosque, primary and secondary schools, sports facilities, post office, shopping mall, telephone installations, club house and business offices. Others include:
- interlock paving stone surfaced roads,
- storm drainage,
- treated water supply
- private telephone service
- large (front and rear) gardens
- visitors’ car park in front of each house and
- efficient refuse disposal

3.1.4 Finance strategies adopted in financing Victoria Garden City housing project
(1) Contractor’s Finance: The strategy employed is that of participatory and partnership otherwise called contractor’s finance. In this kind of finance, the contractor
is approached for the provision of funds for the completion of the construction work if or when the investor or developer runs out of funds and in such arrangement, it is by either given up the development for the contractor to operate and realized his capital as well as the interest which is mutually agreed upon or that the developer is allowed to manage the development and pay the capital and interest as stipulated by or allowing joint management of the estate which is the situation now presently between Victoria Garden City Limited and HFP Engineering Nigeria Limited.

(2) Pre-sale arrangements: Under this arrangement, “model houses” were employed as a selling device. Other forms of advertisement and sales promotions were made both on the television and radio, handbills were printed and distributed to the public while letters of offer were written and sent out to corporate organizations and prominent individuals. In response to all these, interested persons were invited over for site inspection. After site inspections, they are made to pay a capital contribution for electricity and water before such buildings are connected to the existing grids.

CASE STUDY 2: CROWN ESTATE LEKKI PENNISULA

3.2.1 Development of Crown Estate Lekki Peninsula

Crown Estate at Lekki Peninsula is an estate developed by Crown Realities with an area of 41.7 hectares (104.25 acres) located at Lekki Peninsula, along Lagos-Epe expressing. The 99 year lease was granted by the Lagos State Government under the private estate developers’ scheme. It comprises of 414 low density competitive residential plots within full infrastructural facility which includes electrical, water tarred road with covered drainage etc. and complimentary services such as schools, hospital, filling station, police station, refuse collection, gardens, community center, etc. The crown estate has a firm hard crust land with tendency to naturally drain and also can boast of an extensive/spacious frontage park.

3.2.2 Types of property developed within the estate and constructional details

For the Crown Estate Lekki Peninsula, a wide range of residential properties has been developed and same sold to accommodate both medium and high income earners in the state, these buildings so developed were found to be tastefully finished and also provided in a serene environment. The range of residential houses consists of four basic types which are:-

- **Venus:** 3-bedroom detached bungalow with all rooms ensuite
- **Sun:** 3-bedroom detached bungalow with an open courtyard, all rooms ensuite
- **Pluto:** 4-bedroom detached house with 2 rooms detached steward quarter all rooms ensuite
- **Asteroids:** 5-bedroom detached house with 2 room steward quarter, all rooms ensuite

Constructional details: Each house sits on a standard plot of 648 square meters and is well demarcated by block walls and a combination of block wall and metal grill at the frontage. However, apart from the above development, the estate also has within it development, a community center which accommodate a multipurpose hall, a club house, library, swimming pool and sporting facilities like lawn tennis and basket ball courts.

3.2.4 The funding of Crown Estate Lekki Peninsula

Crown Realities Plc is the main developer of the Crown Estate Lekki Peninsula. The funding for this housing estate was provided and managed by NAL Merchant Bank Plc, under a joint venture partnership housing finance. Under the scheme, the investor provides the technical expertise only while the financial institution provides the funds. This type of relationship is profit based and the strategies are so designed that the major participants, Crown Realities PLC concentrated on the provision of all professional skill and technical know-how for the delivery of the houses i.e. the professional team, construction works project management, etc., while NAL Merchant Bank (the financiers) was responsible for fund mobilization, fund management, financial advisory and risk management. This strategy adopted makes the funds (capital) invested to be recouped back on the development through two basic which are outright sale and...
mortgage. With regards to the outright sale, some 102 housing units were sold through this process out of 150 that were being built. The prototype model was advertised with price tag in the open market for those that could afford to pay at once. On the other hand however, mortgage options were made open to those that could not afford an outright purchase under a reasonable mortgage condition. Under this arrangement, NAL Merchant Bank Plc which is the financier of the project however managed a third party fund that allow a purchaser on the payment of 50% of the price of any house type within the estate, the purchaser having 15 years from delivery of the house to him to pay the outstanding 50% balance at 15% interest per annum on a reducing balance basis. Some of the requirements and conditions for eligibility of the mortgage option include:

a) 50% deposit of the price of the house
b) Capacity to service the payment of the balance
c) Taking up mortgage protection policy, fire and all peril policy while repayment is pending.

The purchasers may elect to make payment monthly, quarterly, or bi-annually depending on his/her income stream and capacity. However, the purchaser is at liberty to accelerate repayment to liquidate the mortgage earlier than stipulated 15 year period.

A purchaser benefiting from the mortgage arrangement must take out two insurance policies, which are:

1. Mortgage protection policy for an insured value equivalent to mortgagee noted on the policy as the first loss payee in the event of death or permanent disability of the purchaser. The purchaser is required to pay a single premium on the policy which shall suffice for the life of the policy.
2. Fire and all perils policy for the value of the house with the mortgagee named as the first loss payee on the policy throughout the currently of the mortgage. The premium payable on this policy is on an annual basis. These two different policies are arranged by NAL Merchant Bank Plc in order to minimize the risk involved in the transaction and development. The insurance company involved in this arrangement is the Royal Exchange Assurance Plc (the insurer) and by NAL Tower Securities Limited (the Brokers) under a special policy called “Estate Insurance Scheme”, a package uniquely designed for houses within the housing estate.

CASE STUDY 4: MKO ABIOLA GARDENS ALAUSA, IKEJA, LAGOS

3.4.1 Introduction The MB Marwa Garden which has been renamed by the government of Bola Ahmed Timbu as MKO Abiola Gardens was initiated as a result of the clamour by the high income earners for the government to provide them a decent and modern functional housing estate. This clamour brought about the birth of housing estate in June 1997.

MKO Abiola Gardens comprised 304 units of houses and flats. The estate has 80 units of 4-bedroom duplexes, 80 units of 4 bedroom terrace houses, 72 units of 3 and 4 bedroom flats, with all modern infrastructural facilities provided including electricity transformers, well tarred roads, water supply from public mains, concrete cover drains, etc. MKO Abiola Gardens was initiated and developed by Lagos State Development and Property Corporation (LSDPC) under the Government of retired Brigadier General Mohammed Buba Marwa who was then the sole administrator of Lagos State.

3.4.2 Finance strategy cum the result achieved MKO Abiola Gardens project did not acquire loan from bank as public responses was high in the area of making payment. Ever before they start laying of blockwork, most interested persons made their respective full payment and this made LSDPC have enough fund to the extent that the State Government counterpart funding was returned. LSDPC achieved all the set objectives in that the project was completed on schedule and all the houses were completely sold out to the targeted group. The over-subscription of the houses by the public is an indication that the initiative as carried out was a huge success.

4.0 RECOMMENDATIONS AND CONCLUSION

4.1 RECOMMENDATIONS Finance could be said to constitute a major obstacle to real estate development. Though different sources of finance have been discussed, one can still say that those methods have been equity fruitful and as at now no new means of financing such a development apart from all that has been mentioned. Therefore, in order to advance and strengthen the traditional modes of finance and also prompt project realisation, particularly the various equity instruments to financing commercial development, the following: recommendations are proffered:

- Relaxation of government control: The various levels of government should review downwards the fees chargeable on properties and remove all administrative delays presently encountered in processing building and planning approvals, consent for transfer of property ownership and land acquisition for property development. Also the development charge or capital contribution on property developed should not be prohibitive or levied arbitrarily so as not to discourage potential investors.
- Encouragement or co-operative funding: Co-operative funding as a means of cheaper funds should be encouraged and used as a check off system to the commercial development fund. To this end, all Nigerian workers should contribute small sums of money (other than stipulated to the fund monthly and should be eligible to draw from there for their personal needs at a low cost.
- Capital market funding of commercial development: Many commercial development project seem to suffer from over capitalization as reflected in low output capital ratios. Over capitalization, along with substantial debt servicing burden has created financial difficulties for many commercial development projects. To alleviate the financial distress of this development, the government should allow capital restructuring and extension of loan repayment period in some cases, and a certain degree of pragmatism and flexibility is required by the government to deal with this problem.
- Local sourcing of building...
materials: Both the Government and private sector should intensify efforts towards sourcing building materials locally through encouragement and funding of research into those materials and investing into their production. Locally sourced materials are bound to be cheaper in the long run.

Institutional investment in commercial development: Large organizations and companies, such as NNPC, Chevron, Nestle Foods and Cadbury among others should be compelled by government to plough in a percentage of their annual profits into commercial development, at least to their employees. Such large developers should be given necessary assistance by government in the acquisition of land.

Enlightenment on other strategies for sourcing finance for housing estate development: Some other creative ways of sourcing funds for housing development should be exploited by developers and government. However, there should be an awareness of the existence of such strategies and authorities like NIESV, FHA, FMBN, LSDPC, etc, should embark on campaign and workshops to bring such products to the developers of the consumers.

Phased development of project as a viable way of funding commercial development: It has been deemed fit that the projects be phased to reduce period of construction and gauge performance and response of market forces. This will help to reduce the incidence of unproductive developments as more space can be added as and when required. It will also lead to savings in interest repayment and the income from a completed phase can be used to finance another phase.

Review of the Land Use Act: The Land Use Act should be amended to make acquisition of land for development easier especially where land requirement is large and acquisition by private treaty is impossible. The government should step in and exercise powers of compulsory acquisition to assist developer acquire the land mass necessary for a project which is in the interest of the general public. Finally, it must be emphasized that government should concern itself with provision of site and services thus freeing itself the burden of producer of all. It should be noted that the private sector participation in housing development is the panacea to ensuring distribution of homes to the citizenry.

4.2 CONCLUSION
This paper discussed housing finance with respect to private and public sector participations. The hindrances to effective housing finance in both sectors as well as major sources of finance have been discussed. However, the Federal Government must provide leadership in creating conducive macro-economic environment and thereby encourage the active involvement of the private sector in housing delivery. It must resist the repeated urge of involving itself in direct housing construction but rather encourage the private sector to do this through the provision of the necessary incentives.

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APPLICATION OF INFORMATION TECHNOLOGY IN CONSULTING QUANTITY SURVEYING FIRMS IN LAGOS STATE

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ABSTRACT

The Nigerian construction industry has witnessed a remarkable improvement in service delivery through the embrace of information technology. This makes it imperative for every profession wishing to be relevant in this present age to equally acquire, adopt and utilize every opportunity that information technology present, in order to enhance their contribution to the construction delivery process. The study aims at investigating the application of information technology in consulting Quantity Surveying (QS) firms as a means of boosting its usage. Using a survey design approach and a purposive sampling technique, a sample (N=30) was drawn on Quantity Surveying firms located within Lagos metropolis. The data were analyzed using descriptive data analysis while mean items score was used to present responses obtained on a modified Likert scale instrument. The study revealed that 70% of Quantity Surveying firms are computerized and they are very proficient in the use of word processing packages; they are proficient in the use of Microsoft Excel, E-mail, and Internet, while they are moderately proficient in the use of intranet and presentation packages. Lack of adequate proficiency in the use of database management packages and QS software packages and Design packages is an indication of low technical know-how among the professional staff in the use of this software for QS core services, but many QS firms use their own in-house packages. Majority of the respondents underwent training in computer on personal and informal basis, while the identified impact/benefits of information technology implementation on QS service delivery are: ease of retrieval of past project information; increase staff productivity; ease of production of project documents among others. The major factors affecting computer usage in QS firm include: QS training institution inability to give computer education to their students, lack of QS software instructors and the unwillingness of management in giving in-service training to QS staff among others. One of the determinants of computing need identified is the competition among professionals in the industry while the study recommend attitudinal change by the management of QS firms and the Quantity Surveyors themselves toward the embrace of IT among others.

Key words: Information Technology, Quantity Surveying, Consulting Firms

Impact on the emerging needs of modern societies in education, healthcare delivery, library services, widespread access to scientific and leisure databases and communication networks within companies, among others. Stewart (2002) described IT as encompassing the use of electronic machines and programs for the processing, storage, transfer and presentation of information (e.g. intranets, internets, e-mails, wide area networks, video conferencing etc.). On the other hand, Ferry, Brandon and Ferry (1999) considered IT as the application and development of technology which enables improved data capture, transmission, manipulation of interpretation of information in support of decision makers or the manufacture of an improved product.

Mohamed and Steward (2003) considered the significant productivity improvements experienced by a wide range of industries to be associated with IT implementation. The need to increase the effectiveness of the construction industry activities and the efficiency of the Quantity Surveyors in particular, via the use of information technology cannot over-emphasize.

Quantity Surveying, according to Ofereh and Alufohai (2000) is uniquely founded on the present and future belong to the superhighway. To corroborate this view, Ofoereh and Alufohai (2000) observed that the present and future belong to the technology to which the wise cannot afford to be lukewarm. Also that the stress-endemic processing methods of quantity surveying profession can only be obviated through an unconditional and warm embrace of the graphic, speedy and tidy results derivable from computer application.

Benefits of information technology application

Bettis and Ofori (1994) identified the
opportunities offered by information technology as: strategic weapons to gain competitive advantage; improve productivity and performance; enable new ways of managing and organizing; and developing new business. Stewart (2002) pointed out the benefits of IT implementation as including: productivity gains; increased business turnover; shorter cycle time; capacity to manage large and more complex projects; improved accuracy and consistency of documentation; ease of data exchange; ability to satisfy client needs; and ability to manage projects at a distance and work in close collaboration with remote offices among others.

Barriers to information technology implementation
The causes of apathy to information technology in most Nigerian Quantity Surveying firms according to Adetola (1998) are: lack of clear understanding between cost and economy and lack of proper training of professional staff that should be operating these systems. More over, most of the firms that have introduced computers into their offices have done so by accident rather than by design. Stewart (2002) held the view that lack of system knowledge; lack of training associated with the implementation and ignorance of the potential benefits of IT application are reasons responsible for its low usage. At the organization level, Trucker and Mohamed (1996) identifies barriers to IT implementation by the senior management as:

1. Reluctance on the part of the management who are not convinced of the immediate gains that could be achieved from IT application.
2. Unwillingness of the organization under heavy competition, to invest their resources into the technology and to provide time to change operations and train staff.
3. Avoidance of effects of changes to work processes which can be disruptive to productivity, especially during the introductory phase of new technology and more so if the introduction is not known in advance.
4. Unwillingness to part with tradition, as people, no matter how dedicated to the new tools, usually has a tendency towards doing things the way they are used to.

Objectives of study
The study seeks to:
1. Identify the computer packages in common use and the QS functions that has been computerized.
2. Identify the mode of computer knowledge and skill acquisition by the professional staff and the factors affecting computer usage in the firms.
3. Identify the impact/benefits of IT on QS service delivery.
4. Identify the determinants of computing needs in QS firms.

Research Methodology
A survey research approach was adopted by means of self-administered questionnaire distributed to the selected sample drawn from the target population comprising mainly the QS firms in Lagos metropolis. A purposive sampling technique was used for the selection of the sample. Out of the 36 questionnaires distributed, 30 (86%) valid responses were received, which could be considered very fair and adequate for the research.

Construction of the Questionnaire
The self-administered questionnaire was designed in an attempt to survey the use of Information Technology in consulting Quantity Surveying firms. The questionnaire was divided into two sections. Section A sought to get information on the personal data of the respondent. Such questions as name of the consulting QS firm, years of existence of the QS firm, Number of years the respondent has spent in the firm, the respondent educational and professional qualification. Section B sought to know the number of QS services the firm are performing on the computer and those functions the firm would like to be able to computerize. Other questions sought to know the computer packages in common use by the QS firm, the mode of computer knowledge and skill acquisition by the professional staff in the firm, factors affecting the use of computer, the impact of computers on the firm’s service delivery, and finally computing needs determinants.

Method of data analysis
The data collected were analyzed using descriptive statistics while responses from questions drawn on summated rating scales instrument were analyzed to generate relevant indices used for ranking the responses.

Results and discussion of findings
Out of 30 consulting QS firms surveyed, 18 (60%) of them has been established for over 10 years while the remainder has been existing for less than 10 years as shown in Figure 1 below.

Figure 1: Years of existence of QS firms
The result of study as shown in Table 1 indicates that 21 (70%) of the QS firms are using computers for their professional services for over 5 years, but at elementary level as they are only very proficient in the use of Word processing packages.

Table 1: Years of use of computer for QS services in the firms

<table>
<thead>
<tr>
<th>Years</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>3-4</td>
<td>8</td>
<td>26.7</td>
</tr>
<tr>
<td>5-6</td>
<td>13</td>
<td>43.3</td>
</tr>
<tr>
<td>9-10</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>Over 10</td>
<td>7</td>
<td>23.3</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 2 further indicates that the QS firms are proficient in Ms Excel, E-mail and internet, while, they are moderately proficient in the use of intranet and presentation packages. Lack of adequate proficiency in the use of Data base management packages (e.g. Ms Access) QS software packages (e.g. Master bill, QS Elite, Vector, workmate and Design packages (e.g. Auto CAD) is an indication of low technical know-how among the professional staff in the use of information technology (IT) for QS core services. This confirms the lack of QS software instructors and inadequate training of professional for IT skill acquisition.

Table 2: Proficiency in computer packages

<table>
<thead>
<tr>
<th>Computer Packages</th>
<th>Mean</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Processing packages (e.g. Ms Word)</td>
<td>5.00</td>
<td>1</td>
</tr>
<tr>
<td>Ms Excel</td>
<td>4.27</td>
<td>2</td>
</tr>
<tr>
<td>E-mail</td>
<td>4.13</td>
<td>3</td>
</tr>
<tr>
<td>Internet</td>
<td>4.00</td>
<td>4</td>
</tr>
<tr>
<td>Intranet</td>
<td>3.30</td>
<td>5</td>
</tr>
<tr>
<td>Presentation packages (e.g. Ms Point)</td>
<td>3.23</td>
<td>6</td>
</tr>
<tr>
<td>Data base management packages</td>
<td>2.83</td>
<td>7</td>
</tr>
<tr>
<td>In-house QS packages</td>
<td>2.73</td>
<td>8</td>
</tr>
<tr>
<td>QS Software packages</td>
<td>2.52</td>
<td>9</td>
</tr>
<tr>
<td>Design packages (e.g. Auto CAD)</td>
<td>2.48</td>
<td>10</td>
</tr>
<tr>
<td>Lotus 1-2-3 or Ms Lotus 1-2-3</td>
<td>2.40</td>
<td>11</td>
</tr>
<tr>
<td>Accounting packages</td>
<td>2.24</td>
<td>12</td>
</tr>
</tbody>
</table>

Cannot use it at all = 1; Not proficient = 2; moderately proficient = 3
Proficient = 4; Very proficient = 5
Table 3 shows the QS functions currently being performed on the computer in the firms and the functions wished to computerized. Majority of the firms are currently carrying out on the computers functions such as: Spread Sheet calculation, Estimating; Job costing; Cash

Table 3: Functions currently performing on the computer and functions wished to computerized

<table>
<thead>
<tr>
<th>Function currently being performed on the computer</th>
<th>Function wished to computerized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Spread Sheet calculation</td>
<td>19</td>
</tr>
<tr>
<td>Estimating</td>
<td>14</td>
</tr>
<tr>
<td>Job costing</td>
<td>16</td>
</tr>
<tr>
<td>Cash flow requirement</td>
<td>22</td>
</tr>
<tr>
<td>Scheduling</td>
<td>18</td>
</tr>
<tr>
<td>Resource leveling</td>
<td>14</td>
</tr>
<tr>
<td>Programme of work</td>
<td>28</td>
</tr>
<tr>
<td>Material schedule</td>
<td>27</td>
</tr>
<tr>
<td>Word processing</td>
<td>27</td>
</tr>
<tr>
<td>External correspondence</td>
<td>28</td>
</tr>
<tr>
<td>Internal memo</td>
<td>28</td>
</tr>
<tr>
<td>Technical information</td>
<td>29</td>
</tr>
<tr>
<td>Staff Information</td>
<td>28</td>
</tr>
<tr>
<td>Equipment information</td>
<td>28</td>
</tr>
<tr>
<td>Project information</td>
<td>28</td>
</tr>
</tbody>
</table>

From Table 4, majority of the professional staff in QS firms acquired computer knowledge and skill through personal self development using computer manuals being the most dominant mode of training. Other modes of training in the order of dominant are: knowledge acquired while in school, in-service training by the employer; continuous professional development workshop and seminar; and private computer training organization.

Table 4: Mode of computer knowledge and skill acquisition by the professional staff in the firms

<table>
<thead>
<tr>
<th>Training Modes</th>
<th>Mean</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal self development using Computer manuals</td>
<td>3.10</td>
<td>1</td>
</tr>
<tr>
<td>Taught curriculum while at school</td>
<td>2.86</td>
<td>2</td>
</tr>
<tr>
<td>In-service training by the employer</td>
<td>2.85</td>
<td>3</td>
</tr>
<tr>
<td>Continuous profession development Work shop, seminar</td>
<td>2.83</td>
<td>4</td>
</tr>
<tr>
<td>Private computer training organization</td>
<td>2.60</td>
<td>5</td>
</tr>
</tbody>
</table>

1 = Never used as a mode of training
2 = Least dominant mode of training
3 = Dominant mode of training
4 = Most dominant mode of training

Table 5 below presented the respondents opinion on factors that are capable of affecting computer use in the QS firms. Majority of the respondents believe that Q.S training institutions’ inability to give computer education to their students, lack of QS software instructors and unwillingness of management in giving in-service training to QS staff constitute the major effect on computer usage in QS firms. This assertion is supported by past studies (Trucker & Mohamed, 1996; Adetola, 1998; Oyediran & Odusami, 2005) which claimed that senior management unwillingness to invest their resources into the technology and provide time to change operations and train staff constitutes a barrier to IT implementation. Also, low capacity of QS educators in software training skill and the absence of software training in the quantity surveying curricula of QS training institutions affect IT application in QS firms.

Table 5: Factor affecting computer use

<table>
<thead>
<tr>
<th>Factors</th>
<th>Means</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>QS training institutions are not equipped/poised to give computer education to their students</td>
<td>3.82</td>
<td>1</td>
</tr>
<tr>
<td>Lack QS software instructors</td>
<td>3.79</td>
<td>2.5</td>
</tr>
<tr>
<td>Software education is poor</td>
<td>3.79</td>
<td>2.5</td>
</tr>
<tr>
<td>Management of firms rarely give in-service training to QS staff</td>
<td>3.64</td>
<td>4</td>
</tr>
<tr>
<td>There is no tailor made QS training by private computer school trainers</td>
<td>3.32</td>
<td>5</td>
</tr>
<tr>
<td>Management is not willing to computerize QS operation</td>
<td>3.22</td>
<td>6</td>
</tr>
<tr>
<td>Inadequate job order to encourage investment in computer</td>
<td>3.15</td>
<td>7</td>
</tr>
<tr>
<td>Fees is not enough to justify computerization of QS services</td>
<td>3.04</td>
<td>8.5</td>
</tr>
<tr>
<td>Few QS software to choose from</td>
<td>3.04</td>
<td>8.5</td>
</tr>
<tr>
<td>The rate at which software becomes outdated and require up dating</td>
<td>2.86</td>
<td>10</td>
</tr>
<tr>
<td>It is capable of creating unemployment for QS practitioners</td>
<td>2.81</td>
<td>11</td>
</tr>
<tr>
<td>The cost of engaging computer literate</td>
<td>2.79</td>
<td>12</td>
</tr>
<tr>
<td>QS is high</td>
<td>2.64</td>
<td>13</td>
</tr>
<tr>
<td>QS believes computer training and usage is for the coming generation</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

1 = No effect; 2 = minor effect; 3 = moderate effect; 4 = major effect; 5 = very major effect.

Table 6 shows the impact/benefits of computers on QS service delivery. As would be expected in those firms where information Technology has been embraced, all the respondents agreed to the impact/benefits of computers on QS service delivery as including; enhances ease of retrieval of past project
information; increases staff productivity; enhances ease of production of projects/contract document; permit sharing of project information electronically; reduced level of paper work among others. Betts and Ofori (1994) shared same view by identifying improved productivity and performance as one of the benefits of IT. Stewart (2002) identified increased business turnover, shorter cycle time, and ability to satisfy clients’ need, capacity to manage large and more complex projects among others as impact/benefit of IT implementation in the organization.

**Table 6: Impact/Benefits of Computers on QS services delivery**

<table>
<thead>
<tr>
<th>Impact/Benefits of Computer</th>
<th>Mean</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhance ease of retrieval of past project information</td>
<td>4.00</td>
<td>1</td>
</tr>
<tr>
<td>Increases staff productivity</td>
<td>3.90</td>
<td>2</td>
</tr>
<tr>
<td>Enhances ease of production of project/contract document</td>
<td>3.77</td>
<td>3</td>
</tr>
<tr>
<td>Permits sharing of project information</td>
<td>3.68</td>
<td>4</td>
</tr>
<tr>
<td>Reduces the level of paper work, thereby making the office environment tidy/neat</td>
<td>3.59</td>
<td>5.5</td>
</tr>
<tr>
<td>Reduces the length of time to respond to enquiries from project members through E-mail</td>
<td>3.59</td>
<td>5.5</td>
</tr>
<tr>
<td>Permits on-line or real time sharing of project information among in-house project participant</td>
<td>3.56</td>
<td>7</td>
</tr>
<tr>
<td>Improves the presentation of contract documents</td>
<td>3.54</td>
<td>8</td>
</tr>
<tr>
<td>Improves service to client</td>
<td>3.52</td>
<td>9</td>
</tr>
<tr>
<td>Enhances ease of coordination and Integration of project information among project team members</td>
<td>3.50</td>
<td>10</td>
</tr>
<tr>
<td>Reduces the cost of storage and access to cost information</td>
<td>3.30</td>
<td>11</td>
</tr>
<tr>
<td>Requires retraining of staff</td>
<td>3.17</td>
<td>12</td>
</tr>
<tr>
<td>Requires staff with new skills and aptitude</td>
<td>3.03</td>
<td>13</td>
</tr>
<tr>
<td>Reduces the number of staff needed for QS job</td>
<td>2.97</td>
<td>14</td>
</tr>
<tr>
<td>Enhances meeting deadlines</td>
<td>2.93</td>
<td>15</td>
</tr>
<tr>
<td>Increase the cost of maintaining the computer</td>
<td>2.5</td>
<td>16</td>
</tr>
<tr>
<td>Reduces reimbursable charges</td>
<td>2.29</td>
<td>17</td>
</tr>
</tbody>
</table>

1 = Strongly disagree  2 = Disagree  3 = Agree  4 = Strongly agree

**Table 7 Determinants of computing needs**

<table>
<thead>
<tr>
<th>Determinants</th>
<th>Mean</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competition among professionals in the construction industry</td>
<td>3.79</td>
<td>1</td>
</tr>
<tr>
<td>Competition among quantity surveyors</td>
<td>3.49</td>
<td>2</td>
</tr>
<tr>
<td>General construction industry demand</td>
<td>3.39</td>
<td>3</td>
</tr>
<tr>
<td>Client/customer demand</td>
<td>3.14</td>
<td>4</td>
</tr>
<tr>
<td>Firm’s corporate technology strategy</td>
<td>2.89</td>
<td>5.5</td>
</tr>
<tr>
<td>General technology demand</td>
<td>2.89</td>
<td>5.5</td>
</tr>
</tbody>
</table>

1 = No influence;  2 = Moderate influence;  3 = High influence

**Conclusion and recommendation**

The study notes that Information Technology application in consulting Quantity Surveying firms has been on for sometimes but at elementary level as most of the firms is proficient in the use of Word processing packages, Ms Excel, E-mail and Internet with lesser proficiency in the use of Database management packages, QS software packages and Design packages. The Quantity Surveyor’s functions which are found to be computerized among others include: Spread sheet calculation; programme of work preparation; Estimating, job costing, project information and external correspondence preparation, while very few firms are yet to computerize these tasks.

The majority of the professional staff in QS firms acquired computer knowledge and skill through personal self development rather than training acquired from schools or given by their employers. The study identified the QS training institutions’ inability to give adequate computer education to their students as being the major effect, on IT application in QS firms, closely followed by low capacity of the QS educators in the training of QS software and the management of firm’s unwillingness to invest their resources into the technology and provide training opportunity for staff among others.

The impact/benefits of IT in QS firms cannot be over-emphasized as it enhances ease of retrieval of past project information; increase staff productivity; enhance ease of production of project/contract document; permits sharing of project information; reduces
the level of paper work; to mention a few. Notwithstanding, the low level of information technology application in many QS firms, the study identified competition among professionals in the construction industry, followed by competition among the Quantity Surveyors as being the main computing needs determinants in consulting QS firms.

To enhance the present level of Information Technology application in consulting QS firms, the management of the firms and the professional QS must make a concerted effort toward embracing IT and training of staff as a means of improving their service to the clients. Also, Quantity Surveying software training should be made part of the QS curricular in QS training institutions, while the development of local QS software should be encouraged as a means of reducing the cost of installation and enhancing its availability.

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THE EFFECT OIL AND SALT WATER ON THE WORKABILITY AND
COMPRESSIVE STRENGTH CONCRETE

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ABSTRACT
The research considered the effect of salt and oil water on the workability and compressive strength of concrete. The research data were derived from laboratory experiment performed on concrete samples produced using oil and salt water. Water used for the study are: tap water for the control experiment; well and lagoon water for salt water and used engine oil water for the other experiment. The results showed that workability of the concrete mixed with tap water was reliable having slump value of 25mm (true) for both mix 1:2:4 and 1:3:6. Slump values for concrete mixed with slat water viz well and lagoon water were 27mm (shear) and 29mm (shear) for 1:2:4 mix ratio and 28mm (shear) and 32mm (shear) for 1:3:6 mix ration; while concrete mixed with oil water has slump value of 115mm (collapse) for 1:2:4 mix ratio and 118mm for 1:3:6 mix ratios. The compacting values for concrete mixed with salt water viz well and lagoon water are: 9.895 and 0.796 (both reliable) for 1:2:4 mix ration and 0.880 and 0.789 (both reliable) for 1:3:6 mix ration. Slump values for concrete mixed with salt water viz well and lagoon water had low compressive strength throughout the duration of the experiment. This was due to the fact that the cubes hardly absorb water which was attributed to the presence of oil in the water which acts as a buffer. Hence, a low compressive strength results since concrete cubes requires water for curing. Concrete cubes specimen cast with slat water viz: well and lagoon water exhibit a reduced early strength. The strength however appreciates as the age of curing increases. It was concluded that tap water is the best for concreting to achieve a better workable concrete with adequate compressive strength.

Keywords, compressive strength, saline, concrete, workability, oil water.

1.0 INTRODUCTION
Concrete strength can broadly be grouped into: compressive strength, tensile strength and shear strength. Compressive strength of concrete is the most important and commonly used index of quality because it can easily be determined and from it other strength can be estimated. Compressive strength of concrete is one of the major parameter of concrete which is consistently being tempered with erroneously or willingly by the use of oils and salts in various forms. Research studies showed that sea water contains varying amount of salt content ranging from 34-36% (3). Although the properties of water to dissolve salts may vary within the ocean, the major component ions are disturbed in ocean, water in relatively constant proportions. Construction of concrete structures continued to increase on the sea from time to time. The effect this salt water has on concrete compressive strength is of utmost importance to research study. Basically, soil salinity can be classified into: irrigation salinity, dry land salinity, urban salinity, river salinity and industrial salinity. (4) Ground water carries dissolved salts from the underlying soil and bedrock materials through which it travels; as this water comes close to the soil surface (within 2 meters) it enters the foundation root zone causing concrete foundation failures. The impact of water logging and Stalination varies with soil type, climate and land use. (5). Soil salinity is determined by measuring the electrical conductivity of solution extracted from a water saturated soil paste. Salinity is abbreviated as Ece (Electrical Conductivity of the Extract) with units of dsiemens per meter (ds/m) or millin has per centimeter (mnhos/cm). (5). The study investigated the workability of concrete using the slump and compacting factor experiment and the compressive strength of concrete using the cube specimen with the mixing water such as tap, well, Lagoon and oil water.

2.0 EXPERIMENTAL PROCEDURE

2.1 MATERIALS
For the purpose of the study the major materials used are: sharp sand (fine aggregate), cement (Ordinary Portland Cement) complying with B.S 12 (1970) was used as the binding material. (6).
The actual source was from the West African Portland Cement Company, Ewekoro, Ogun-State. Lagoon water was obtained from Lagoon front, University of Lagos, Onikan-Lagos, while the well water was obtained from Bariga-Lagos. Tap water used for the control experiment is treated water from the Lagos State water corporation. Finally, oil water is used engine oil mixed with tap water. The oil water used contains one-tenth (1/10)th of the mixing water as used engine oil.

2.2 SPECIMEN PREPARATION
Two batches of concrete mix were carried out viz: 1:2:4 and 1:3:6 mixes. The concrete were cast with tap, well, lagoon and oil water using water cement ratio of 0.6.

2.3 TESTING OF SPECIMEN
2.3.1 SLUMP TEST
The mould was filled in four layers with concrete of approximate equal depth. Each layer was rodded with 25 strokes of the end of the tamping rod. The surface of the concrete was struck off the level with a trowel. Spillages are cleaned around the mould. The slump which is the difference between the height of the inverted concrete mould and the greater height after the removal of the mould was measured. The test was performed in accordance with the provision in BS 1881:1983 part 102. (1).

2.3.2 COMPACTING FACTOR TEST
Two batches of concrete mix were carried out, the first batch of four sets of mix ratio 1:3:6. The mixing water are: tap, well, lagoon, and oil water. Sufficient sample of the prepared mix was poured into the upper hopper of the compacting factor apparatus with the hinged tap door under the upper hopper closed. The hinged tap door was consequently opened to allows the concrete fall through the upper hopper to the lower hopper with the hinged tap door under the lower hopper closed; thereafter, the door was opened and the concrete fall through into the cylindrical mould under the lower hopper. Excess concrete in the cylindrical mould was wiped clean and re-weighed, before computing the compacting factor value as:

\[
\text{Compacting factor} = \frac{\text{Wt. of compacted mould}}{\text{Wt. of fully compacted mould}}
\]

The test was carried out in accordance with the provisions in BS 1881: Part 103 (1993) (2).

2.3.3 COMPRESSIVE STRENGTH TEST
Concrete cube specimens were cast with tap, well, lagoon and oil water with mix ratio 1:2:4 and 1:3:6 and water-cement ratio of 0.6. Concrete mould of size 150 x 150 x 150mm was used.

Twelve concrete cube specimens were cast with each of the mixing water. A total of 96 concrete cube specimens were cast. Ece concrete cube specimen was cast in three layers; each layer compacted manually with 35 strokes of a steel tamping rod of 16cm diameter and 600mm long across the cross-section of the mould. Concrete cube specimens cast with oil water contains one-tenth (1/10)th of the mixing water as used engine oil. Specimens were remoulded after 24 hours and water cured in curing tank until testing age of 7, 14, 21 and 28 days. One each testing age, three specimens for each mix proportion were brought out of the curing tank and allowed to rest for 2 hours before crushing on an electric operated hydraulic machine with maximum capacity of 3000KN, type SWP 300EM 1, Masch. Nr. 6329. Compressive strength value was computed thus:

\[
\text{Compressive through strength} = \frac{\text{Maximum load}}{\text{Normal cross sectional area}}
\]

2.4 GRAVIMETRIC ANALYSIS OF WATER
20cm$^3$ of the specimen (well and lagoon water) was obtained in a measuring cylinder. 5cm$^3$ of silver chloride (AgNO$_3$) was added to the specimen to precipitate the chloride ions in form of silver chloride (AgCl). An empty filter paper was weighed after which the precipitate was poured into it, before it was reweighed. The weight of the precipitate was obtained by subtracting the weight of the filter paper from the weight of filter paper plus the precipitate.

The weight of the precipitate was converted to moles. The mole of sodium chloride was related to mole of sodium chloride. The mole of sodium chloride was converted to grams per volume used. The reaction is as expressed thus:

\[
\text{NaCl} \rightarrow \text{AgCl (ppt)} + \text{AgNO}_3
\]
3.2 WORKABILITY

Workability of the concrete mix was viewed from two perspective viz: slump test analysis and compacting factor analysis.

3.2.1 SLUMP TEST ANALYSIS

The result of the slump test is presented in Table 1. Table 1 revealed that the control experiment exhibited a true slump of (25mm) both for 1:2:4 and 1:3:6 mix ratio, while concrete mix cast with water exhibited a shear of (27mm) and (28mm) for mix ratio 1:2:4 and 1:3:6 respectively. Concrete mix cast with lagoon water exhibited a shear slump of (29mm) and (32mm) for mix ratio 1:2:4 and 1:3:6 respectively; and lastly concrete mix cast with oil water exhibited a collapse slump of 115mm and 118mm for mix ration 1:2:4 and 1:3:6 respectively. It is evidenced from this result that oil increased the fluidity and viscosity of the concrete mix hence, a collapse slump resulted. Concrete slump can be categorized into: true slump (0.25); shear slump (26-75) and collapse slump (76 and above)(7)

3.2.2 COMPACTING FACTOR ANALYSIS

The result of the compacting factor test for concrete mix is as presented in Table 3. The table revealed that workability of concrete mixes for tap water, well water and lagoon water are reliable having the following compacting factor values: 0.97, 0.895 and 0.796 for mix ratio of 1:2:4 and 0.85, 0.88 and 0.789 for mix ratio 1:3:6. The result also indicated that workability of concrete mix with oil water is unreliable having compacting factor value 0.49 for both mix ratio of 1:2:4 and 1:3:6. The ranges for compacting factors are: (0 0.45) as unreliable and (0.5 0.99) as reliable, compacting factor for concrete mix must be less than unity.(8)

3.3 COMPRESSION STRENGTH

Table 4 showed the compressive strength values of concrete cube specimen cast with tap, well, lagoon and oil water. The strength of concrete cubes appreciates from 7 to 28 days. For 1:2:4 mix ratio concrete cubes specimen cast with tap water appreciates from 20 N/mm$^2$ at 7 days to 23.1 N/mm$^2$ at 28 days; while cube specimens cast with well water appreciates from 11.1 N/mm$^2$ at 7 days to 22.2 N/mm$^2$ at 28 days. Cubes cast with lagoon water appreciate from 11.1 N/mm$^2$ at 7 days to 24.4 N/mm$^2$ at 28 days. Similar occurrence was also observed by concrete cube specimens cast with 1:3:6 mix ratio.

4.0 CONCLUSION

Form the result of the various test performed, the following conclusions can be drawn:

- Tap water is the best for concrete work to achieve the best workability without any negative effect such as low early strength experience with salty water.
- The use of oil water for concreting should not be encouraged.
- Salt water though has effect on the early strength though, the strength appreciates as the age of curing increases.
- Compressive strength of concrete appreciates with age of curing.

5.0 RECOMMENDATIONS

Based on a close investigation of the effect of oil and salt water on the workability and compressive strength of concrete the following recommendations are made.

- Oil water should not be encouraged for mixing concrete.
- Salt water though has effect on the later strength of the concrete should not be encouragings because
Tap water is highly recommended for concrete mixing in order to achieve good workability, high compressive strength and no efflorescent tendency.

Table 1: Gravimetric Result of Water Specimen

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Weight of empty filter paper (g)</th>
<th>Weight filter paper (ppt) g</th>
<th>Weight (pp) (g)</th>
<th>Mole</th>
<th>Equivalent mole of NaCl (mm)</th>
<th>Mole/cm³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well water</td>
<td>0.818</td>
<td>0.949</td>
<td>0.131</td>
<td>0.000914</td>
<td>0.0553</td>
<td>2.67</td>
</tr>
<tr>
<td>Lagoon water</td>
<td>0.813</td>
<td>1.112</td>
<td>0.299</td>
<td>0.00209</td>
<td>0.122</td>
<td>6.10</td>
</tr>
</tbody>
</table>

Table 2: Slump Test Result

<table>
<thead>
<tr>
<th>Types of Concrete cube</th>
<th>Mix Ratio</th>
<th>Water Cement Ratio</th>
<th>Compacting factor test value (mm)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tap (control)</td>
<td>1:2:4</td>
<td>0.6</td>
<td>25</td>
<td>True</td>
</tr>
<tr>
<td>Well</td>
<td>1:2:4</td>
<td>0.6</td>
<td>27</td>
<td>Shear</td>
</tr>
<tr>
<td>Lagoon</td>
<td>1:2:4</td>
<td>0.6</td>
<td>29</td>
<td>Collapse</td>
</tr>
<tr>
<td>Oil</td>
<td>1:2:4</td>
<td>0.6</td>
<td>115</td>
<td>Collapse</td>
</tr>
<tr>
<td>Tap (control)</td>
<td>1:3:6</td>
<td>0.6</td>
<td>25</td>
<td>True</td>
</tr>
<tr>
<td>Well</td>
<td>1:3:6</td>
<td>0.6</td>
<td>28</td>
<td>Shear</td>
</tr>
<tr>
<td>Lagoon</td>
<td>1:3:6</td>
<td>0.6</td>
<td>22</td>
<td>Shear</td>
</tr>
<tr>
<td>Oil</td>
<td>1:3:6</td>
<td>0.6</td>
<td>118</td>
<td>Collapse</td>
</tr>
</tbody>
</table>

Table 3: Compacting Factor Result

<table>
<thead>
<tr>
<th>Types of Concrete cubes</th>
<th>Mix Ratio</th>
<th>Water Cement Ratio</th>
<th>Partially compacted weight (kg)</th>
<th>Fully compacted weight (kg)</th>
<th>Compacting factor test value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tap (control)</td>
<td>1:2:4</td>
<td>0.6</td>
<td>11.55</td>
<td>11.90</td>
<td>0.970</td>
<td>Reliable</td>
</tr>
<tr>
<td>Well</td>
<td>1:2:4</td>
<td>0.6</td>
<td>9.45</td>
<td>10.55</td>
<td>0.895</td>
<td>Reliable</td>
</tr>
<tr>
<td>Oil</td>
<td>1:2:4</td>
<td>0.6</td>
<td>9.00</td>
<td>11.30</td>
<td>0.796</td>
<td>Reliable</td>
</tr>
<tr>
<td>Tap (control)</td>
<td>1:3:6</td>
<td>0.6</td>
<td>11.65</td>
<td>12.20</td>
<td>0.95</td>
<td>Reliable</td>
</tr>
<tr>
<td>Well</td>
<td>1:3:6</td>
<td>0.6</td>
<td>9.40</td>
<td>10.65</td>
<td>0.880</td>
<td>Reliable</td>
</tr>
<tr>
<td>Oil</td>
<td>1:3:6</td>
<td>0.6</td>
<td>11.25</td>
<td>22.85</td>
<td>0.490</td>
<td>Reliable</td>
</tr>
</tbody>
</table>

REFERENCES


ABSTRACT
Urban Planning is a rational activity involving physical development within the prevailing political and economic context. The notion of resource optimization with its universal acceptability naturally gives undue priority to economic considerations, even in activities that have far-reaching social and environmental implications. Urban planning has thus become a tool of group interest in which policies and programmes tend to favour one socio-economic class over the other. This manifests in the form of good housing environment and slim areas existing side by side, planning standards that do not reflect diversity of the society, and the perpetuation of social injustice and inequality. There is thus the need for urban planning to be neutral through conscious moderation of economic considerations with public interest considerations which emphasize social choice, social justice, equity and fairness among others.

1.0 INTRODUCTION
Planning theory can be delineated into three different emphasizes: planning practice, political economy and metatheory (Sandercock and Forsyth, 1990). At the metatheory level, theorists ask fundamental epistemological and methodological questions about planning. The theoretical objective is an abstract, general notion of planning as a rational human activity that involves the translation of knowledge into action (Sandercock and Forsyth, 1992; Krieger, 1989; Friedman 1987; Faludi 1986; Majone and Quade, 1980).

In the past two decades, authors who theorize about planning practice (e.g. Herkin, 1991; Sandercock, 1990; Krumholz and Forester, 1990; Forester, 1989; Marris, 1987; Clavel, 1986) laid much emphasis on planning process and outcomes. Generally, speaking, theories of planning practice involve analyses of the procedures, actions and behaviour of planners. They may also include an
analysis of the context or concrete situation in which planners are working (Sandrock and Forsyth, 1992).

The political economy ideas of Engels as well as Marx and Lenin toward which many urban theorist turned, were usually imported from point of origin outside the realm of urban planning. As a result of paradigm shift, although not in the Khunian sense in urban planning, theorists quickly began giving them new twists, applying them differently, then adding new dimensions. Recent theories of urbanism have stressed that urbanism is not an autonomous process but has to be analysed in relation to major patterns of political and economic changes (Giddens, 1989).

With the advent of political economy approach in urban planning, there is today a growing number of studies on the moral dimension of the impact of urban planning under capitalism on urban territory. This is with a view of updating 'the discipline and to allow more investigations into the process through which injustice manifests itself on the urban territory' (Corubolo, 1998:5). The urban poor are at the receiving end of planning as a result of the orientation of urban planners in which the built environment is seen as an entity to be created overnight rather than something to be evolved or ganically. Rather than urban planning serving the diverse needs of the society, the society is mandated to surrender its heterogeneous attributes to promote the higher ideals of urban planning. Not all socio-economic groups are naturally placed to perform such obligations. Urban planning, through regulations, planning laws, and planning standards is seen as a tool used by the state to promote the interests of the ruling and upper classes. This is because most urban dwellers are poor and have no means to meet stringent planning requirements. The 'rule of planning law' is thus the means by which the urban poor are discriminated against and which consign them to live in sub-standard environment. This is well-captured by Vladimir Putin, the immediate past President of Russia, in his doctoral thesis. According to him, rather than the law protecting the rights of the people, it is the dictatorship of the law which controls the right of individuals (Omorogbe, 2008). The need for urban planning and urban planners do accommodate the urban poor is thus the focus of this paper. The next section discusses the political economy of capitalist urban planning. The next section discusses the political economy of capitalist urban planning.

2.0 POLITICAL ECONOMY OF CAPITALIST URBAN PLANNING

Urban planning is particularly concerned with the spatial and land-use dimension of urban development (Devas and Rakodi, 1993). The basic aim of urban planning is to ameliorate some problems emanating from the functioning of the market economy. Urban planning which relates to the process of decision-making for resource allocation in physical phenomena such as land, the capital improvements associated with urbanization and the array of public services and facilities, which are identified with urban life, attempts to ameliorate some problems emanating from the functioning of the market economy. In short, it seeks to avoid conflict in land use, which might have arisen as a result of price mechanisms, which seeks to allocate land on the principle of highest and best use of land.

However, evidences have clearly shown that planning has failed to address the root causes of urban problems. Political economy or urban planning holds the imperatives of capitalism for many of the problems confronting dependent capitalist towns and cities.

The political economy paradigm which falls with the realm of structural paradigm came into limelight in the early 1970s simply because of the strong belief that the previous approaches to urban planning have failed to explain important social problems like housing poverty and environmental ill-health. The previous approaches have also failed to show adequate concern for those suffering the problems.

Political economy approach is significant in urban planning analyses in that it introduces a number of theoretical principles, which have become indispensable to a Marxian perspective on urban problems. One of these principles is the concepts of class. The Marxian tradition recognizes only two primary classes: capital (the bourgeoisie), which uses its power over the means of production to expropriate surplus value from labour (the proletariat). From the perspective of political approach, urban planning under capitalism has created conditions, which benefits the dominant group at the expenses of the residual class. Since these two social classes are not equal, they could not be protected equally. Whichever class has control, the power of the state is seen to be limited by the structure of capitalism and basically supports the interests of the dominant class (Philips and Williams, 1984). City planning has a clear system maintaining functions (Marcus, 1977).

Authors of Marxist disposition (for example, Roemer, 1985; Jessop, 1982; Poulantzas, 1973) label the state as a tool of group interest. In the scramble for open access to housing resources, some people are more equal than others. Similarly, everyone may have the same right to decent and affordable housing but not everyone has equal means to do so. Open access often lead to not one tragedy, but two: the abuse of urban space and the 'stealing of the commons' by powerful and wealthy interests at the expense of others. By examining the nature of urban planning in capitalist society, political economy approach has made it possible to witness an important expansion of research on the extent to which the state influences urban planning.

If politics is about power and urban planning constitutes a means of using state power, then urban planning can be regarded as political. Urban planning
under capitalism relates to capitalist system. Capitalist city can be seen as the spatial context within which the capitalist system reproduces and sustains itself through capitalist mode of urban planning. One can, therefore, contest the argument that capitalist urban planning is neutral and objective. There should be no mistake that urban development planning is a political activity, whose agenda is politically determined when it is effective (Mattingly, 1998).

3.0 CAPITALIST URBAN PLANNING AND THE 'NEW APARTHEID'

Capitalist urban planning influences residential segregation through established design standards and planning regulations. Design standard, including minimum setback requirements meant to prevent the production of substandard housing constraint the effective participation of the low-income group in the formal residential layouts. In addition, urban planners use formal strategies of exclusionary zoning to determine the supply, desirability, mix as the specific nature of housing permitted in a specific location. Zoning policies also assist in the nature of housing permitted in a specific location. Furthermore, development control system enforced by capitalist urban planners 'favours sophisticated Western-type house designs materials and layouts rather than being rooted in the nature of local demands and available resources' (Ikpejofor, 1998:302). As rightly observed by Agbatekwu (1982), development control system favour the supplier of high-medium income dwellings which very few can afford and simultaneously a severe shortage of housing that suit the needs of the poor. Thus, capitalist urban planning constrained the disadvantaged groups to build their houses and live in informal/illegal sub-divisions or settlements.

The term 'informal' housing or settlement raises the same definitions as when it is applied to economic activities and employment. It is defined negatively. The main characteristics are known, but in some instances, the borderline between formal and informal remains blurred. Urban planners and planning authorities considered housing or settlements that does not obey either planning authorities guidelines, or legal right, or norms and building standards as informal or even illegal. Hence, legal interpretation of informal/illegal depends to a large extent on what are stipulated in planning laws and regulations.

Informal housing or settlements may be regarded as illegal, depending on the legal interpretation of relevant urban planning authorities. Like the term 'informal' housing or settlement, 'illegal' housing or settlement posses the same problems of definition, but with a distinctively more repressive connotation, illegality is what we must not do, what does not conform to 'what one should do' according to jurists, what is outside the law. However, in reality, it is common that a residual building or neighbourhood that is considered illegal has a few legal features. For example, the sale of plots in some illegal subdivisions may be illegal but the construction of houses in such residential layouts may conform to established building and planning norms and standards; the occupation of such houses may be considered illegal but, its dwellers do pay certain taxes and rents, and so on.

In informal/illegal settlements, buildings are produces in such a way that they are cramped together and there are hardly any gaps between the houses, a situation causing monumental ventilation and accessibility problems, amongst others. A situation as described above has invariably led to the inevitable development among the urban poor of such non-conventional housing and slums and squatter settlements, which are very common in Nigeria cities (Filani, 1987). Slums are already estimated to be home to over 800 million people, and this is predicted by UN-Habitat (2003) to grow to between 1 and 2 billion by 2020. Slums and squatting areas accommodate the majority of the population of cities in developing countries. According to a recent estimate by UN-Habitat (2003), 72% of the population in Sub-Saharan Africa or 166 million people, live in slums or informal settlements. There are Nigerian cities where more than 80 percent of the population lives in slums and squatter settlements (Awake, 2005).

Slums and squatter settlements are characterized by housing of poor quality and with such inadequate provision for water, sanitation, and drainage that put the lives and health of residents under continuous dangers. Thus, there is housing poverty, that is, individuals and households who lack safe, secure and healthy shelter with basic infrastructure such as piped water and adequate provision for sanitation, drainage and the removal of household wastes. As revealed by WHO (2001), today, more than a third of the urban population in Africa, Asia and Latin America live in housing of such poor quality with such inadequate provision for water, sanitation, drainage, garbage collection and health care that their lives and their health are constantly under threat. Despite the many different forms that poor quality housing takes, from one room housing to rooms rented in tenements or illegal settlements, beds rented in boarding houses and houses and shacks built on legally occupied or subdivided land almost all share three characteristics which contribute to poor environmental health: inadequate provision for water, sanitation, and drainage that put the population at risk of indoor pollution, and overcrowding which increases the transmission of airborne infections and increase the risk of accidents (UNCHS, 1996). Many places where poor people live present multiple disadvantages that include not only missing and inadequate infrastructure and services, but also unfavourable geography, vulnerability to
environmental shocks and seasonal exposure (Narayan et al., 2000). Several roads linking these settlements are not tarred and are usually without drainage. It is possible to find a fashionable flat next door to an uncompleted but inhabited tenement building in informal settlements. It is also a common phenomenon to see people developing a room or two on a tenement building foundation.

While capitalist urban planning constrained the poor to live in informal/illegal settlements with their communities of despair, it afforded the rich the opportunity to segregate from the poor by constructing their houses in the formal residential layouts, which constitute the formal settlements. While informal settlements are characterized by housing of poor quality and with such inadequate provision for water, sanitation and drainage that put the lives and health of residents under continuous dangers; the formal settlements of the ruling class enjoys the advantages of city life usually at the expense of the informal/illegal residential neighbourhoods. The dichotomy between the rich and the poor has solidified into a permanent divide creating a new apartheid (Ibrahim, 1997).

While the conventional apartheid (as practiced in South Africa, for example) emphasized racial segregation and discrimination, the new apartheid emphasized class segregation and discrimination in urban space. In a typical capitalist city, especially dependent

class to which they belong.

From the foregoing discussion, it is glaring that capitalist urban planning aids the emergence of a divided city characterized by class segregation and discrimination. This divided or non-socially integrated city as observed by Mabogunje (1999) is marked by the exclusion, marginalization, social and spatial segregation of a substantial proportion of the population. In cities as divided as this, sustainable development is impossible (Maseland, 2000). The tale of two cities within a city is one of the greatest failures of the urban revolution as it alienates and marginalizes one part of the urban population from other (Toepfer, 1999). We cannot, and certainly should not, rely on capitalist urban planning to successfully shape and guide sustainable urban development. There is therefore the need for radical planners to have a rethink on capitalist mode of urban planning. This is an area for further study.

REFERENCES


INTRODUCTION
Most modern buildings in third world countries have very high content of steel in building structures. In Nigeria the ever increasing cost of steel is becoming unbearable to the average user. According to Olateju (1993), the average cost of steel reinforcement was N180,000/tonne. The problem of high cost forced some clients to delay or abandon projects with vague hope that price would reduce. This problem has prompted various researchers to search for close substitute for steel.

Bamboo is characterized as a renewable, biodegradable and energy efficient natural resource with a great potential as an environmentally sustainable building material. The rapid depletion of natural forests makes bamboo a viable alternative to timber. Bamboo grows around 15cm-
1cm/day and reaches its full height in 4-6 months. It can be harvested within 3-5 years of growth compared to 20-40 years for timber. It has excellent strength to weight ratio compared to conventional materials such as timber, steel and concrete. Table 1 gives a comparison of the structural attributes of bamboo vis-à-vis other conventional materials (Janssen, 1981). Bamboo is comparable to steel in terms of strength and stiffness efficiency while the production energy required for bamboo (per m³) is only 0.1% of that required for steel Table 2. An average bamboo culms can reach 8-15m length, 5-12cm diameter with wall thickness 5-10mm, a tensile strength around 100MPa and compressive strength about one third the tensile. There are over 1000 species of bamboo and for certain species a tensile strength of 370MPa was reported (Ghavami, 2005).

Bamboo is one of nature’s most versatile products. Bamboo is a material with long history of usefulness and in buildings; it has been employed in South-East Asia and South America for rural housing and scaffolding (American Bamboo society 2008). Investigation on the use of bamboo in Nigeria has revealed that there are three varieties namely bambusa vulgaris, dendrocalamus and oxytenantheria. Bambusa vulgaris (BaVu), ripe culms, showing pronounced brown colour, commonly available in and around Lagos State were sourced to evaluate their compression, bending and buckling capacities. Portable water used was sourced from Yaba College of Technology Department, Yaba, Lagos.

SPECIMEN PREPARATION

Bamboo

The culms used were 3-6 years old, 50-65mm external diameter and over 1.5m length. 14 specimens were prepared, 8 compressive (stub), 3 bending (beam) and buckling (column) test were conducted. The moisture content is between 15-30%. For each sample, three measurements of the external and internal diameters were made at each end and the cross-section area and moment of inertia were determined by averaging over the samples. Figure 1 shows a schematic view of three test setups. For the compression tests, a sample length of twice the external diameter of the culm and no less than a minimum of 75mm was used. For the bending test, a three point set up is used with a sample length of 1.2m with a 1m simply supported span. For the hinge-hinge column buckling test a slenderness ratio of about 70 was used for all the samples. The average compression strength, bending elastic modules, and buckling stress were obtained as shown in Table 3.

To obtain the various patterns for testing, they were split to ⅛ and ⅛ splints, tied with binding wires. The back of the specimen was hacked with saw before being water and fire proofed with a brush of coal tar and a fire retardant chemical prepared from a solution of ammonium phosphate (2.6%), boric acid (2.6%), copper Sulphate (0.90%), Zinc chloride (4.3%), potassium chloride (2.6%), water (87%) and a few drops of concentrated hydrochloric acid. All bamboo specimens were dipped in the fire retardant solution for ten minutes, before the coal tar treatment and were then coated with a sprinkle of fine sand. The hacking and sand coats were to enhance bonding.

Aggregates (Fine and Coarse)

The aggregates used, were free from any form of organic and inorganic impurities that may upset the result of the research.

Formwork

The slab specimens’ moulds were sawn softwood with no defects and measured 750 x 250 x 150mm. They were purposely designed for quick demoulding of specimens.

Casting and Curing

The bamboo specimens with kickers attached were placed in formwork already oiled. The mix ingredients of cement, sharp sand and crushed granite were batched by volume and poured into the rotating drum mixer. Specimen samples were taken before casting for compacting factor test and slump test. 150 x 150 x 150mm moulds were prepared by oiling the inner walls and fresh concrete was poured into moulds for curing test. The moulds were filled in three layers; each layer of concrete was compacted by not less than 35 strokes of tamping rod to achieve homogenous compaction. The surface of the cubes was finished with trowel. The concrete cubes, beams and slabs were casted and demoulded after 24 hours and cured by immersing in tank filled with portable water and tested for strength after 7, 14, 21 and 28 days. All materials used were sourced in Lagos State. The casting, curing and testing...
operations were conducted at the concrete laboratory, Building Technology Department, Yaba College of Technology, Yaba.

Testing of Specimen
Tests performed on concrete were; slump test, compacting factor test, cube test and flexural test for beams and slabs. Tests on bamboo include; moisture content test, shrinkage test and bending test on bamboo culms to determine the bending capacity. The bending machine was capable of measuring load to the nearest 1% and the deflection to the nearest millimeter. Slump and compacting factor tests were carried out in accordance with the requirements of BS 1881: Part 102 (1983) for slumps test and BS 1881: Part 103 (1983) for compacting factor test.

RESULTS AND DISCUSSION
The results of average compressive strength test on bamboo indicated on Table 3; are 134 N/mm² (5% moisture content), 27 N/mm² (more than 5% moisture content) and 57 N/m.mm² (30% moisture content).

The buckling capacities of bamboo are 27N/mm² and 25.6N/mm² for 5% and 30% moisture content respectively.

Table 4 shows compressive strength tests for concrete cubes using 1:2:4 mix ratio and water cement ratio 0.6.

The result of slump test was true slump 10mm, the compacting factor was 0.9 and the average shrinkage of bamboo was 2.9%. The average concrete cube compressive strength at 7 days, 14 days, 21 days and 28 days were; 20 N/mm², 22.2 N/mm², 22.9 N/mm² and 23.1 N/mm².

Table 6 shows results of flexural tests on beams and slabs; ¼ bamboo splints namely A1 had the highest load and stress capacities of 63.20 KN, 830.23 KN/m² followed by A2; 25.03 KN, 667.56 KN/m². Also Table 6 indicates that A1 had the highest deflection followed by B, whereas, A had the highest load capacity of 63.20 KN, which is higher than that for steel reinforced concrete beam and slab of 60.30 KN. The optimum bamboo reinforcement ratio was about 3.95%. This corroborates Olateju’s (1993) findings.

CONCLUSION
This research has shown that bamboo is structurally viable alternative to steel reinforced concrete in low cost and low rise constructions. The mechanical property of bamboo is comparable to steel reinforcements. Availability of the material, durability and stability makes bamboo an alternative to steel and can reduce the overall cost of a building project.

Table 1: Structural Attributes of Bamboo against Conventional Materials

<table>
<thead>
<tr>
<th>Material</th>
<th>Working Stress (MPa)</th>
<th>Working Stress (MPa)</th>
<th>Buckling Capacity (KN/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel</td>
<td>210.000</td>
<td>10</td>
<td>25.200</td>
</tr>
<tr>
<td>Concrete</td>
<td>10</td>
<td>20.000</td>
<td>42.000</td>
</tr>
<tr>
<td>Timber</td>
<td>11.200</td>
<td>18</td>
<td>37</td>
</tr>
<tr>
<td>Bamboo</td>
<td>20.000</td>
<td>33</td>
<td>41</td>
</tr>
</tbody>
</table>

Source: (Janssen, 1981)

Table 2: Efficiency of Materials for Strength and Stiffness

<table>
<thead>
<tr>
<th>Material</th>
<th>Working Stress (MPa)</th>
<th>Working Stress (MPa)</th>
<th>Buckling Capacity (KN/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete</td>
<td>2400</td>
<td>0.003</td>
<td>2300</td>
</tr>
<tr>
<td>Steel</td>
<td>7800</td>
<td>0.02</td>
<td>7800</td>
</tr>
<tr>
<td>Wood</td>
<td>600</td>
<td>0.013</td>
<td>600</td>
</tr>
<tr>
<td>Bamboo</td>
<td>600</td>
<td>0.017</td>
<td>20.000</td>
</tr>
</tbody>
</table>

Source: (Janssen, 1981)

Table 3: Compression, Buckling and Bending Test Results

<table>
<thead>
<tr>
<th>Bamboo</th>
<th>Moisture %</th>
<th>Compressive Strength (MPa)</th>
<th>Buckling Capacity (MPa)</th>
<th>Elasticity (GPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vulgaris (BaVu)</td>
<td>13.2</td>
<td>144</td>
<td>75</td>
<td>12.6</td>
</tr>
<tr>
<td></td>
<td>5%</td>
<td>144</td>
<td>75</td>
<td>12.6</td>
</tr>
<tr>
<td></td>
<td>30%</td>
<td>81</td>
<td>57</td>
<td>10.2</td>
</tr>
</tbody>
</table>

S = slenderness ratio
TABLE 4: AVERAGE COMpressive TEST RESULTS FOR CONCRETE Cubes

<table>
<thead>
<tr>
<th>Duration In Days</th>
<th>Mix Ratio</th>
<th>Water Cement Ratio</th>
<th>Areas of Cubes (mm²)</th>
<th>Compressive Force (KN)</th>
<th>Average compressive Strength (N/mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>1:2:4</td>
<td>0.6</td>
<td>22500</td>
<td>450</td>
<td>20</td>
</tr>
<tr>
<td>14</td>
<td>1:2:4</td>
<td>0.6</td>
<td>22500</td>
<td>500</td>
<td>22.2</td>
</tr>
<tr>
<td>21</td>
<td>1:2:4</td>
<td>0.6</td>
<td>22500</td>
<td>515</td>
<td>22.9</td>
</tr>
<tr>
<td>28</td>
<td>1:2:4</td>
<td>0.6</td>
<td>22500</td>
<td>520</td>
<td>23.1</td>
</tr>
</tbody>
</table>

TABLE 5: CLASSIFICATION OF BAMBUSA VULGARIS SAMPLES

<table>
<thead>
<tr>
<th>Designation</th>
<th>Size (Splints Culms)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A₁</td>
<td>¾</td>
<td>Bamboo splints arranged in 3 pile</td>
</tr>
<tr>
<td>A₂</td>
<td>¾</td>
<td>Bamboo splints rigidly bonded</td>
</tr>
<tr>
<td>B₁</td>
<td>1/8</td>
<td>Bamboo splints arranged in 2 pile</td>
</tr>
<tr>
<td>B₂</td>
<td>1/8</td>
<td>Bamboo splints rigidly bonded</td>
</tr>
<tr>
<td>P</td>
<td></td>
<td>Steel reinforced concrete</td>
</tr>
<tr>
<td>Q</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE 6: COMPARATIVE AVERAGE FLEXURAL PROPERTIES OF BAMBUSA VULGARIS REINFORCED CONCRETE BEAMS AND SLABS

<table>
<thead>
<tr>
<th>Designation</th>
<th>Span (mm)</th>
<th>Width (mm)</th>
<th>Depth (mm)</th>
<th>Max. Failure Load KN</th>
<th>Stress KN/m²</th>
<th>Ultimate Moment Kn/m</th>
<th>Max. deflection (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A₁</td>
<td>750</td>
<td>250</td>
<td>150</td>
<td>63.20</td>
<td>830.23</td>
<td>12.45</td>
<td>6.75</td>
</tr>
<tr>
<td>A₂</td>
<td>750</td>
<td>250</td>
<td>150</td>
<td>25.03</td>
<td>667.56</td>
<td>5.00</td>
<td>11.50</td>
</tr>
<tr>
<td>B₁</td>
<td>750</td>
<td>250</td>
<td>150</td>
<td>12.13</td>
<td>485.33</td>
<td>2.43</td>
<td>7.40</td>
</tr>
<tr>
<td>B₂</td>
<td>750</td>
<td>250</td>
<td>150</td>
<td>14.67</td>
<td>651.85</td>
<td>2.93</td>
<td>5.33</td>
</tr>
<tr>
<td>P</td>
<td>750</td>
<td>250</td>
<td>150</td>
<td>60.30</td>
<td>1608.00</td>
<td>12.06</td>
<td>8.00</td>
</tr>
</tbody>
</table>

RECOMMENDATIONS

Based on the findings of this research, the recommendations are:

(i) Bamboo should be well treated with fire retardant chemicals for protection against fire outbreak and water proofed to prevent water absorption.

(ii) Bamboo should be well prepared and sand blasted to aid bonding.

(iii) There is need for further research on this versatile product and standardizing by relevant organizations, e.g. Standard Organization of Nigerian (SON) and dissemination of research findings to stakeholders.

(iv) All stakeholders (Structural Engineers, Builders, Contractors and Clients) should be informed on the structural viability and economical benefits to be achieved by using bamboo as an alternative material for concrete reinforcement.

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1.1 INTRODUCTION

Urbanization is essentially an economic phenomenon and, therefore, it is only logical to expect that the internal organization of urban area have evolved as a mechanism to facilitate the functioning of economic activities. An urban area consists of a great variety of interdependent activities, and the choice of location of any activity is normally a rational decision made after an assessment of the relative advantages of various locations for the performance of the activity in question. Thus, by a process of competition (in any city, large or small), activities seek out and segregate themselves in that area in which their optimum conditions (greatest relative advantage) are to be found and by virtue of which they are normally able to exclude all other uses.

Basically, the locational pattern of land use in an urban area is a reflection of the demand for and supply of sites. By a process of competition, a site will be secured by that use which can extract the greatest return from the accessibility advantages since it can offer the greatest demand for sites will be within the position of greatest accessibility and complementarity, and will lead to the greatest intensity to use in that position.

1.2 STATEMENT OF PROBLEM

The decision to examine the effects of changing land use pattern in Victoria Island was as a result of the numerous environmental occurrences and unprecedented changes in the real estate sector in the area. At one time, nearly all the properties in the area of study were residential. But now, the general outlook is different. The basic research question is, what are those environmental occurrences, the unprecedented changes and general outlook of the present Victoria Island.
1.3 AIM AND OBJECTIVES
This study examined the factors responsible for the rapid changes in land use pattern of Victoria Island, Lagos and the aftermath of these changes. The objectives of this study are to:

(i) examine the extent of commercial activities in Victoria Island

(ii) know the “position” of residential users since the change in use trend began.

(iii) determine whether the influx of commercial activities in the area is responsible for the increase in noise pollution and other environmental vices being currently witnessed in Victoria Island.

(iv) determine whether the volume of vehicles that flow into Victoria Island is responsible for the worsening traffic congestion in and around Victoria Island.

(v) proffer suggestions that could combat the identified environmental problems in Victoria Island.

1.4 RESEARCH METHODOLOGY
This study was based on:

i. Reconnaissance survey and visual observations of the study area

ii. Examination and extractions of information from relevant literature including journals, seminar papers and textbooks among others.

2.0 LITERATURE REVIEW ON URBAN RENEWAL

2.1 The Concept and Evolution of Urban Renewal
The urban renewal concept was launched in the United States of America, in its modern fashion, through the Federal Urban Renewal programme enacted by the Congress in 1949. The Federal Urban Renewal Programme attempts to rebuild run-down areas of cities by feeding large subsidies of public money and government power into the normal operations of the private market. This concept has ever since assumed universal acceptance as a remedy toward solving the urban sprawl and deteriorating environment. Urban renewal is by no means a new concept. Baron George Hanussman transformed the face of Paris during the reign of Emperor Napoleon Bonaparte, and despite the vigorous opposition and his ultimate dismissal, he gave Paris the broad boulevard, its water supply, the sewer system, bridges, the opera and other public buildings that make Paris the envy of the world today.

According to Thorncroft (1976), urban renewal in its widest sense covers rehabilitation of an area by improvements, which need not necessarily amount to rebuilding, and to the piece-meal replacement of obsolete properties but more generally, it is applied to comprehensive redevelopment. This is the renewal of an area in which the individual area related to the neighbourhood and the neighbourhood related to the entire urban structure to be effective, the renewal of a decayed area must be sufficiently large scale to maintain its character and blighted landscape. In a nutshell, urban renewal refers to the revitalization, rehabilitation or redevelopment of the older parts of towns and cities, including the central business district, depending on the level of degradation and public finance. Thorncroft (1976) further identified two main types of areas in which urban renewal is required. The first is the obsolescent town centers and traffic congestion. A further distinction between these types of area is that the renewal of town centers usually involve the provision of a large commercial accommodation which is often economically attractive to the private developers while the development of slums requires, as a rule, the building of low-rented residential accommodation which are uneconomic and so, left almost entirely to public authorities for actions.

In practice, because of the difficulty of private developer has in agglomerating a relatively large site for comprehensive redevelopment, a public authority usually undertake an important role in town renewal by using its power of compulsory purchase to secure the site needed. Urban Renewal is therefore essentially a public rather than private activity. Barlowe (1972) stressed that urban renewal is the revitalisation of the town area to improve living conditions and to raise the standard of urban life, while redevelopment involves the acquisition of site and clearance of existing structure and renewal of existing communities in the area. In his opinion, urban renewal projects are usually expensive because of the need to acquire an already developed site and demolition of existing structures thereon, and because of the ambitious of the redevelopment programme that follows. Most of the acquired sites are sold back to private developer with covenants to ensure compliance with overall redevelopment plans. In the words of Gan (1975), urban renewal programme has cleared slum to make room for many luxury housing and a few middle income projects, and it has provided inexpensive land for the expansion of colleges, hospitals, libraries, shopping area and such other public institution. Still another major critic Anderson (1975) was against the programme on the basis of its economic wastefulness and its unfortunate social consequence.

2.2 FACTORS RESPONSIBLE FOR DECAY OF CITIES
Cities around the world, more especially the third world countries, have been witnessing decline and decay in recent years. Various factors are responsible for the decaying environment of urban cities in Nigeria among which are:

2.2.1 Slow rural-urban assimilation: Rural-urban migration has been the predominant factor of urbanisation, which in turn exert pressures on urban facilities. This is one of the problems that led to the development of residential slums in Nigerian cities. Many cities in Nigeria witness an uncontrolled migration of people who are either unemployed or difficult to be employed because of urban job saturation, but keep on staying in the cities; this over-stretched urban services/facilities and in no doubt doubles the incidence of slums.

2.2.2 Rapid growth of population and area expansion of the city: The low rate of admitting immigrants to the socio-economy of the city is further aggravated by the rapid rate of population growth of Nigerian cities. Usually, the overspill of the city population which consist mainly the fresh immigrant in the city leads to rapid expansion of the city. This is so
because the pressures within the city center forced people to the sub-urban, which are rarely planned for, in Nigeria. This situation often result in haphazard development, which eventually degenerate into slums simply because supporting infrastructures and social amenities are hardly provided by the appropriate authorities.

2.3 FACTORS RESPONSIBLE FOR CHANGE IN USE

The change in use from residential properties to another is found to be caused by the following factors:

2.3.1 Accessibility: Accessibility evaluates the net economic costs of moving persons and goods between one place and another. It is therefore, not only concerned with the distance to be traveled between two places but more important, with the time taken to travel that distance. (Lean and Goodall, 1977). Victoria Island is highly accessible to the Central Business District of Lagos Island. It has a direct link to the third 3rd Mainland or Carter bridges or through Marina to the Eko Bridge. Easy accessibility to the seaports, Tin Can Island and other commercial areas in the metropolis. Also it is accessible with its vantage position to other parts of Ikoyi and within Victoria Island itself.

2.3.2 Socio-economic pressure on land: Nathaniel (1990) identified socio-economic pressure on land as the major factor responsible for conversion of properties. He noted that the total use pattern consummating these changes is found to be a cumulative effect of the various activities on land. He also identified changes in land use as a result of human behaviours in response to land's demand and supply, and concludes that the effect of conversion has been found to accelerate the increase in land value.

2.3.3 Lack of development control: Odunlami (1997), said one of the factors responsible for change in use of properties can be traced to lack of development control, which is an effective tool used to control, monitor and implement development over the years. He concluded that this has created a stressful situation to inner residential areas as a result of constant noise, traffic congestion, pollution by smoke from vehicular exhaust especially conversion of residential properties to commercial uses.

2.3.4 Lack of review of approved plan: Folarin (1992) in her own view said the lack of review-approved plan from time to time. She opined that this phenomenal change of uses, if unchecked, would result in invasion and succession of unplanned dominant land use. The resultant effect and implication of this phenomenon will be noted in the increased demand for infrastructural facilities e.g. transportation and danger of possible collapse of building. She buttressed this assertion with the incidence of SAQUE COMMERCIAL SCHOOL in Port Harcourt in 1990, which claimed many lives. The collapse building, which was then under construction, was initially used as a residential house. The new usage could not cope with such heavy live load now imposed on it and subsequently collapsed.

2.3.5 Overpopulation of urban areas: Odubote (1985) identified overpopulation of urban centers and availability of buildings that could specifically suit the intended use of the occupiers of such buildings. As a result of the above, land owners tend to maximize their profits by converting their residential buildings to other uses which could command higher income in the form of rent.

2.3.6 Scarcity of land: Kehinde (1992), stated that the scarcity of land has culminated into competition for land thereby resulting in conversion of properties. He said that the situation in the Lagos State alone has undoubtedly assumed an uncontrollable dimension in respect of changing land use pattern with streets and houses meant for residential purpose now converted to banking halls, insurance companies, stores, business centres, shopping complexes, restaurants etc and other forms of land uses, that is, industrial, institutional and mixed uses.

2.3.7 Income maximization: The basis of any investment decision, real estate inclusive, depends largely upon the relationship between earnings accruable therefrom and the total capital outlay (Okenwa, 1998). Investors/owners of properties whose general desires is to make profit is one of the major factors that drive the owners to convert their properties. Okoh, (1997) was of the opinion that every property owners will like to achieve the highest returns possible from their properties. Aribisala (1995) was of the view that individuals who have laboured so hard to build their houses should be allowed to put them into uses they would get optimal benefits. He stressed that individuals have been the traditional providers of houses in the country and said that most of them (house-owners) rely on rent from these properties to survive.
2.3.8 High cost of construction: Due to the increase in cost of construction (cost of fund inclusive), it has been difficult to increase the stock of housing to match the attendant demand. Construction costs are observed to have doubled and re-doubled during the period of economic depression. For instance, in the early 1980's, cost of construction of an average detached house on the Island was put at N750 per metre square of floor area. It increased in the 90's averaging more than 300% increase as stated in the Guardian, December 3rd, 1999. Rather than constructing new purpose-built office block, the already existing residential properties are modified and let out for commercial use, which is in high demand.

2.4 THE VARIOUS URBAN RENEWAL STRATEGIES

Studies have identified three major strategies/options of urban renewal. These are:

2.4.1 Comprehensive Redevelopment: This refers to the clearance of substantial area which is adjudged to be bad and beyond redemption. This strategy is used in areas where buildings are in such squalid state that it could be irrational to use the resources of the community to rehabilitate them. Lean (1969) contends that the technique is based on the notion that nothing existing in the area is of any value. The option results in the demolition, clearance and reconstruction of an existing area giving an opportunity for a fresh start.

2.4.2 Rehabilitation: This involves the enhancement of the quality and deteriorating neighbourhood through code enforcement and private actions of owners. Onibokun (1972) sees rehabilitation as a process of improvement at both macro and micro levels. At the macro level, it is a process of neighbourhood revitalization through the elimination of irreparable houses, renovation and construction of streets roads and the provision of infrastructural and communal facilities. At the micro level, it means environmental upgrading on an individual housing unit basis. In this case, defective houses are improved upon and made to be conducive to healthy human habitation.

Rehabilitation is applicable where the building structures are still in good condition and can be revived, that is where the squalid condition arose as a result of lack of maintenance. The criticism of the strategy is that full rehabilitation does not replace the main fabric of the buildings and does not significantly improve their life spans. The protagonists of this approach recommend it for cities in developing countries because it is less expensive, less radical and has relatively favourable financial and social implications. The effective housing stock in the country may also be increased by embarking on large-scale rehabilitation rather than through direct construction. Studies have shown the suitability of the strategy for the renewal of the traditional core of Yoruba cities (Bolu, 1988). It was also indicated that for rehabilitation to be successful, it has to move away from the colonial idea of what the exercise should entail, and address itself to the immediate needs of the people.

2.4.3 Conservation: This is an urban renewal strategy that is usually applied to neighbourhoods that are judged to be basically sound, but which require only increased capital inputs by owners in form of renovation and better maintenance. It may essentially be aimed at preventing the deterioration of areas or structures which are good at present, the provision of infrastructures and upgrading the buildings must be in good physical condition and it is usually directed at preserving neighbourhood and structures with historical, cultural and architectural values from deterioration and oblivion.

These options have been applied singularly or combined in the renewal of cities around the globe, and recording a varying degree of success within the context of the circumstance of the environment to be renewed and level of government and people's commitment. The other minor sub-strategies adopted in consonance with the objectives of the above three are:

- **Spot clearance:** This involves the selection, demolition and clearance of substandard structures either to make way for building infrastructures or accessibility.

- **Code enforcement:** This is a complementary condition for any of the strategies above. It involves the use of legal sanctions to ensure adherence to, at least, the minimum standard presented in an urban renewal programme and building reputations.
3.0 THE STUDY AREA: VICTORIA ISLAND

3.1 Historical Background of the Study Area

Victoria Island is a piece of land surrounded by water within the Lagos area of the Federal Republic of Nigeria. It is situated on the Western Coast of Africa at Longitude 6° 36’ North and Latitude 4° 45’ East. It is located immediately east of the Eastern Moles on the down drift side of the natural inlet to the Lagos harbour. To the North, Victoria Island is bounded by the five Cowrie-Creek, South by the Atlantic Ocean, and West by Lagos harbour which extends infinitely to join the Maroko beach of the East. It was discovered by the Portuguese between 1417 and 1475.

Victoria Island was first inhabited in about the 1st century A.D. by local natives and people from neighbouring settlements as a result of its fishing potentials. The first sign of foreign presence was about the 18th century when some Portuguese traders settled in Victoria Island as a result of its being safe from external attacks because of its natural (water) boundaries. At this point, the Island was an important centre for the exchange of products from the hinter lands (the mainland) which later expanded into a convenient spot for exchange of goods and services between natives and European traders.

Victoria Island is made up of the following major streets: Osamba Nbadije Road, Ahmadu Bello Street, Adetunjio Street, Kofo Abayomi Street and Adeola Odeku Street. Victoria Island is accessible through the Onikan/Ahmadu Bello Road link bridge, the Kingsway Road Link Bridge and Epe Road. Victoria Island enjoys series of access roads and major public facilities such as water supply, power supply and telecommunication; the area also enjoys good market network which relates to the Lagos Island Central business district one of the biggest in Nigeria. Developments in Victoria Island are continuous and quite extensive; nevertheless, they can be categorized into Residential, Commercial and Recreational uses.

Victoria Island accommodates quite a number of public establishments and government institutions among which are: the Nigerian Television Authority (Headquarters); Ministry of Education; the Nigerian Security Printing and Minting Corporation; the Nigerian National Petroleum Corporation (Headquarters); state government liaison offices, government guest houses, several embassies; several banking institutions, several oil companies; several blocks of residential luxury flats; the Lagos Garrison Command Bonny Camp, etc. Hence, Victoria Island is one of the ‘heart beat’ areas of Lagos State. The national harbour in the lagoon behind the inlet was notoriou for strong wave action at the entrance along the coast. This caused the drifting of sand at the coast into the inlet access channel of the sea. Over the years, a good amount of land has been lost to the sea due to the action of the wave causing coastal erosion. This called the attention of researchers among who is Sir John Goode (1892) who provided information to the various solutions to the erosion problem. Among the various control measures applied to the beach erosion problem were the dredging of the channel and construction of break waters (mole) to protect the channel of the coastline but this seem not to have yielded any tangible result as the erosion problem persistedly increased over the years. Since the awareness of the authorities concerned, many techniques have been involved to ascertain the causes of the erosion as it affects property value in the area.

Kuye

3.2 Growth and Development

Although, a lot of other factors inter-played in the growth of the Island, development in organized property began after the coming of the British colonial government in 1861 while the British colonial government through its agencies such as the Royal Niger Company developed residential properties mostly in Ikoyi for the mission officers, the few residential properties in Victoria Island were occupied by the few educated Nigerians when they began to join the realms of political power. It was during this period that this area acquired its G.R.A status. This became more obvious at the turn of the 20th century when more Nigerians, having acquired western education returned home and settled mostly in Victoria Island. This absolute residential status of Victoria Island continued until the first Lagos Town and Country Planning Law came into effect towards the end of the century.

Successive town and country planning authorities and government in Lagos have maintained this status quo until the beginning of the 1980s. Generally, the aim of establishing the Ikoyi and Victoria Island areas, like other areas in the state, was strictly for residential purposes. In fact, the idea of Ikoyi and Victoria Island was conceived as a result of the decision by the government through the planning authorities to initiate a large residential scheme within the Lagos metropolis to relieve, at least to a lesser degree, land use conflicts.

3.3 Sustained Residential Use: Post Independence

As highlighted in the historical background as well as the growth and development of Victoria Island, residential zoning arrangement was first muted for Victoria Island. This was, as a matter of fact, sustained when the Lagos Planning Authority was established in some organized cities around the world. This cannot be called change in land use pattern or conversion because to the Authorities and perhaps the ordinary man, those premises served as residences.

3.4 Locational Relationship with the Lagos Island Central Business District (CBD)

With the exception of Obalende, Victoria Island is perhaps the nearest settlement to the famous Lagos Island which is the nerve centre of the long established Central Business District (CBD) where most commercial activities take place. Accessing from the tail end of Adeniji Adele/outer Marina (Ring Road) and the inner Marina axial roads, which form part of the CBD, it takes less than five...
3.5 The Encroachment of Commercial Activities into Victoria Island

Change in use of properties have become a common feature, not only in Lagos but in other urban centres in the country, to see buildings otherwise meant for residential purposes being adapted for other uses. Such practices is common in areas like Awolowo Road and Norman Williams street in Ikoyi, Ogunlana Drive and Adeniran Ogunsanya in Surulere, Saka Tinubu and Adeola Odeku in Victoria Island, among others areas too numerous to mention.

During the 1970s and up to the early part of the 1980s, Victoria Island enjoyed its original residential status. The first signs of real commercial activities were noticed during the middle of 1980s when more banks were granted operational licenses. Most of the newly licensed banks, having registered their head offices in Lagos, needed to commence operation from the CBD. However, as a result of non-availability of additional and suitable properties in the Lagos Island Central Business District for the take-off of these banks, properties in Victoria Island became useful alternatives. At first, only a few properties in the major streets such as Adeola Odeku, Ahmadu Bello, Ozumba Mbadiwe, and Akin Adesola were converted for such use. But as the Lagos State Government as well as the planning authorities could not halt the trend, more commercial users descended on all other stress and properties. As expected, these conversions became sources of raising additional funds by the relevant local government councils whose only concern was to impose conversion penal fees on the commercial users. Today, banks, consulting firms, shopping complexes, retail outlets, show rooms, oil companies and other blue chip companies, name it; have taken over nearly all available properties in all the prime locations of Victoria Island.

3.6 Existing Property Types in Victoria Island

Type of properties in Victoria Island can be categorized into different uses as outlined below:

3.6.1 Residential use: This covers about two-thirds of the portion of land occupied by the estates in the area. The nature of development ranges from detached houses to duplexes, to blocks of luxury flats and majority of which were constructed by private individuals. Un-development residential plots still exists in the area and is left so either for speculative purposes or the owners have not secured finance to undertake the development. Few among the governments owned residential estates includes, the 1004 Residential Luxury Flats, the Bar Beach Towers etc. There are adequate facilities that serve most of the separate accommodations, which could be in terms of private or public utilities.

3.6.2 Commercial use: Provision was not originally made by the Town Planning authority for commercial land use as Victoria Island is meant to be a Government Reserved Area (G.R.A) but due to long lease granted to the occupiers and as development progresses, terrace shops, petrol filling stations and series of commercial centres, light industries and other business-oriented ventures also sprang up.

3.6.3 Recreational use: Some recreational facilities like playground, lawn tennis court, swimming pool, and mini sport centre, etc. which are visible in most of the private development are made possible because the Planning Authorities permits for about 200m² area of land per single ownership out of which only one-third (1/3) of the area is usually developed to accommodate the houses and the rest is left for recreational developments. Other publicly enjoyed recreational facilities are the Federal Palace Hotel Complex, Eko Meridien Hotels, (which are 5- star hotels), Bar Beach, and few shopping complexes within Victoria Island.

3.6.4 Academic use: This use comprises various schools with their lecture rooms/offices for staff. There are three Federal institutions of higher learning the Nigerian Law School, the Federal School of Oceanography and Marine Research, and the Federal College of Fisheries and Marine Technology in addition to government colleges, private and public secondary and primary schools among others.

3.7 Changes in the Use Of Properties in Victoria Island

Land use simply refers to the activities customarily engaged in by the establishment operating within a given environment. In Victoria Island, as earlier discussed, the design was originally made for residential land use. Most of the houses in the area are for private dwelling. State government liaison offices, government establishment etc. and very few commercial activities increased in the area. But with time, many residential houses were converted to offices and most new developments for commercial use became rampant. The ultimate effect of this rapid change in use pattern is the attendant problems of traffic congestions high exertion of pressure on facilities.
3.8 BEYOND CONVERSION OF PROPERTIES

3.8.1 Construction of purpose-built office complexes

It is no longer news that commercial activities have taken permanent position in Victoria Island where most of the undeveloped lands prior to the invasion have been bought over by commercial users. Today, all manner of high-rise buildings which serve as corporate headquarters of banks and all form of blue chip companies adored most part of Victoria Island. This shows that the situation has gone beyond mere conversion of residential properties to commercial uses to actual construction of approved office complexes. A few examples of such construction include Cowries House and AIB Plaza on Adeyemo Alakija Street, C&C Towers and Consortium House on Sanusi Fafunwa Street, Coscharis Plaza and IMB House on Bishop Aboyade Cole Street; (the list is endless) as no such construction could be embarked upon without prior approval, developers of these commercial projects do get approvals from the relevant bodies.

3.8.2 Categorisation of properties and trend of rent passing

The situation today is one of mixed uses. While commercial properties are springing up every other day, there are still a handful of residential properties that have survived the invasion. As a matter of fact, a few new residential projects stand next or opposite commercial projects. It is therefore no surprise if, when a property becomes vacant that the owner or letting agent demands a higher rent from a prospective commercial tenant and a somewhat lower rent from a prospective residential tenant. The reason being advanced is that the wear and tear on the property is greater when used for commercial purposes and less in the hands or commercial user. Intuitively also, the vendor is usually not unaware of the capability of commercial user to afford higher rent than residential user.

During the days when Victoria Island was predominantly a residential zone, there was relative stability in rent passing on all categories of properties. Annual rental increases were in line with inflationary and other economic factors. But since the coming of commercial activities in Victoria Island brought with it increases in human and vehicular traffic. For example, a former dwelling house for an average family accommodates say six people and probably thee vehicles. Now, that same house now converted for commercial purpose could attract as many as twenty staff and probably ten vehicles. This excludes visitors, business associates and the vehicles they came with. Also, the sudden surge in the volume of vehicles has resulted to over stretching of existing parking lots. Vehicles are today parked indiscriminately on virtually any available space including roads and places prohibited for parking. These unlawful parking have most times contributed to the traffic jam and sometimes resulted in accidents.
3.10 Emigration of Residential Users
The conversion of residential dwellings to commercial users without a corresponding replacement of such dwelling accommodation meant displacing of Victoria Island residents. And as the yet-to-be converted properties are either occupied or attract higher rents, residents are left with no other choice than to move to other locations. It is therefore no surprise to see former residents of Victoria Island living or moving to say Ikeja, Gbagada, Surulere, Lekki Phase, Victoria Garden City, Dolphin Estate, the new peripheral Estate, and other such locations that befit their status to an extent.

3.11 Noise Pollution and other Environmental Issues
As already highlighted above, the sudden surge in population as well as increase in vehicular traffic have brought corresponding noise pollution Victoria Island, which was once known for its serenity is now comparable to commercial centres like Tinubu Square, Broad Street, Idumota or even Aba and Onitsha with all their “hustling and bustling.” All manner of noise come from commercial vehicles plying the various streets, motorbikes, popularly called Okada and all categories of traders are not left out. The streets are no longer kept neat as a result of littering from people. Heaps of refuse and all forms of garbage are visible all over the streets. The refuse authorities may not have bargained for this, but they can no longer cope with the volume of refuse being generated. Some offices that care now engage the services of private refuse outfits or even the cart-pushing refuse collectors to dispose off refuse generated by them.

3.12 Identification of Physical and Environmental Problems
Some of the physical and environmental problems that have been identified in the study area are as follows:

i. Inadequate drainage facilities: The drainage system and the construction does not allow for free flow of water and consequently enhance flooding activities, which is not further helped by rising underground water.

ii. Unhealthy and filthy environment: The quality of the total environment is poor and aesthetically displeasing and conclusively not ideal for healthy human habitation unless a drastic positive action is taken.

iii. Condition of roads: Most of the roads in the study area are in bad condition with the exception of the newly upgraded areas.

iv. General environmental condition: Victoria Island is fast becoming a blighted area that requires urgent rehabilitation and upgrading. Some of the environmental conditions/indicators that amplified this assertion are as follows:

- Displeasing environment
- Flooding topography
- Inadequate and ineffective infrastructural facilities
- Bad road network and poor accessibility
- No parking and recreational facilities
However, the general environmental condition of the area, even with these deficiencies is not bad to condemn it to the fate that befalls Maroko. Properties there are still sustaining livelihood for thousands of people. Hence, the situation is still considered redeemable.

3.13 Growth of Peripheral Housing Estates
A very good effect on housing delivery through the taking over of Victoria Island by commercial users has been the springing up of peripheral housing estates. On the Lagos/Epe Expressway alone, numerous housing estates are either completed or under construction, these include the Lekki Phase 1 Estate, the Mobolaji Johnson Housing Estate, the Alpha Beach Estate, the Seagate Housing Estate, the Femi Okunnu Housing Estate, the Victoria Garden City Estate, the Alma Beach Estate, the Crown Estate, the list is endless. The Victoria Island Annex was rapidly developed as a result of the invasion on the older part. But unfortunately, the Annex today is not being spared by the same invasion. It seems that the idea of these peripheral developments was to create residential dwellings away from the Victoria Island “madness”. The Dolphin Estate which existed before the beginning of the commercial activities in Victoria Island has been fully utilized as a result of tenants moving in from Victoria Island. Other peripheral Estates that have received the patronage of former Victoria Island dwellers include the Parkway, the Second Avenue Extension and the Foreshore all in Ikoyi.

3.14 Other Key Factors that led to the deterioration of Victoria include:
- Effect of the police Barracks on Ahmadu Bello way. It is an irony that Police barracks which should be an embodiment of law and order portend disorder, at least in Nigeria. It is common knowledge that police barracks nationwide have been a breeding place for all sorts of characters. They are also known for blight and over-congestion. The barracks on Ahmadu Bello way is no exception, especially in the area of over-congestion. The place has thus created habitat for a population influx into Victoria Island leading to the maintenance of facilities over-stretch and other environmental issues.
- Movement of Embassies from Victoria Island.
- Abandonment of the Ocean front houses leading to spaces being found for habitation by undesirable elements.
- Indiscriminate and unregulated advertising. This created an unpleasant horizon in Victoria Island.
- Hawkers cashing in on traffic build up to hawk and cause littering of roads.
- Effect of Okada operators in Victoria Island as against taxis. This further created a an environmentally unfriendly need for vulgarisers, spare parts sellers and littering of roads.
- The neglect and dilapidation 1004 flats created the avenue for more human population into Victoria Island by illegal occupations (squatters).
- Influx of beggars into Victoria Island.
- Use of local guards (Maiguards) by most residents of Victoria Island creating the need for them to set up kiosks for their sale of sweets, kolanuts, chewing gum, cobbler, etc.
- Preponderance of refuse cart pushers and scavengers due to the absence of an organized refuse disposal system. This resulted into two key problems: security lapses and environmental decays as evidence by bad roads, failure of public utilities, blocked drainages, noise pollution (generators, sirens of bank bullion vans, government vehicles etc).
- Indiscriminate parking which in turn creates stressful road conditions and congestion and also reduces space for habitation.

4.0 THE REMAKING OF VICTORIA ISLAND (A PROPOSAL FOR RENEWAL)
4.1 Recommendations
Below are some recommendations which could help ameliorate some of the environmental challenges presently confronting Victoria Island:
- The Estate Surveyor and Valuer should always use his/her professional experience to advise both the authorities as well as the property owners on the pros and cons of exposing a property to other uses other than the approved usage in particular, and allowing a dramatic change in an existing land use pattern.
- In planning a Central Business District, provisions should be made for flexibility and future expansion should be put into consideration. With the present trend in Victoria Island, the authorities should come out with policies that will restrict the activities of commercial users to certain streets (major ones) while the inner streets should be reserved for exclusive residential uses. This should apply to both old Victoria Island and the annexes. Punishment should be meted to defaulters the government; and if need be, properties of land use zoning violators could be confiscated to act as a deterrent to potential violators.
- The growth of peripheral residential housing estates should be encouraged by the government by putting in place flexible and affordable policies on acquisition of land for both individuals and corporate bodies that may wish to go into such developments. This will help decongest the present Victoria Island.
- Victoria Island is perhaps too small to
accommodate the volume of vehicles influx on daily basis. This incessant vehicular traffic could be resolved by ensuring that all roads within the area is fully repaired and made motorable. To ease some of the financial burden of this on government, the State Government should call on the private sector, notably those with large scale business venture, for assistance. Some of these roads could even be privatized and/or on BOT basis.

- Although, it is already too late to halt the conversion trend in Victoria Island, the authorities should still come out with policies that will restrict the activities of commercial users to certain streets (major ones) while the inner streets should be reserved for residential users. This should apply to both old Victoria Island and all the annexes.
- Setting up of a special fleet of vehicles to run commercial operations within Victoria Island. This is to be organized by a private sector outfit. All that is required is for government to license one or more operators and many workers in the area may decide to make use of these vehicles instead of their personal ones. With this practice, many vehicles will be taken off the road during weekdays.
- Reclamation of certain residential areas already taken up by commercial activities, the rebuilding of damaged roads, the clearing of blocked drains and the reactivation of streets lights. This way, the lost glory of Victoria Island will be restored. Furthermore, the beautification of roundabouts, traffic triangles (private sector, especially banks, is already doing this) should be vigorously pursued. The State Government should encourage this practice.
- Establishment of a Victoria Island Security patrol to be funded by the business, residents in Victoria Island that will lead to the displacement of the numerous local guards (Maiguards) who have actually constituted a nuisance.
- Appointment of a refuse disposal outfit for Victoria Island. Beneficiaries of their services to pay a weekly, monthly or on pay-as-you-go service charge. If government cannot handle it, a private sector outfit could be appointed and zones allocated to them for effective coverage.
- There should be a complete ban on the use of sirens by bullion vans and other siren user in Victoria Island to reduce the effect of noise pollution.
- Stoppage of hawking and the stoppage of siren user in Victoria Island to reduce the number of activities of street begging. Beggars to be sent to welfare homes.

5.0 CONCLUSION
"The pleasure of planned construction is one of the most powerful motives in men who combine intelligence with energy. Whatever can be constructed according to a plan, such man would endeavour to construct. The desire to create is not in itself idealistic since it is a form of the love of power, and while the power to create exist there will be men desirous of using this power even if unaided, nature would produce a better result than any that can be brought about by deliberate intention. Any urban renewal programme is essentially an attempt to change existing land use pattern within a city into new, different land use patterns that some persons feel are more desirable from their view point of the public good" (Bertrand Russel).

These are people vested with powers to cause such changes in the environment. As generally agreed the world over, the only thing that is constant is ‘change”. Planning itself is not and should not be made rigid. As a matter of fact, one of the conditions for a good planning is that it must be flexible and adaptable; that is, easily adjustable to new conditions or existing realities. However, this does not make for chaotic change such as a change from one use pattern to a completely different use pattern. It simply means making allowable and reasonable adjustments to a use zone so as to properly accommodate observed emerging trend in the use of land which will make for the highest and best use of land. It is therefore pertinent that professionals involved in planning (no matter their specialization) should meet regularly to appraise the conditions of our towns and cities and make recommendations to the government where necessary. The gathering will also keep them abreast of any new development for a necessary action so as to keep our environment in good and harmonious condition.

This study, which highlights changing land use pattern as it affects Victoria Island is revealing. To a large extent, it confirms that planning as a process must be strictly monitored to avoid process failure. A planning process fails when the desired results are not achieved in the short or long run. One of the theories of pattern of growth is that if competition is allowed to set in, in an urban area, a site will be secured by that use which can extract the greatest return. Except for the influences of Town Planning Authority, one of the factors that determine the pattern of urban land use is that commercial activities locate where maximum profit can be achieved.

This study revealed that due to the proximity of Victoria Island to the Central Business District (CBD), the latter became readily available for the commercial expansions of the CBD as economic activities began to expand. As the authorities could not stop the first signs of commercial activities, duly approved purpose built office complexes are springing up at major locations in Victoria Island. The change in use pattern is responsible for the present surge in population and vehicular congestion as well as increased noise pollution and other environmental vices. While some of the original residents in Victoria Island lost their homes to commercial invaders, some others could not cope with the higher rents. A good number detest the noise level and other environmental phenomenon that came with commercial activities. These and many more combined in driving the residential users to other locations relatively devoid of Victoria Island “madness”. From the study, it is also obvious that there is now rapid growth in peripheral housing estates as a result of demands for residential properties.

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A REVIEW OF TENDERING STRATEGIES FOR PROJECT PROCUREMENT IN THE NIGERIAN FORMAL AND INFORMAL SECTORS

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ABSTRACT

The philosophy of all tendering procedures is aimed at selecting a suitable contractor and obtaining from him at an appropriate time an acceptable offer or tender upon which a contract can be let. Hence, tendering requires mainly the contractor’s input, which serves as the basis on which a valid contract is formed. Therefore, tendering at large involves the client selecting an appropriate or suitable contractor and the contractor submitting a realistic (or competitive) tender. This paper therefore seeks to strategize tendering procedures/arrangement for the project procurement in the Nigerian formal and informal sectors. This paper also examined how viable tenders could be prepared for detailed large (formal) project and for small size or not too detailed (informal) project. Data were collected, through the administration of structured questionnaire, from 40 randomly selected consulting and contracting firms. The data collected were analysed using descriptive statistics and analysis of variance. The study reveals the following: the associate partners were often charged with the responsibility of tender analyses than with the principal or senior officers while the final decisions on recommendations are made by the principal partners. The factors considered for the selection of tenders are financial capacity, experience and expertise, company strength, and, lowest cost and reputation. The factors mostly used by consultants in disqualifying tenders are late submission of tenders, inconsistent unit rates, over pricing and under pricing and the least of all prequalification by contractors. While the most frequently used tender selection method is the selective tendering.

Furthermore, projects in the present dispensation are being awarded to contractors unlike in the past. Also, contractors (by mean item score) assessed the private sector as being more transparent and fair in their tender selection process than the public sector (especially, government parastatals). Documentation of past tenders is observed to have being done to a little extent (especially by small and few medium contracting firms). Statistics also revealed that the competitive form of tender selection is often employed about 86% more than the non-competitive tender. This paper therefore seeks to strategize tendering procedures/arrangement for the project procurement in the Nigerian formal and informal sectors. This paper also examined how viable tenders could be prepared for detailed large (formal) project and for small size or not too detailed (informal) project. Data were collected, through the administration of structured questionnaire, from 40 randomly selected consulting and contracting firms. The data collected were analysed using descriptive statistics and analysis of variance. The study reveals the following: the associate partners were often charged with the responsibility of tender analyses than with the principal or senior officers while the final decisions on recommendations are made by the principal partners. The factors considered for the selection of tenders are financial capacity, experience and expertise, company strength, and, lowest cost and reputation. The factors mostly used by consultants in disqualifying tenders are late submission of tenders, inconsistent unit rates, over pricing and under pricing and the least of all prequalification by contractors. While the most frequently used tender selection method is the selective tendering.

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Keywords: Formal Sectors, Informal Sectors, Project procurement, Strategies, Tendering.
1.0 INTRODUCTION

Construction project can be executed using various procurement systems. The successful contractor could therefore be selected using either of competitive or non-competitive tendering procedures. Out of these tendering procedures, the competitive tendering is a most favored means of selecting contractors. Farrow (1972), is of the opinion that competitive tendering is the gateway to starting, sustaining or expanding a business and it is the life blood of most contractors undertaking building and civil engineering works. This method is employed globally with adopted variations from country to country. It is pertinent for a tenderer (bidder) to monitor constantly his building performance to ensure that enough contracts are won for the company (to at least-a break even point). In a non-competitive environment, the contractor obtains all the estimated work making a profit equal to the mark-up allowed in his tender. On the contrary, for a contractor to be successful in his bid, he has to be aware of who his competitors are and what they are doing in a competitive sphere.

1.1 TENDERING METHODS

As mentioned earlier, tendering methods could broadly be classified as:

i. Competitive

ii. Non-competitive

1.1.1. Competitive tendering

The competitive tendering allows contractors tender in competition with others and the numbers of tenderers depend on the size of the contract and tendering method adopted. The basic idea behind this concept was that competitive tendering protected the public from extravagancy, corruption and other improper practice (by public officials). This form of tendering assumes that the lowest bidder is capable of making the effective use of its resources and manages the project to the benefit of the client. It is often employed when price is the sole criterion for evaluating the tenders. Despite the advantages of openness and transpareny, it could be quite defective, if an unreasonable low bid is made for the sake of winning the contract, thereby leading to a sub standard quality job irrespective of the method applied.

The various methods under this form of tendering include:

i) Open tendering

ii) Selective tendering

iii) Open selective tendering

iv) Due process

I) Open Tendering

In this method, an advertisement is placed inviting all building contractors to quote a price, that is submit tenders without any prior enquiry regarding their competence to the work. Though this method claims the removal of favoritism, suspicion, and gives new firms an opportunity to obtain contracts. However, the risks elements to the clients is high since he cannot ensure before the bidding that the prospective contractor has the experienced. Also in this system, more expense is incurred by the client in preparing the tendering documents to be sent out and fairness is down played wherein coming tenders are numerous.

II) Selective Tendering

This method consist of two variants namely;

a) Single stage selective tendering

b) Two stage selective tendering

Single Stage Selective Tendering

This offers a form of competition but among a list of well known contractors to the client from tenders are to be invited. The list could be drawn up from a list of contractors with proven competence, capacity, financial record and reputation. According to the code of procedure, a maximum number of tenders are recommended for different values of contracts to reduce cost of abortive tendering (code of procedure for single stage selective tendering, 1977). This method enables the client to obtain a cost effective price which reflects what the construction market can bear at a time. In addition, it assumes less financial risks since the financial commitments can be ascertained. However, useful project time is lost in detailed planning and preparation of scheme before invitation of tenders.

Two-staged Selective Tendering

According to Seeley (1984), two-staged tendering is of value where early contractor selection, is required. It involves a two-stage selection process, where in the first stage competitive selection of contractor is made, while the second stage embraces determination of the contract price based on pricing data obtained from the first stage. The competitive selection is based on pricing approximate, nominal or blank bills of quantities containing work similar to the project in hand. Other considerations for selection may include management and plant capacity, labor rates and overheads. In the second stage, the total contract price is determined partly by negotiations and partly by pricing based on the data provided by the contractor at the first stage.

The client benefits from the designer/contractor collaboration during the design phase leading to a buildable design; and from both elements of competition and negotiation in contractor selection. The client must exercise due care as legal responsibilities for designed facilities are not easily apportioned due to the multiple design inputs and more effort is required on price determination prior to complete design information.

Open-Selective Tendering

This method is mostly adopted by government and its parastatals (Aderibigbe, 1980). Contractors are categorized based on some ranges of fixed project sums, thus invited to tender with respect to the appropriate category in which they fall. In Lagos state, contractors are register-able within categories A-J having paid due registration fee. Odusami (1988) opined that this practice is both open and selective, open in the sense that as many contractors as registered in a category can submit tender at any time
According to Rowlinson and Mc Dermott (1999) formal organizations include firms and professional institutions whereas, the informal ones are essentially social collective links between the members of which range from very loose to extremely strong ties. Naturally, every contractor would like to tender at every available opportunity to do so. However, a prudent contractor will be selective so as to reduce the cost of abortive tendering. But this is only possible when the contractor is aware of the tendering environment (i.e. whether formal or informal) and understands the operational framework of the construction industry. The construction industry sub sector of the economy operates fundamentally in a framework comprising the contracting firms, the various consulting firms and the employer (client), all operating under the relevant aspect of the legal system.

2.0 TENDERING STRATEGIES IN THE FORMAL AND INFORMAL SECTOR

Considering the economy of any country, two distinct sub system of organizations could be drawn namely; the formal and the informal system of organization. According to Rowlinson and Mc Dermott (1999) formal organizations include firms and professional institutions whereas, the informal ones are essentially social collective links between the members of which range from very loose to extremely strong ties. Naturally, every contractor would like to tender at every available opportunity to do so. However, a prudent contractor will be selective so as to reduce the cost of abortive tendering. But this is only possible when the contractor is aware of the tendering environment (i.e. whether formal or informal) and understands the operational framework of the construction industry. The construction industry sub sector of the economy operates fundamentally in a framework comprising the contracting firms, the various consulting firms and the employer (client), all operating under the relevant aspect of the legal system.

2.1 Strategies to Successful Tenders

There are several strategies for preparing successful tenders. Among these are:

- Decision to tender
- Evaluation and documentation of previous tender
- Estimating prowess
- Tender adjudication
- Winning tenders in the face of favoritism / suspicion (man-know-man)

2.1.1 Decisions to tender

The first stage of tendering process should be to decide whether to accept an invitation to tender or not. Davis (1975) suggested the following two reasons for declining an invitation to tender; one, when the job is not wanted and secondly when there is doubt about being paid (as with some contracts in the Nigerian environment). To guide in this decision, it is often best for the contractor to have tendering policies which guides its decision as it relates to the following:

- Current workload;
- Workload in estimating department;
- Capital available to finance new project;
- Availability of resources (manpower);
- Type and location of job;
- Size, nature and value of project;
- Extent and value of main contractors work to nominated sub contractors;
- Degree of competition (number of competitors);
- Minimum price at which the contract is likely to be of benefit to the company.

Once decision has been made to tender for a project, the next important issue is the degree of commitment to the tendering process (Bamishile, 2004). The question then arises whether to tender for the sake of appearing on the clients list or for the intention of winning the contract tendered for. Hence the degree of commitment indicates the keenness to win the contract as little can be gained in the execution stage if the contract is won through haphazard or casual tendering procedure.

2.1.2 Evaluation and Documentation of Previous Tenders

It is quite intelligible to document and evaluate past tenders in addition to the theoretical tendering procedures of decision to tender, collection of information, preparation of the estimate and tender adjudication meetings. The documentation and evaluation processes aid decision to be made in all the tendering stages. This process allows for the following:

- It enables the contractor measure his tendering success rate
- It enables the contractor measure his performance
- It enables the contractor to predict likely short falls in his building performance (by comparing his own tender with other tenders)
- It enables the contractor to define the market sector in which he is most competitive (some contractors are competitive in tertiary institution facilities)
- It helps the contractor identify his strengths and weakness, and that of his competitors

2.1.3 Estimating Prowess

It is clear that cost estimates vary for different projects; however, tendering is not just a mechanical aggregation of figures but an art which involves professional judgment. Estimating could be defined as the technical process of predicting construction costs. It is therefore serves as the bed rock of a successful tender.
Tenders submitted by some contractors are rendered, defective by poor estimating techniques. Estimating process is not meant to be a guess work; because it may make the tender figure be too high or too low. If its too high and the company is awarded the contract, there may be no financial problems; but low tenders figures if awarded, often leads to poor performance or abandonment of project. There are various aspects that contractors overlook, while estimating which often adversely affects the tender and these includes:

i) Letting out of estimates with undefined scope: It is of usual practice to engage the services of an estimator or a quantity surveyor in preparation of estimates but where the services of these personnel are sought “externally”, the allowances and assumptions made are unknown to the contractor. For instance, the scope of waste percentage(%) allowed and overheads may be undefined to the engaged estimator thereby leading him to make assumptions based on his judgments unknown to the contractor who might still include additional profit margin.

ii) Use of outdated or inapplicable rates: It is sometimes ignorantly believed that once the quantities for a proposed project are correctly made, any rate may be used irrespective of the environment, as long as the rate had been used before. Conversely, bill rates for works often vary with location and market condition; which ought to be borne in mind always. Inclusion of Profits and overheads: In arriving at the order at the tender sum, the tendered contractor must be wary of how and where his profits and overhead charges are included. From experience, not all works rates carry the same profit weightings. Profits could be included by:
   a) Spreading it over the unit rates by an agreed percentage;
   b) Leaving the unit rates net while including profits as a percentage of the final summary page
   c) Leaving the unit rates and include the profit in the preliminaries;
   d) A combination of all the above

It is worth knowing that cost estimate for a tender must accommodate the actual cost of executing the project and leaving the profit and attendance aspect for management decision. Nevertheless, in assigning profit, the management must consider the following in order to have a competitive bid:
   a) Nature of Competitor
   b) Nature of Client (in terms of response to payments)
   c) Fluctuation clause of the contract
   d) Contract period

e) Company's strength
f) Projects at hand
g) Other factors
   (gratification and settlement) The contractor must learn to exercise care because in the event of having a competitive estimate of actual work, the profit included becomes the margin that could set-off or win the contract.

iv) Use of out dated/obsolete contain in the calculations of unit rate calculation: It is advisable that both contractors and consultants keep records of their on-going projects for the purpose of cost analysis of future projects. Unfortunately, some contractors and consultant Quantity surveyors, when building up unit rates would use some old text book constants dubbed somewhere for the computation. These a times may in most cases may be outdated thereby giving wrong figures in which when used by an inexperienced quantity surveyor or estimator may affect the tender figures adversely.

This is particularly true of all in labor rate computation where some assumed constants are not applicable to our environment while those that are applicable should be substituted instead.

v) wrong use of waste percentages: This use of percentages to cover or accommodate for wastes and double handling in pricing are sometimes over estimated. It is almost a common practice amongst young estimators to apply any nominal percentage without justification for it. An instance is the common 45%-50% allowed for waste in concrete rates sources. Sometimes, these rates need not exaggerated to an unjustified extent.

vi) Need to always find confirm the current market price: Some estimators rely solely on prices/rates from newspapers, magazines and data supplied by various Quantity Surveying organizations or bodies. All the rates or prices from all these publications need to be confirmed on a regular basis because there could be typographical errors or unedited editions which may give a relatively false information about the prevailing market prices. Consequently, estimators and quantity surveyors should take pain to get themselves acquainted with current prices of materials as this will enable them build up viable rates.

2.1.4 Tender Adjudication
This is the final stage in tender preparation and is the responsibility of the contractor's senior management. It requires decision inputs which converts the prepared estimate into the tender to be submitted. It is at this tender adjudication meeting that certain issues below would be concluded;
   - Tender figure
   - Contract period
2.1.5. Winning (successful) Tenders in the face of favoritism/suspicion (man-know-man)

It is a fact that there is a possibility of some consultants conniving with some contractors on expected tender sum. In the light of this, measures are required on all estimating exercise and the level of profits allowed on tender sum made minimal. Normally, to ensure fair competitive tendering, it is essential that the tenders submitted by each contractor shall be based on identical documentation and that tenders should not vary the common basis by qualifying their tenders. Consequently, where a tendered considers that any of the tender documents is deficient in any way, whether by errors, ambiguities or unacceptable alterations, he should notify the issuing authority. Furthermore, the tenders should take more time to package the tender (bid) in a way that makes it attractive to the issuing authority. This will entail the inclusion of photographs of past projects, and computer printing of the relevant supporting documents.

2.2 Clients Decision to Select Tenders

In most competitive tenders, the client is out to look for the lowest cost though in recent times, pre-qualification of tenders is made so that selected tenders are competitive and the tender figures are dependable. As long as the final decision on selection of tenders is entrusted to the client, such decisions would be guided by the client's consultants. The following are therefore considered as factors by the client's consultants in evaluating tenders:

- Analysis of major tenders
- Experience and level of expertise
- Financial capacity
- Reputation
- Company strength (profile)
- Statutory payments
- Tax clearance, VAT, etc

The tendering method and procedures to be adopted in inviting tenders determine the degree at which importance is attached to the above factors in selecting tender (contractors).

2.2.1 Analysis of major cost elements

The area usually checked for errors or anomalies include:

- All-in-rates (materials, labor, plant, etc)
- Cost of preliminaries
- Cost of attendance on nominated subcontractors and suppliers
- Profits and overheads

Comparison is made amongst all the tender figures submitted in relation to the budget (prepared by the consultants). Analysis are made in various ways; for instance, if the consultants observe that a major element is lower than the actual cost of executing that element less profit, then such a tender may not be favored.

2.2.2 Experience and level of expertise

Works that are well executed by a contractor in the past can be used as reference for a future project. Past experience and level of expertise exercised by a contractor in the past often stand as a guarantee (though not total) to the consultants for the performance by the contractor. Photographs of executed projects may be required and former clients may be written to confirm contractor's integrity.

2.2.3 Financial capacity

Certain projects require financial stability of the contractor, thus the consultants ensure that evidence of financial standings are made where financial capacity would be a pivot criterion of awarding the contract.

2.2.4 Reputation

Clients look forward to working with contractors who would make his dream a reality without much hassles—contractors should strive in achieving project goals even in the face difficulties. There are instances where construction companies would not deter in execution of their project even when payment falls behind schedule.

2.2.5 Company strength (profile)

Consultants sometimes do require tenders to include their organizational (company) profile. This enables the consultants to assess the level of qualification and experience of personnel within the organization tendering for a job. The consultants may be able to reduce the proficiency expected of the tender's organization.

3.0 TENDERING IN A FORMAL AND INFORMAL SECTOR

3.1 Tendering In a formal sector

Actions and decisions in a formal sector are procedural in nature with every step going through one process or the other. Tendering process and procedures in a formal environment are guided by strict rules thereby creating an inflexible atmosphere. Tenders must be aware of all the rules of the game in this light as it requires versatile and prudent personnel to thrive in this sector. Tendering is governed more by standards which the tendered must be aware of. There are various standards adopted by into conditions of contracts such as Joint Contract Tribunal (JCT) conditions of contract, General Contract(GC) works, and Institute of Civil Engineers (ICE) conditions of contract. Projects in the formal sector are sometimes synonymous with works of complex nature and over long duration. Therefore, besides the actual cost of the work (i.e., plants, labor and material costs), provision must be to cover associated risks such as safety on site, inflation and unforeseen incidence that may forestall completion. These provisions are usually made by including contingencies, insurance and...
3.2 Tendering in an Informal Sector

Tendering in this sphere requires judgmental flexibility, in the sense that the tendered must be able to predict from the nature of work and clients, what is likely to be expected. Projects in an informal sector may also be large or to some extent complex, but the bureaucratic or procedural processes may not be as rigid as that of a formal sector. Bamidipe (2005) referred to the informal sector as consisting of individuals, partnership, sole proprietor, religious bodies, and companies which covers about 60% of the population.

3.2.1 Characteristics and Requirements of the client in an Informal Sector

3.2.1.1 Characteristics

According to Bamidipe (2005), the characteristics synonymous with clients in the informal sector include:

- Decisions are usually taken by one person with some few expectations
- Decision making process is faster
- Ability to change already concluding matters easily
- Decisions can easily be influenced by others
- Wants to get involved in all stages from inception to completion
- Willing to pay the most economic cost
- Demands a lot from both consultants and contractors
- Does not want to be cheated at all

3.2.1.2 Requirements of the client

Clients in the informal sector are often eager to know the actual cost of their proposed projects. Hence, some often require from the contractor, materials (labor) and plant schedule, thus less bothered about the conventional Bills of Quantities (BOQ). It is therefore imperative for a contractor/tendered to engage experienced personnel in preparation of the required schedule. Extra care must be exercised in preparing labour rates/schedules because it is often difficult to make claims as a result of unreasonable rate inclusion, unlike materials and plants which would be physically evaluated on site or found out by the client. Also cost of supervision must be included to cover for management and overhead charges.

In circumstances where a BOQ is required, the client (in an informal sector) might not expect some intricacies such as bogus contingencies, preliminaries, performance bonds, or insurances. Though all these could be omitted yet diplomatically included elsewhere in the tender. The paradox will put the tendered at safety both in winning the tender and during the execution phase.

4.0 THE PROCUREMENT PROCESS

According to Ogunsanmi (2005), "Procurement" has been a terminology that has often been a terminology that has often been confused with "contract system". Basically, "procurement" is a method by which new units of housing is acquired with reference to: Method of design and construction, Parties involved in carrying out these functions and the Contractual arrangements used for executing the project, while contracting system are modes and terms of agreement between parties to a building contract which are legally enforceable. However, a working definition of procurement developed by CIB W92, defines it as "The framework within which construction is brought about, acquired or obtained" (McDermott, 1999). Therefore, procurement processes thrust unto consultants the responsibility to be able to advise clients (or developers) on the appropriateness of any procurement method selected to be selected.

Some of the commonly recognized procurement methods for building projects include:

- Traditional method
- Design and build
- Building-operate-transfer
- Management contracting and
- Labour only

Traditional method

Application: Adopted and applicable for most of all building works and some engineering works where design is to proceed actual execution or construction.

Level of acceptance: High

Process: Client selects an Architect and other consultants for the design of the project and later selects a building contractor who executes the project to completion.

Tender selection method: Open tendering, pre-qualified open tendering, selective tendering or negotiated tendering

Advantages:

- Comparative fairness
- Changes are reasonably easy to arrange and value
- Reasonable price certainly at contract award based upon market forces

Disadvantages:

- The strategy is open to abuse, resulting in less certainty
- No build ability input by contractor

Design and Build

Application: Adopted in projects where the contractor’s input in design is required and where early start is required, thereby integrating design and construction stage.

Level of acceptance: Low (acceptable for experienced clients)

Process: A single contractor assumes the risk and responsibility for designing and building the project in return for a fixed price lump sum. Briefly, performance quality specifications are
fully and unambiguously defined before entering into this type of contract. At tender stage, proposals are submitted by contractors in accordance with specification requirements.

**Tender selection Method:** Selective tendering or negotiated tendering

**Parties involved:** Client, consultants, contractors

**Advantages:**
- The client only has to deal with one firm
- Inherent build ability is achieved
- Price certainty is achieved before construction starts, provided the client's requirements are adequately specified and changes not introduced. Reduce project time due to overlapping activities.

**Disadvantages:**
- Relatively few firms offer the design and build high service, so there is less real competition
- Client's changes to project scope can be expensive. There is no design overview unless separate consultants are appointed by the client for this purpose
- Bids are difficult to compare since each design, programme and cost will vary

**Build-operate and transfer**

Application: This is used for commercial investment related projects such as hostel accommodation and shopping complex

**Level of acceptance:** Very low (common to the public sector)

**Process:** The client procures design, construction, financing, maintenance and operation of the faculty as an integrated whole from a single contractor. Only initial planning and financial designs may be provided by the owner.

**Parties involved:** Client, one single contractor and multi-disciplinary consultants.

**Tender selection method:** Selective and negotiated tendering

**Advantages:** Initial transfer of financial risks to the contractor

**Disadvantages:** Design is usually rigid

**Labour-only**

**Application:** This is usually employed for small works, or public oriented works where material and management are to be supplied by the client

**Level of acceptance:** Moderate (public sector, low income clients).

**Process:** Client may select an Architect(with or without other consultants). This employs a main contractor or sub contractors on basis of “labour-only”. Labour items are quoted for, by invited contractors.

**Advantages:** The supply of materials is monitored by the client, while the contractor is relieved of the burden of ensuring materials on site

**Disadvantages:**
- No commitment is shown by labour operatives towards the project
- Possibility of poor standard of workmanship
- There are no strict deterrent measures against wastage in material usage

From the foregoing, the onus lies on the experience and expertise of the consultants to give unbiased advise to the client as to the decision to make concerning appropriate procurement and tender selection methods.

**5.0 SUMMARY OF PILOT FIELD SURVEY**

A pilot field survey was carried out in Lagos State, Nigeria to assess the current trend of practice on tendering procedures. Simply structured questionnaires were administered in both consultants and contracting firms (small-large). A total of forty(40) questionnaires were sent out, of which thirty-two(32) were returned, in which seventeen(17) were from consultants and fifteen(15) from contracting firms. However, only fifteen(15) out of seventeen(17) were used because two(2) were incomplete. This is to obtain adequate information on the current trend in practice. The field data were analyzed using the Statistical Package for Social Science (SPSS) application (see appendices 1&2). From the analyses of field survey, the data obtained from consultants revealed that associate partners were often charged with the responsibility of tender analyses than with the principal or senior officers. On a personal interview with some consultants, it was discovered that final decisions on recommendations are made by the principal partners.

The survey also revealed that by mean item score from the field data, financial capacity, experience and expertise, company strength, lowest cost and reputation, respectively in that order were considered for the selection of tenders, there were usually variance of actual price from tender sum, while the contract period is seldom adhered to as agreed in the submitted tender document and the occurrence of liquidated and ascertained damages, and disputes were minimal.

Analysis carried out shows that factors mostly used by consultants in disqualifying tenders include the following in order of predilection, late submission of tenders, inconsistent unit rates, over pricing and under pricing and the least of all prequalification by contractors. While the most frequently used tender selection method is the “selective tendering”. Furthermore, from the pilot field survey carried out, observation revealed that the mean tender performance of contractors generally rated 0.66 obtained by the ratio of successful tenders to submitted tenders. This is an indication that more projects in the present dispensation are being
awarded to contractors unlike in the past. Also, contractors (by mean item score) assessed the private sector as being more transparent and fair in their tender selection process than the public sector (especially, government parastatals). Documentation of past tenders is observed to having been done to a little extent (especially by small and few medium contracting firms). Statistics also revealed that the “competitive” form of tender selection is often employed about 86% than the “non-competitive” system about 13%.

6.0 CONCLUSION
From the foregoing, it could be thus concluded that:
- Cost may not only be the justification for the selection of a successful tender because other things are considered such as presentation and packaging, reputation, financial capacity.
- The competitive method of tendering still remains the most adopted form of tender selection by both the formal and informal sector except where the client is used to a particular contractor, the negotiated tendering is employed.

7.0 RECOMMENDATIONS
- Contractors should endeavor to measure their bidding performance by documenting contracts tendered for and those eventually awarded.
- In event of unsuccessful tenders, variance should be measured between the accepted tender figure and the unsuccessful tender.
- Contractors should monitor and enquire assumptions made in estimating when external services are engaged for the estimation process.
- As Quantity Surveyors are mostly found at the back doors of estimating and tender preparation (directly or indirectly), professional ethics combined with experience of prevalent market-environmental condition must be ensured amongst Quantity Surveyors, partners, trainees and estimating personnel.
- Ensure the use of the right and qualified professionals.

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Mafimidwo
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AN EVALUATION OF THE USE OF CONSULTANT QUANTITY SURVEYORS ON CONSTRUCTION PROJECTS IN LAGOS STATE.

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ABSTRACT
This study evaluated the use of consultant Quantity Surveyors by construction clients in Lagos State. The study became imperative following controversies over the involvement of Quantity Surveyors on construction projects in this country. The study therefore sought to investigate the needs of construction projects’ clients in Lagos State, the client-types which use consultant Quantity Surveyors and the project types on which they are used. The research method include a review of the opinions of previous authors on related subject matter. A study instrument was also used to collect field data from construction projects stakeholders including clients, consultants and contractors. The data were analyzed using frequency counts and descriptive statistics.

The study indicated that construction clients require consultant Quantity Surveyors’ services most either to revive abandoned projects or for financial reports on on-going projects. The study also concluded that public clients and religious and social organizations make use of consultant Quantity Surveyors most on either school buildings and shopping complexes.

The study therefore recommends that consultant Quantity Surveyors should be used not only to solve financial problems on on-going or abandoned projects but also to prevent such problems from occurring to start with. It is also recommended that private individuals and private company clients should be encouraged to use consultant Quantity Surveyors on their projects as done by the public clients. Further, it is recommended that the use of Consultant Quantity Surveyors should not be limited to building projects.

Key Words: Consultant Quantity Surveyors, Construction Project; Client, Lagos State.

INTRODUCTION
According to the New Encyclopaedia Britannica, construction relates to the erection or assembling of structures. To a significant degree, construction is synonymous with building. It is in common usage most frequently applied to such major works as buildings, ships, aircraft and public works such as roads, dams, bridges, and railways.

With the construction industry’s products accounting for over 75% of the total Capital formation of most developing countries (Obadan and Uga, 1996), the importance of construction projects to the national economy cannot be over-emphasized. Also, construction projects satisfy man’s needs for shelter, welfare, and commerce. This is because construction projects include houses, offices, schools, warehouses, market stalls or shops, roads, and water schemes, to mention but a few.

Construction projects are capital intensive in which the Quantity Surveyor should be consulted before they are commenced to determine their feasibilities, profitability and ultimate justification of the resources committed to them.

A Consultant is a person or organization who gives expert advice for a fee. The importance of consultants to individuals, organizations or to a nation should not be under-estimated especially in a world of division of labour and specialization. No one can boast of having expert knowledge in all areas of human endeavor in our modern world.

A Quantity Surveyor is primarily a professional adviser who specializes on the application of scientific methods and procedures to the prudent management of construction resources with a view to ensuring optimum value for money. He does this by bringing his knowledge, skill and experience to bear on the conceptualization, design and execution of construction projects. This means that he not only investigates the feasibility of these projects before they are ordered but also that they are suitably designed, measured, described, estimated, awarded, valued and accounted for. The services of the Quantity Surveyors are very important to various construction clients, to the construction industry itself and to the national economy at large. This is because, in a world where the value of money is progressively threatened, there is the need for the judicious management of the scarce resources of money, manpower, machinery and materials for optimum results. By extension, the optimum allocation of construction resources will have salutary effects on the well-being of the general citizenry. Therefore, Quantity Surveying consultants are those who should be contacted for expert advice on both the financial feasibility and management of construction projects.

PROBLEM ANALYSIS
Quantity Surveying as a profession is one of the heritages of Nigeria from her British Colonial masters. According to Kadiri (2008), British Quantity Surveyors controlled the practice of the profession in Nigeria before the attainment of Independence in 1960. Examples of these practicing firms were Roxbough and Partners, Tillyard and Partners, Windnell and Trollope and the Arop Group, to mention only a few. With time, some Nigerians who received Quantity Surveying training overseas (Britain) began to return home to contribute their quota to national development. Initially, some of them worked for foreign firms in Nigeria before establishing their practices as Quantity Surveyors. These Nigerian Quantity Surveyors came together in 1969 and formed a body known as the Nigerian Institute of Quantity Surveyors (NIQS).

This body was recognized by the Nigerian Government with Decree No. 31 of December 1986. Subsequently, in 1990, the Quantity Surveyors’ Registration
Board of Nigeria (QSRBN) was formed as a government parastatal. This is the body saddled with the responsibility of regulating the practice of the profession in Nigeria.

However, the opinion is rife that construction clients do not make adequate use of Consultant Quantity Surveyors on construction projects in Nigeria. This study was therefore carried out to evaluate the use of consultant Quantity Surveyors on construction projects in Lagos State with the view to redressing the ugly trend.

AIM AND OBJECTIVES
The aim of the study is to evaluate the use of Consultant Quantity Surveyors on construction projects in Lagos State. The objectives of the study are:
(a) To identify the client's needs or requirements on construction projects in Lagos State.
(b) To ascertain which client type(s) use consultant Quantity Surveyors in Lagos State.
(c) To determine the type(s) of construction projects on which consultant Quantity Surveyors are engaged in Lagos State.

PREVIOUS WORKS
Citing the role definition of the Royal Institution of Chartered Surveyors (RICS) Seeley (1996) describes the Quantity Surveyor's role as that of "ensuring that the resources of the construction industry are utilized to the best advantage of the society by providing, interalia, the financial management of projects and a cost consultancy service to clients and designers alike during the whole construction process".

Accordingly, this role definition envisages the indispensability of the Consultant Quantity Surveyors' duties by the design team in an attempt to proffer solutions to the problems arising from the client's brief. To realize this role definition, Seeley (1996) further identifies the following duties which the consultant Quantity Surveyor must perform:
1. Preliminary cost advice
2. Cost Planning
3. Advice on contract procedures and types of contract
4. Advice on methods of obtaining tenders.
5. Advice on procedures for selecting contractors.
6. Preparation of tender documents.
8. Periodic financial statements.
9. Valuation of work in progress for advance payment (interim valuation).
10. Examination and settlement of claims.
11. Preparation and settlement of final account.

However, in a survey on the trends in Quantity Surveying Consultancy Practice in Nigeria, Odusami (1999) lists the following to be the regular services rendered by Consultant Firms of Quantity Surveyors in descending order of frequency:
1. Valuation for Interim Certificates.
2. Preparation of Preliminary Estimates
3. Tender Analysis and Report
4. Preparation of Bills of Quantities
5. Preparation of Final Account
6. Preparation of Materials Schedule
7. Cost Planning
8. Expenditure and Cashflow Forecast
9. Project Management
10. Feasibility Studies
11. Schedule of dilapidation
12. Expert advice on arbitration
13. Fire Insurance Valuation
14. Technical Auditing

The survey further discovers that of these, only items one to five are the duties most frequently offered by Nigerian Consultants to their clients. From this, it is obvious that the list of services rendered are the needs or requirements of construction clients in Nigeria.

RESULTS AND DISCUSSION
In analyzing the data, it is interesting to note from Table 1 that out of a total of 80 copies of the study instrument sent out, 63 copies were received and used representing a return rate of 82.5%.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Number sent</th>
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</thead>
<tbody>
<tr>
<td>Client</td>
<td>25</td>
<td>21</td>
<td>84</td>
</tr>
<tr>
<td>Contracting</td>
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<td>13</td>
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</tr>
<tr>
<td>Quantity Surveyor</td>
<td>15</td>
<td>15</td>
<td>100</td>
</tr>
<tr>
<td>Other consultants</td>
<td>25</td>
<td>17</td>
<td>68</td>
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<td>66</td>
<td>82.5</td>
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The study, which was carried out in Lagos, surveyed the opinions of Construction Consultants, Contractors and perceived clients using questionnaires. Lagos was selected for the study because of its economic status in Nigeria coupled with its large concentration of potential clients, consulting and contracting firms. For convenience, the study instrument was classified into four groups of subjects including construction clients, Consultant Quantity Surveyors; Contractors, and other construction consultants groups. The instrument was administered on contractors and consultants using convenience sampling technique. The purposive sampling technique was however used to select the clients studied. This was necessary to obtain meaningful responses since the sample frame of construction clients in Lagos State is undefined. The data collected were analyzed using frequency counts, mean item scores and tables, where necessary.

RESEARCH METHOD
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In determining the needs of construction clients in Nigeria, the relative significance indices of the clients' needs investigated were computed. Thus, Table 4 indicates that the need to revive abandoned projects is most crucial to clients in Lagos State. This is followed closely by the need for financial reports on on-going projects. It would have however been expected that the preparation of bills of quantities, for contractor selection, be higher up in ranking than financial reports and final accounts needs. This is because both depend on the preparation of bills of quantities for contractor selection.

Table 2: Experience of respondents

<table>
<thead>
<tr>
<th>Years</th>
<th>Number (F)</th>
<th>X</th>
<th>XF</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 5</td>
<td>0</td>
<td>2.5</td>
<td>0</td>
</tr>
<tr>
<td>5 - 10</td>
<td>18</td>
<td>7.5</td>
<td>135</td>
</tr>
<tr>
<td>10 - 15</td>
<td>22</td>
<td>12.5</td>
<td>275</td>
</tr>
<tr>
<td>15 - 20</td>
<td>14</td>
<td>17.5</td>
<td>245</td>
</tr>
<tr>
<td>20 – 25</td>
<td>8</td>
<td>22.5</td>
<td>180</td>
</tr>
<tr>
<td>Over 25</td>
<td>4</td>
<td>27.5</td>
<td>110</td>
</tr>
<tr>
<td>TOTAL</td>
<td>66</td>
<td></td>
<td>945</td>
</tr>
</tbody>
</table>

\[ \bar{X} = \frac{XF}{F} = \frac{945}{66} \]

\[ \text{Mean} = 14.3 \text{years} \]

Also, Table 3 shows that 42.9% of the clients are self-employed. 33.3% are in paid employment while 23.8% of them claimed that they earn income from both paid and self employments.

Table 3: Client’s source of income

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>NUMBER</th>
<th>PERCENTAGE OF TOTAL (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paid Employment</td>
<td>7</td>
<td>33.3</td>
</tr>
<tr>
<td>Self-Employer</td>
<td>9</td>
<td>42.9</td>
</tr>
<tr>
<td>Both</td>
<td>5</td>
<td>23.8</td>
</tr>
<tr>
<td>TOTAL</td>
<td>21</td>
<td>100</td>
</tr>
</tbody>
</table>

In determining the needs of construction clients in Nigeria, the relative significance indices of the clients' needs investigated were computed. Thus, Table 4 indicates that the need to revive abandoned projects is most crucial to clients in Lagos State. This is followed closely by the need for financial reports on on-going projects and so on. It is important to note here that most clients in Lagos State seek the services of the Consultant Quantity Surveyor after their projects are abandoned. It is the opinion of this researcher; however that such abandonment may have been prevented if they were engaged from the on-set. It would have however been expected that the preparation of bills of quantities, for contractor selection, be higher up in ranking than financial reports and final accounts needs. This is because both depend on the preparation of bills of quantities for contractor selection.

Table 4: When clients need consultant quantity surveyors

<table>
<thead>
<tr>
<th>NEEDS</th>
<th>INDEX</th>
<th>RANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need to complete abandoned projects</td>
<td>0.500</td>
<td>1</td>
</tr>
<tr>
<td>Need for financial reports on on-going projects</td>
<td>0.448</td>
<td>2</td>
</tr>
<tr>
<td>Need for final accounts</td>
<td>0.438</td>
<td>3</td>
</tr>
<tr>
<td>When projects are just being conceived</td>
<td>0.427</td>
<td>4</td>
</tr>
<tr>
<td>Need for interim valuations</td>
<td>0.365</td>
<td>5</td>
</tr>
<tr>
<td>Need to select contractor</td>
<td>0.313</td>
<td>6</td>
</tr>
<tr>
<td>After engaging contractor</td>
<td>0.302</td>
<td>7</td>
</tr>
<tr>
<td>After designs are ready</td>
<td>0.208</td>
<td>8</td>
</tr>
</tbody>
</table>

On the question of the use of Consultant Quantity Surveyors by various clients. Table 5 indicates that they are mostly used by public clients (especially governments and their agencies). Sixty-one percent of the projects studied on which Consultant Quantity Surveyors were used were sponsored by various governments. This is closely followed by religious and social organizations with 24.5% respectively, and so on.

Table 5: The use of consultant quantity surveyors by clients

<table>
<thead>
<tr>
<th>CLIENTS TYPES</th>
<th>NUMBER</th>
<th>PERCENTAGE OF TOTAL (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religious organizations</td>
<td>12</td>
<td>24.5</td>
</tr>
<tr>
<td>Private companies</td>
<td>3</td>
<td>6.1</td>
</tr>
<tr>
<td>Social organizations</td>
<td>12</td>
<td>24.5</td>
</tr>
<tr>
<td>Individuals</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Governments</td>
<td>30</td>
<td>61.2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>58</td>
<td>100</td>
</tr>
</tbody>
</table>

These results are expected to be so the fact that these three (government, social, and religious) organizations being not owned by single individuals, need to show accountability in their operations. Thus, they need to follow due procedures in the award of contracts for project execution. On the other hand, individual and private company clients may not require such transparency since they are usually not accountable to anybody, as such.
Table 6 shows, on the average, that Shops or Shopping Complexes, Factories, Offices and Schools in that order are the projects on which Consultant Quantity Surveyors are mostly engaged in Lagos State. It is however not surprising to note that only 2.4% of the respondents claimed that Consultant Quantity Surveyors were used on residential projects. This result corroborates Table 5 in which private individuals, who are the major sponsors of residential projects are shown to shy away from the use of Consultant Quantity Surveyors on their projects. It is also interesting to note that shopping Complexes and factories, for example, are most usually owned by organized associations and public companies. These organizations usually have Board of Directors who are accountable to their shareholders. Accordingly, following the due process of contract award for project execution necessarily require these organizations to engage the services of Consultant Quantity Surveyors.

**TABLE 6: Projects on which consultant quantity surveyors are used.**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NUMBER OF TOTAL RESPONDENTS</th>
<th>% OF TOTAL</th>
<th>NUMBER OF TOTAL QUANTITY SURVEYOR RESPONDENTS</th>
<th>% TOTAL</th>
<th>AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory</td>
<td>7</td>
<td>22.6%</td>
<td>10</td>
<td>16.1%</td>
<td>19.4%</td>
</tr>
<tr>
<td>Residential</td>
<td>1</td>
<td>3.2%</td>
<td>1</td>
<td>1.6%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Offices</td>
<td>5</td>
<td>16.1%</td>
<td>9</td>
<td>14.5%</td>
<td>15.3%</td>
</tr>
<tr>
<td>Shps/shopping Complexes</td>
<td>8</td>
<td>25.8%</td>
<td>10</td>
<td>16.1%</td>
<td>21%</td>
</tr>
<tr>
<td>Renovations</td>
<td>2</td>
<td>6.5%</td>
<td>9</td>
<td>14.5%</td>
<td>10.5%</td>
</tr>
<tr>
<td>Refurbishments</td>
<td>3</td>
<td>9.7%</td>
<td>3</td>
<td>4.8%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Schools</td>
<td>5</td>
<td>16.1%</td>
<td>6</td>
<td>9.7%</td>
<td>12.9%</td>
</tr>
<tr>
<td>Others (religious)</td>
<td>-</td>
<td>-</td>
<td>14</td>
<td>22.6%</td>
<td>11.3%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>31</td>
<td>100%</td>
<td>62</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

**CONCLUSION AND RECOMMENDATION**

From the foregoing results, the study concludes that construction clients in Lagos State seek the services of Consultant Quantity Surveyor mostly when they need to revive abandoned projects and when they need financial reports on on-going projects. The study therefore recommends that since the professional training of the Quantity Surveyor on construction cost is all-encompassing, his predominant use on building projects alone should be deemphasized. Accordingly, efforts should be stepped-up by both individual practitioners and the regulatory bodies to enlighten the public as to their capabilities to handle all manners of construction projects be they building, civil or industrial engineering.

Moreover, the spectrum of services the Consultant Quantity Surveyor can provide on construction projects should be communicated to prospective clients in such awareness campaigns. On its part, government should be urged to enact an enabling law which will make the fees paid for planning consent a function of the Consultant Quantity Surveyor's priced bills of quantities. This is the surest means of determining the value of proposed developments. It is also recommended that since the public sector has been shown to have utilized Consultant Quantity Surveyors advantageously, the organized private sector and individual clients should be encouraged to follow suit. This recommendation becomes more apt when it is considered that a large number of residential developments in this state is sponsored by the private sector.

It is the earnest hope of this researcher that implementation of these recommendations will go a long way toward ensuring that construction clients in Lagos State and indeed in Nigeria get value for money. It will also ensure the development of the Quantity Surveying profession in Nigeria with attendant economic fortunes of Consultant Quantity Surveyors.

**REFERENCES**


AN ANALYSIS OF STAKEHOLDER'S PERCEPTION IN ELECTRONIC TENDERING ADOPTION IN NIGERIAN CONSTRUCTION INDUSTRY

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School of Environmental Studies,
Yaba College of Technology,
Yaba, Lagos, Nigeria
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ABSTRACT

Tendering system in Nigerian construction industry over time has been based on traditional paper-based approach in which the tender documents are distributed, collected, collated and administered manually despite the facts that most of these documents are produced electronically. Various shortfalls has been attributed to this system by various researchers but they submitted that with the paradigm shift from traditional paper-based to digitally based information exchange, which other industries have adopted and benefited from long ago, the system can be transformed to electronic tendering (e-tendering) in order to overcome the perceived shortfalls. The study investigates the perception of the stakeholders in Nigerian construction industry to the perceived shortfalls in the traditional paper-based tendering system in Nigeria, and evaluates the factors that could influence their willingness to adopt and participate in e-tendering. The population for the study is the construction stakeholders in Nigeria who are involved in tendering process and they include consultants, contractors, and employer representative (both private clients and Government representatives). Stratified random sampling was employed with the sampling frame generated from the list of registered Quantity Surveyors, Architects, Engineers, and Contractors as published by their respective institutions, 61 responses were used in all, using a self-administered structured questionnaire which was delivered by hand. Data collected were analysed using descriptive statistics and analysis of variance. The study identified seven variables as the perceived shortfalls in traditional system but reveals the most severe problems as, cost, time wastage, intensive administrative task, labour intensive tasks, lack of security of tender, large storage capacity required to problem of double or triple entry/participation in order of severity. The study also reveals that all the stakeholders are not satisfied with the current traditional paper-based tendering process, and that the stakeholders are aware of e-tendering system. Twenty-two variables were identified as the factors that could influence the willingness of all stakeholders in construction industry to adopt and participate in e-tendering, but only 15 of these factors were ranked to be the most important factors while the remaining 7 factors may not really have great influence on the adoption of e-tendering.

Key Words: Adoption, E-Tendering, Nigeria, Participation, Perception, Stakeholders

1.0 INTRODUCTION

Electronic- Tendering, commonly known as E-tendering is defined as the exchange of tender documents between the client’s representatives and the tenderers for pricing purposes (Adetola, 2002). RICS (2005), in its guidance note, defined it as the electronic issuing and receipt of any tender documentation as part of the procurement process. Construction industry by its nature is one of the most information-intensive industries, and requires close coordination among a large number of specialized but interdependent organizations and individuals in order to achieve the cost, time and quality goals of a construction project (Toole, 2003). This is because almost all construction processes require heavy exchange of data and information between project participants, one of these processes is tendering (Oladapo, 2005; Maqsood, Walker and Finegan, 2004; Adetola, 2002; Craig, 2003). Tendering process over time has been based on traditional paper-based approach in which the tender documents are distributed, collected, collated and administered manually despite the facts that most of these documents are produced with computers. These, according to various researchers make tendering process to be cumbersome and full of shortfalls which often result into wastage of resources (manpower, money and time) which can be channelled to other productive things in obtaining value for money in construction (Adetola, 2002; RICS, 2005; Oladapo, 2005; Martin, 2003; Craig, 2003).

Meanwhile, Oyediran and Odusami (2005), submitted that the explosive growth of the information and communication technology (ICT) has had unquantifiable impact on business systems and processes. This is in line with Rivard, Froese, Waugh, El-Diraby, Mora, Torres and Gill (2004) observation that the construction industry is currently experiencing a paradigm shift from traditional paper-based to digitally based information exchange, which other industries such as aircraft manufacturing and banking have adopted and benefited from long ago. In their submissions; Peansupap and Walker 2005; and Craig 2003, stated that some benefits of ICT critical to the performance of the construction industry include reduction in the time for data processing and communicating information, and to improvement in communications for effective decision-making and coordination among construction participants to enhance construction productivity. Oladapo (2005), RICS (2005), De Lapp, Ford, Bryant and Horlen (2004), and Adetola (2002), made it known that this is possible because the Internet-based tools of ICT allow communication between even remote users and enables them to share files, comment on changes and post requests for information. Bett (1999), also explained that ICT has been shown to be a vital tool in assisting the construction industry to cope with the increasing complexity of its products (as well as the increasing demands of its clients and regulators) and to enhance construction productivity.
In this regard, findings emanating from various researchers show that the shortfalls in the tendering process could be overcome with the introduction of effective electronic tendering which enables quick production, distribution, collection, collation and general administration of tendering in electronic format and through internet-based tools (Al-Lawati and Aibinu, 2008; RICS, 2005; Oladapo, 2005; Craig, 2003; Martin, 2003; Hamilton et al., 1995). In this regard, this paper research into the perceived shortfalls in the traditional paper-based tendering system, and evaluates the factors that could influence the willingness of stakeholders in the Nigerian construction industry to adopt and participate in electronic-tendering system in order to improve productivity in Nigerian construction industry.

2.0 LITERATURE REVIEW

2.1 Tendering
The philosophy of tendering, according to Mafimidiwo (2005), is aimed at selecting a suitable contractor and obtaining from him at an appropriate time an acceptable offer or tender upon which a contract can be let. Hence, tendering requires mainly the contractor’s input which serves as the basis on which a valid contract is formed. Therefore, tendering at large involves the client selecting an appropriate or suitable contractor and the contractor submitting a realistic (or competitive) tender (Al-Lawati and Al-Lawati and Aibinu, 2008; Mafimidiwo, 2005; Adetola, 2002; Shash, 1993). There are two methods of tendering namely; competitive tendering and negotiated tendering. Competitive tendering is where more than one contractor compete to win a construction contract. This method allows the client to get the lowest possible price. Competitive tendering may be done by open tendering, selective or serial tendering. Tendering may also be negotiated rather than competitive. Negotiated tendering is a non-competitive approach where the client negotiates a price and enters into contract with a specific preferred contractor (Al-Lawati and Aibinu, 2008; Mafimidiwo, 2005; Smith, 1986; Milne, 1980).

2.2 Tendering Practice in Nigeria
Tendering practice in Nigeria, both in Public (Government) sector and Private (construction and consulting organisations other than Government) sector has been based on traditional paper-based method. Meanwhile, the invitation to tender is often through newspaper advertisements, televisions, radios, online (using Government and private own website) or individual contact through phone facility or any other means of communication (Tender Online, 2008; Mafimidiwo, 2005, Adetola, 2002). The common ground in the tendering procedure is the tender documents which are produced by individual designers (consultants) mostly using electronic format. The various documents after production in electronic formats are mostly printed on paper and given to interested contractors to tender (Adetola, 2002). This manual paper-based according to Aibinu (2005) and Mafimidiwo (2005) are faced with many disadvantages. These are:

- Large storage capacities, such as, storing rooms and archives required to store tenders’ and projects’ documents and drawings;
- Lack of security of stored data in papers;
- Time wastage and cost in exchanging information and tender documents;
- Labour intensive tasks required to issue and respond to tenders (for example organisations’ representatives will have to travel from one part of the country to another to obtain and submit tender documents);
- Intensive administrative tasks, such as printing, collating, binding and distributing of tender documents to all interested contractors where the contractors pay for postage or use of courier services.

With all these bottlenecks, there is a need to source for alternative system which will reduce to the bearable minimum level or eliminate these problems in order to improve productivity in construction industry. In this vein, Ruikar et al. (2004) and Oladapo (2005), submitted that the use of ICT can impact on the traditional processes of organisation in construction, and results in change in organisational processes, working methods and culture.

This calls for e-tendering, and thus discussed below.

2.3 E-Tendering
Electronic- Tendering, commonly known as E-tendering has been defined earlier in this paper as the exchange of tender documents between the client’s representatives and the Tenderers for pricing purposes (Adetola, 2002). RICS (2005) in its guidance note, defined it as the electronic issuing and receipt of any tender documentation as part of the procurement process. Its definition extended e-tendering to the use of mix document formats, i.e. electronic and hard copy in which the method of exchange can be through disk; email; and web based technology. Government of Newfoundland and Labrador (1999), defined e-tendering as the process by which tender documentation, such as, drawings, bills of quantities ‘BoQ’ and specifications are issued to construction firms in an electronic format and via the internet (cited by Al-Lawati and Aibinu, 2008). Therefore, the invitation to tender, tender award, contract administration and monitoring project performance will be all undertaken electronically online. This can be achieved through the use of a web enabled tender system such as extranet, which is a unique website enabling access to all the project teams via a login name and password in order to upload and download documents (Al-Lawati and Aibinu, 2008; RICS, 2005; and Adetola, 2002). Furthermore, tender queries, tender addendums, updates, evaluation of work for payment and notification of
payments are all to be exchanged electronically on the internet via the system's website and e-mail.

For the purpose of this study, the definition of the Government of Newfoundland and Labrador’s, 1999, will be adopted. This is because, it eliminates every aspect of traditional paper-based method and thus provides probable solutions to the impending problems identified in the traditional system. RICS (2005) further explained that standard practice (both in terms of presentation and content) has to be adopted in order to avoid ambiguity and reduce frustrations over technical incompatibility. Abibun (2008); RICS (2005) and Adetola (2002), outlined the benefits that can flow from the introduction of e-tendering as:

- **Simplifying the process;**
- **Reducing tendering costs;**
- **Avoiding the need for double or triple entry of the same information; and**
- **Ultimately enabling a fairer assessment between tenders.**

RICS (2005), added that the desire to drive down costs has been seen as the primary strategic purpose behind e-tendering. Advocates of the adoption, use factors such as the aggregation of buying power, elimination of waste and the simplification of the process to justify this belief. This reduction in waste, particularly the production of multiple copies of paper-based information, can also lead to a less environmentally demanding and more sustainable tendering.

Whilst there may well be positive outcomes from the introduction of electronic tendering, there are many barriers to successful adoption. Given natural inertia, lack of agreed standards, little or no impartial advice and the potential legal and technical traps, it is not surprising that the industry has in the past spent a lot of time talking about the benefits of e-tendering, but has not followed this talk with action (RICS, 2005; Adetola, 2002). Notwithstanding these perceived barriers to the wide scale adoption of e-tendering within the construction industry, can be eliminated or reduced to the bearable minimum level if properly addressed.

In Nigeria, few organisations use e-tendering system. Although, the majority of the industry participants have fully adopted computer system of working using software packages to develop the tender documents but they still convert the document to manual paper-based (Oladapo, 2005; Oyediran and Odusami, 2005; and Adetola, 2002).

### 2.4 Stakeholders' willingness to adopt and participate in e-Tendering

Despite all the benefits of e-tendering, there are certain perceived barriers, which, if not well defined and if practical steps are not taken to address them (i.e. manage) could hinder the Nigeria construction industry stakeholders' propensity to adopt or participate in e-tendering. In this study, "Stakeholders' willingness to adopt and participate in e-Tendering" refers to their propensity to adopt or participate in e-tendering.

### 2.5 Objective of the Study

The objectives of this study are to:

1. identify the perceived shortfalls in traditional paper-based tendering system according to stakeholders in the Nigeria construction industry and evaluate their satisfaction with the system,
2. evaluate the awareness of the electronic-tendering system by the stakeholders and their current participation in the system, and,
3. evaluate the factors that could influence the willingness of all stakeholders in construction industry to adopt and participate in e-tendering.

### 3.0 RESEARCH METHOD

The objectives of the study require the perception of the stakeholders in Nigeria construction industry to the perceived shortfalls in the traditional paper-based tendering system in Nigeria, and evaluate the factors that could influence their willingness to adopt and participate in e-tendering. It became pertinent that the stakeholders involved in the practice of tendering, also the location chosen can best represent the construction industry because of the large clusters of the chosen stakeholders in this area as obtained from the relevant directories. Since the opinions (perception) of the targeted stakeholders were required to achieve the objectives of the study, the opinion-based questionnaires were used.

The questions were designed in 'structured form' in which the questionnaires were presented to the respondents in same form and order, having same wordings. Postal has poor response rate and response bias, as well as...
the inability of the investigator to verify the information provided (Omoleowo, 2006). Therefore, the questionnaire was self-administered and was delivered to respondents by hand and also recovered via same procedure.

The questionnaire has four sections; section A, B, C, and D. The first two sections - Section A and B were designed to reflect the profiles of companies and the respondent. The general information requested from the respondents includes the respondents' designation, construction experience, tendering practice experience, academic and professional qualifications, type of organization, year of establishment. These were required to be able to classify the respondents in terms of their profession, knowledge as well as that of the company and practice, and the group of the stakeholders/professionals from which data were collected.

The third section - Section C, addresses the first objective of the study which is to identify the perceived shortfalls in traditional paper-based tendering system according to the stakeholders in the Nigeria construction industry and evaluates their satisfaction with the system. It therefore focused on the current traditional tendering practices used in Nigeria construction industry. This section has two questions. The first question asked the respondents to rank the severity of these shortfalls in the Nigeria construction industry on a five-point Likert scale, ranging from 'Not severe' to 'Very severe'.

The fourth section - Section D, addresses the second and third objectives of the study which are to evaluate the awareness of the electronic-tendering system by the stakeholders and their current participation in system, and, to evaluate the factors that could influence the willingness of all stakeholders in construction industry to adopt and participate in e-tendering system. Five questions were asked. The first question seeks to know the respondents' awareness of the e-tendering system and was therefore asked whether they are aware or not. The second question seeks to know the present level of participation in e-tendering and therefore asked if the respondent participates in it or not. The third question seeks to know the willingness of the stakeholders to adopt and participate in e-tendering, and they were asked to rate the extent of their willingness on a five-point Likert scale of 1-5, ranging from 'Very dissatisfied' to 'Very satisfied'. The second question addresses the perceived seven disadvantages of the traditional paper-based system of tendering and asked the respondents to rank the severity of these shortfalls in the Nigeria construction industry.

Variables that could influence the responding stakeholders' organisations' willingness to adopt and participate in e-tendering system. These variables were identified from the literature. The fifth question asked the respondents to list any other concerns which they might have about the adoption of e-tendering in Nigeria.

This study employed 'stratified random sampling' of stakeholders involved in tendering system in Nigeria construction industry. The sampling frame was generated from the list of registered Quantity Surveyors, Architects, Engineers, and Builders published by the Nigerian Institute of Quantity Surveyors (NIQS), Nigerian Institutes of Architects (NIA), Nigerian Society of Engineers (NSE) and Nigerian Institutes of Building (NIOB), respectively, and also, from the Federation of Construction Industry (FOCI).

The statistical analyses of data obtained were carried out with the aid of statistical Packages for Social Sciences (SPSS).

4.0 RESULTS AND DISCUSSION

4.1 Profile of respondents and their respective organisation and response rate

The questionnaire were distributed to 70 respondents, out of which 61 were returned in usable format representing 87% overall response rates. Contracting organisations represent 58.1% of the overall response, consultants 32.3%, and Employers' representatives/Government organisations 9.7%. Organisations with human resources capacity of over 20 tenders represent 61.3% of the responses, while 9.7% for each of 1-5 capacity, 6-10 and 11-15 and 16-20. 67.7% of the respondents' organisations have been in the operation for over 20 years, while 12.9% for 6-10 years, and 19.4% for 11-15 years. Organisations who have executed or being involved in over 20 projects represent 90.3%, while 9.7% represents 11-15 projects. Also 71% of the organisations have been involved in more than over 20 tenders, 19.4% for 16-20 tenders, and 9.7% for 11-15 tenders. 38.1% of the respondents have been involved in more than over 20 tenders, 19.4% for 16-20 tenders, and 9.7% for 11-15 tenders. Organisations with average turn over of 81-100million naira represents 38.5% of the responses, 5-30 million turnover - 38.7%, 31-55 million -19.4%, and above 100million - 3.2%. Quantity Surveyors represent 41.8% of the respondents, Architects-19.4%, Engineers-19.4%, and Builders-19.4%. Professionals with over 20 years experience in Nigerian construction industry represent 38.7% of the respondents, 38.7% have 6-10 years experience, and 22.6% have 1-5 years experience. Professionals who are BSc holder represents 58.1% of the respondent, while 41.9% are MSc holders. In terms of their professional affiliation, ANIQS- 41.8%, FNIOB-19.4%, FNIA- 19.4%, and MNSE-19.4 %, 29% of the respondents have been involved in over 20 tenders, 51.6% represent 6-10 tenders, 9.7% 11-15 - tenders and 9.7%-1-5 tenders. 58.1% of the respondents have executed or involved in over 20 projects, 29% in 11-15 projects, 9.7% in 6-
10 projects, and 3.2% in 1-5 projects. Therefore, it can be inferred from the above analysis that the majority of the respondents have good experience in Nigerian construction Industry and as well familiar and experience in tendering procedures and processes. Thus, the information obtained from them can be relied upon with at least 70% confidence.

4.2 Perceived shortfalls in traditional paper-based tendering system

The first objective seeks to identify the perceived shortfalls in traditional paper-based tendering system according to stakeholders in the Nigeria construction industry and evaluate their satisfaction with the system. Based on the analysis of the severity ratings assigned to each of the perceived shortfalls, Relative Severity Indices (RSIs) was computed using the formula:

\[ RSIs = \frac{5(m5) + 4(m4) + 3(m3) + 2(m2) + 1(m1)}{5(m5 + m4 + m3 + m2 + m1)} \]

Where: m1, m2, m3, m4, m5 represent number of respondent(s) that selected 1, 2, 3, 4, 5 respectively. The computed RSIs is shown in Table 1, while Table 2 shows the one-sample t-test that was used to determine if the mean severity of each disadvantage is equal to or greater than 4. It is assumed that a mean of 4 or greater implies a 'severe' rating while a mean of less than 4 implies a 'not severe' rating.

Table 1: Disadvantages of Traditional Tendering System

<table>
<thead>
<tr>
<th>Description</th>
<th>Contractors</th>
<th>Consultants</th>
<th>Employers’ representative</th>
<th>Aggregate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RSIs Rank</td>
<td>RSIs Rank</td>
<td>RSIs Rank</td>
<td>RSIs Rank</td>
</tr>
<tr>
<td>Cost(multiple productions of same information, acquiring and submission of tender due to location etc)</td>
<td>0.78 5</td>
<td>0.77 4</td>
<td>0.74 6</td>
<td>1.00 1</td>
</tr>
<tr>
<td>Time wastage</td>
<td>0.85 1</td>
<td>0.83 2</td>
<td>0.82 3</td>
<td>1.00 2</td>
</tr>
<tr>
<td>Intensive administrative task</td>
<td>0.78 4</td>
<td>0.80 3</td>
<td>0.74 5</td>
<td>0.80 3</td>
</tr>
<tr>
<td>Labour intensive tasks</td>
<td>0.78 6</td>
<td>0.73 6</td>
<td>0.86 1</td>
<td>0.80 4</td>
</tr>
<tr>
<td>Lack of security of tender</td>
<td>0.68 7</td>
<td>0.67 7</td>
<td>0.86 2</td>
<td>0.80 5</td>
</tr>
</tbody>
</table>

From Table 1 above, based on aggregate ranking, six out of all the identified perceived shortfalls in traditional tendering system, are ranked to be severe, they are cost, time wastage, intensive administrative task, labour intensive tasks, lack of security of tender, large storage capacity required to problem of double or triple entry/participation in their order of severity. But based on the organisation type, contractors and consultants ranked lack of security of tender as not severe and this may be due to the fact that they are directly in charge of tender administration generally and if there is any thing of such they will know better, employers’ representative ranked problem of double or triple entry/participation not to be severe. In order to determine the severity of the perceived disadvantages one sample t-test was used to determine if the mean severity of each perceived disadvantage is equal to or greater than 4, it is assumed that a mean of 4 or greater implies a ‘severe’ rating while a mean of below 4 implies a ‘non-severe’ rating. Table 2 shows that results

Table 2: Descriptive Statistics of Shortfalls of Traditional Tendering

<table>
<thead>
<tr>
<th>Disadvantages of Traditional Tendering</th>
<th>N</th>
<th>Mean Rank</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>Mean</th>
<th>t-value</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time wastage</td>
<td>61</td>
<td>4.23</td>
<td>0.762</td>
<td>0.137</td>
<td>1.650</td>
<td>0.109</td>
<td></td>
</tr>
<tr>
<td>Problem of double or triple entry/ participation</td>
<td>61</td>
<td>3.97</td>
<td>0.912</td>
<td>0.164</td>
<td>-0.197</td>
<td>0.845</td>
<td></td>
</tr>
<tr>
<td>Large storage capacity required</td>
<td>61</td>
<td>3.94</td>
<td>0.727</td>
<td>0.131</td>
<td>-0.494</td>
<td>0.625</td>
<td></td>
</tr>
<tr>
<td>Labour intensive tasks</td>
<td>61</td>
<td>3.90</td>
<td>0.700</td>
<td>0.126</td>
<td>-0.769</td>
<td>0.448</td>
<td></td>
</tr>
<tr>
<td>Cost(multiple productions of same information, acquiring and submission of tender due to location etc)</td>
<td>61</td>
<td>3.90</td>
<td>0.944</td>
<td>0.169</td>
<td>-0.571</td>
<td>0.572</td>
<td></td>
</tr>
<tr>
<td>Lack of security of tender</td>
<td>61</td>
<td>3.39</td>
<td>0.667</td>
<td>0.120</td>
<td>-5.115</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

(a) Variable is significant at 0.05 level, (Test Value = 4)
From Table 2, six out of the seven identified disadvantages, have mean ranking of 4 and above (this implies that these six are the severe disadvantages of traditional tendering in Nigeria construction industry. Only 'lack of security of tender' is less than four, and it implies that the problem of 'lack of security of tender' is not a severe disadvantage and this is in agreement with security of tender' is not a severe security of tender' is less than four, and it means highly willing. This is represented in Table 4 below. Furthermore, 22 variables were identified to be factors that could influence the stakeholders willingness to adopt and participate in e-tendering, they were to use a Likert scale of 1-5 means highly willing. This is represented in Table 5 below.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Std.Error</th>
<th>Std Deviation</th>
<th>t-value</th>
<th>Sig (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractors</td>
<td>35</td>
<td>3.00</td>
<td>.234</td>
<td>1.027</td>
<td>-4.123</td>
<td>.001(α)</td>
</tr>
<tr>
<td>Consultants</td>
<td>20</td>
<td>2.70</td>
<td>.300</td>
<td>.949</td>
<td>-4.333</td>
<td>.002(α)</td>
</tr>
<tr>
<td>Employers' Rep</td>
<td>6</td>
<td>2.00</td>
<td>-</td>
<td>0.000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Aggregate</td>
<td>61</td>
<td>2.81</td>
<td>.176</td>
<td>.980</td>
<td>-6.778</td>
<td>.000(α)</td>
</tr>
</tbody>
</table>

(α) Variable is significant at 0.05 level, (Test Value = 4)

The results show that all the stakeholders are dissatisfied with the current traditional tendering system.

4.3 Awareness and current participation in e-tendering

The second objective seeks to evaluate the awareness of the electronic-tendering system by the stakeholders and their current participation in system. The results of the analysis show all the respondents are aware of electronic tendering system and this represent 100%. Also only 38.7% of the respondents already participate in the system why 61.35% have never been involved in system at all.

4.4 Willingness to adopt and participate in e-tendering and the factors that could Influence the willingness of the stakeholders

The third objective seeks to evaluate the factors that could influence the willingness of all stakeholders in construction industry to adopt and participate in e-tendering. The respondents were therefore asked to indicate their willingness to adopt and participate in e-tendering. The results show that 22.6% are willing, 19.4% are very willing, and 58.1% are highly willing to adopt and participate in e-tendering system. A one-sample t-test analysis was also used to test whether the stakeholders are highly willing to participate in e-tendering or not. It is assumed that a mean score of 4 or above on the Likert scale of 1-5 means highly willing. This is represented in Table 4 below. Furthermore, 22 variables were identified to be factors that could influence the stakeholders willingness to adopt and participate in e-tendering, they were to place premium on each variable based on the extent the variables could impact their willingness using a Likert scale of 1-5, where '1' is 'no impact' and '5' is 'very critical impact'. A one-sample t-test analysis was also used to test the impact of each variable on stakeholders' willingness to adopt and participate in e-tendering or not. It is assumed that a mean score of 4 or above on the Likert scale of 1-5 means high impact. This is represented in Table 5 below.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Std.Error</th>
<th>Std Deviation</th>
<th>t-value</th>
<th>Sig (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Willingness to participate in e-tendering</td>
<td>61</td>
<td>4.35</td>
<td>.151</td>
<td>.839</td>
<td>2.356</td>
<td>.025</td>
</tr>
<tr>
<td>Test Value = 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From Table 4, all the stakeholders are willing to adopt and participate in e-tendering. This can be linked with the fact that virtually all the stakeholders are dissatisfied with the current traditional tendering system.

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>Rank</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>Mean</th>
<th>t-value</th>
<th>Sig(2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little or no impartial advice i.e. clarity and simplicity of e-tendering</td>
<td>61</td>
<td>4.45</td>
<td>1</td>
<td>0.568</td>
<td>0.102</td>
<td>4.123</td>
<td>0.001 α</td>
<td></td>
</tr>
<tr>
<td>Authentication</td>
<td>61</td>
<td>4.26</td>
<td>2</td>
<td>0.815</td>
<td>0.146</td>
<td>1.844</td>
<td>0.083</td>
<td></td>
</tr>
<tr>
<td>Performance of internet facility</td>
<td>61</td>
<td>4.1</td>
<td>3</td>
<td>0.944</td>
<td>0.169</td>
<td>2.699</td>
<td>0.015</td>
<td></td>
</tr>
<tr>
<td>Security of tenders</td>
<td>61</td>
<td>4.06</td>
<td>4</td>
<td>1.237</td>
<td>0.222</td>
<td>0.222</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Improved competitiveness</td>
<td>61</td>
<td>4</td>
<td>5</td>
<td>0.894</td>
<td>0.161</td>
<td>-0.766</td>
<td>0.454</td>
<td></td>
</tr>
</tbody>
</table>
Improved business opportunity
Assessing tender and notifying result
Availability / cost of internet facility
efficiently designed websites
Time saving
Authorisation
Internet Threat
Lack of agreed standard
Lack of experience in e-tendering
Cost saving
Lack of in-house skills with relevant knowledge
Operating cost
Improved productivity
Confidentiality
Non readiness of business partners
Adequacy of existing system
Initial capital

From the results of the analysis shown on Table 5, only 15 factors out of 22 are likely to have highest influence on the stakeholders’ willingness to adopt and participate in e-tendering. They are availability/cost of internet facility, performance of internet facility, authentication, authorisation, confidentiality, security of tender, lack of agreed standard, assessing tender and notifying result, internet threat, efficiently designed website, lack of experience in e-tendering, cost saving, time saving, improved competitiveness, and improved business opportunity.

5.0 CONCLUSION AND RECOMMENDATION
Based on the results of the analysis of this study, it can be concluded that the shortfalls in traditional tendering system which are severe ranges from cost, time wastage, intensive administrative task, labour intensive tasks, lack of security of tender, large storage capacity required to problem of double or triple entry/participation in order of severity. The stakeholders in Nigerian construction industry are highly willing to adopt and participate in e-tendering. Furthermore the factors that will have high impact on the willingness of the stakeholders to adopt and participate in e-tendering are: availability/cost of internet facility, performance of internet facility, confidentiality, security of tender, lack of agreed standard, assessing tender and notifying result, internet threat, efficiently designed website, lack of experience in e-tendering, cost saving, time saving, improved competitiveness, and improved business opportunity. It is recommended that various professional organisations should sensitise their members and rise up to the task of enabling the construction industry to overcome the shortfalls in traditional system by the adoption and participation in e-tendering. This can be achieved by making the stakeholders to know the benefits that could be accrued from the transformation of traditional paper-based system of tendering to electronic system of tendering.

REFERENCES
Have we ever wondered how things are made? If we want a chair, we go to a cabinet maker to describe the type of chair we want. But how long would it take to describe the chair if the cabinet matter could not copy a similar chair? How would we describe an article to a manufacturer, living far away if we could not send him a picture of the article? How often are strangers misled because it is difficult to describe in words the places they seek?
The answers to these and similar questions are revealed in the meaning of Technical drawing.

WHAT IS TECHNICAL DRAWING?
Technical drawing is a shorthand ‘language’ which describes by means of drawing and a precisely as possible, whatever has been manufactured or is intended for manufacture (Awojobi 1970). It is a visual medium, a universal graphical language and an effective means of communication among designers, constructors, manufacturers/producers and service providers.

WHAT ABOUT FINE ART AND PHOTOGRAPHY?
Unlike Technical drawing, Fine Art started with visual objects and not artificial articles. Such drawings and paintings of landscapes, plant, animal and human life are usually full of colour and shading and they reflect the artist’s appreciation and impression of natural beauty. Even when an artist, perhaps as an advertising agent, is required to draw manufactured articles, he employs colour and shading among other materials and techniques. Photography, on the other hand, presents the picture of an object. Its main advantage is that everyone can immediately recognize the object. However, it can only be perceived when the object already exists, no architect can take photographs of the plans in his mind for a proposed building. Neither can an engineer take photographs of the design in his mind for a proposed new bridge.

Photography may therefore presents little help with articles intended for manufacture.

A disadvantage of both Fine Art and photography is that they cannot show with precision such details as the true sizes, and shapes of different parts of an object and, therefore cannot be fully reliable for the purposes of accurate manufacture, production or construction.

Technical drawing uses straight lines and smooth curves to provide all the details needed to describe completely an artificial object hence it is seen as the correct language of assemblage, production and construction.

THE IMPORTANCE OF TECHNICAL DRAWING
When a word is written, it gives limited descriptions. The works of the artists or photographers would provide pictorial representation but cannot totally serve engineering purposes because engineering descriptions have dimensions, specifications, sequence and other directions for production. Machines and structures therefore have to be graphically represented and designed. Technical drawing is seen as the very foundation of all engineering courses. It is a living language which everyone connected with any kind of practical production must master if he is to be classed as technically literate and if his manual dexterity as a technician or craftsman is to be linked up successfully with the inventive genius of the designers.

Technical drawing is a visual medium best suitable for conveying production information. By putting technical drawing to many uses, industry functions smoothly and supplies us with the goods we need thereby steadily raising our standard of living. Automobiles, jet aircrafts, washing machines, cookers and many other things which we use everyday originate from the drawing board. Machines which investors first described in mechanical drawing later provide us with food, clothing, and information.

City engineers design, draw and construct our roads, highways, bridges, railways and airports. Electronic engineers design our television, cellular phone and computer system that now connect us to the outside world, while architects design and draw plans for the building where we live, school, work, worship and relax.

Technical drawing has contributed immensely to the economic and technological development of many nations such as Russia, Germany, Canada, U.S.A. and Japan just as the manufacturing, construction and service industries in Nigeria are not left out. However, future expansion of these industries in Nigeria depend on the skills of the employees in interpreting drawings and other allied technical details.

Worried and distressed about the poor understanding of technical drawing, Awojobi (1970) recommends that a basic knowledge of technical drawing is desirable for everyone passing through secondary school. The environment in which this important, all embracing and indispensable school subject thrives is expected to be surrounded by competent teachers, adequate facilities and willing to learn scholars.

THE TEACHER
The Teacher is the first factor of production in any educational enterprise. He is the base and leader of such enterprise and as a result, he must be adequately grounded in the elements, principles and practices involved therein. The success or failure of teaching-learning process depends on the quality of the teacher. Anyakoha and Oranu (1992) believes that qualified technical teachers are becoming very scarce in training institutions. The reason for this is not farfetched. While remunerations in the private sector have remained partially satisfactory in the face of high inflationary rates, remunerations in the educational sector have been very static, thus training institutions compete unfavorably with industry for the best available manpower.

TRAINING FACILITIES
Technological development advances daily in some developed countries such that a new piece of equipment becomes obsolete in a matter of months. The industrial sector, being profit-oriented is always on the look out for technological advances that could increase their profit margin in less time with greater labour efficiency. In Nigeria today, training institutions, as is characteristic of depressed economies are hardly able to renew their facilities to keep pace with...
technological progress. The products of these institutions (graduates) enter the world of work only to discover that the equipment with which they were trained have been modified.

Learning is a product of effective teaching. Effective vocation and technical training can only be given when the training jobs are carried out in the same way with the same operations, the same tool and the same machines as in the occupation itself. An achievement of high level/quality performance in teaching-learning system depends mainly on the adequacy/appropriateness of training facilities and equipment. Ivowi (1983) cautioned that Nigeria’s desire for technological take-off may continue to elude the nation until equipment, laboratories and consumables are adequately available in the schools.

INTEREST AND ATTITUDES OF STUDENTS

Special attitudes and interests are required or specific technical training. An individual going for a specific vocation must have the aptitude required for that training.

Interest can be defined as a movie or a basis for choice between competing demands for attention. Most students perform poorly in certain academic fields and school subjects, because they lack the interest, aptitude and attitude peculiar and special to those subjects.

Cantril (2004) defines attitude as a more or less permanently enduring state of readiness of mental organisation, which predisposes an individual to react in a characteristic way to object or situation, which it is related.

The study of technical drawing requires students who have genuine desire, favourable attitude and readiness to acquire the skill. Students do better in subjects in which they are most interests and neglect those in which they have no interest. A technical drawing teacher is faced with a challenge of making both interesting and intelligible the representation of three-dimensional objects in two dimensions. This pedagogy is therefore imparted on willing scholars.

RESULT AND DISCUSSION

Results obtained from the analysis of the data collected for the study are presented and discussed as follows.

Table 1: Distribution of Public Senior Secondary Schools (SSS) and Technical Drawing Teachers in Lagos State

<table>
<thead>
<tr>
<th>Educational Districts</th>
<th>Local Government Area</th>
<th>No. of SSS (%)</th>
<th>No of Technical Drawing Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alimosho, Agege, Ifako/Ijaye</td>
<td>36(12)</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Ikorodu, Kosofe, Shomolu</td>
<td>48(16)</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Ibeju-Lekki, Eti-Osa, Lagos Island</td>
<td>36(12)</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Surulere, Lagos Mainland, Apapa</td>
<td>58(20)</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Badagry, Ojo, Amuwo/Odofin, Ajeromi/Ifeodun</td>
<td>58(20)</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>Ikeja, Mushin, Oshodi/Isolo</td>
<td>60(20)</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>296(100)</td>
<td>27</td>
</tr>
</tbody>
</table>

Result in Table 1 above indicate that there is a high concentration of public Senior Secondary Schools (SSS) in educational districts 6,4 and 5 accounting for about 69% of all the public SSS in Lagos State. It also reveals that there are 27 technical drawing teachers for 296 public schools in the state. This implies that about 90% of the public SSS in Lagos State do not have technical drawing teachers and consequently do not offer the subject at the Senior Secondary School Certificate Examination (SSSCE). From the foregoing, it is obvious that there is a serious dearth of technical drawing teachers in the state Senior Secondary Schools. This explains why technical drawing is not as popular as other subjects like English Language and Mathematics amongst secondary school students.
result is corroborated by Ajeylemi (1990) who alerted that if there is shortage of manpower in all sectors of the Nigeria economy, there is a more serious deficiency of manpower, in terms of numbers and quality in the technical sector of the economy.

Table 2: Academic and Professional Qualifications of Technical Drawing Teachers in Lagos State Public Senior Secondary Schools

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Frequency (%)</th>
<th>Registration with TRC (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N.C.E. (Tech) only</td>
<td>11(41)</td>
<td>11(41)</td>
</tr>
<tr>
<td>N.C.E. Tech with B.Sc voc/Tech.edu.</td>
<td>8(30)</td>
<td>8(30)</td>
</tr>
<tr>
<td>B.Sc with PGDE</td>
<td>3(11)</td>
<td>3(11)</td>
</tr>
<tr>
<td>HND with TTC</td>
<td>3(11)</td>
<td>0</td>
</tr>
<tr>
<td>B.Sc only</td>
<td>2(7)</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>27(100)</td>
<td>22(82)</td>
</tr>
</tbody>
</table>

Key: TRC = Teachers’ Registration Council

Results shown in table 2 above demonstrate that most (93%) of the technical drawing teachers in Lagos State public Senior Secondary Schools have the required teaching qualifications hence are qualified to teach the subject. The National Policy on Education (2004) recommends the Nigerian certificate in Educational (NCE) as the minimum teaching qualification in Nigerian schools. Technical drawing Teachers should be masters in the field who have gone through the mill and acquired equipment, habit and skills, the methodology and principles through undergoing a course of study in the pedagogy. Furthermore, majority, (82%) of the teachers are registered with the Teachers’ Registration Council (TRC). This further confirms that they possess professional knowledge and are able skill transmitters. In view of the rapid technological development, registered professionals must also undergo continued professional development programmes by attending conferences, lectures, seminars, and institutional courses, as well as publishing papers to update their professional knowledge.

Table 3: Technical drawing checklist rating for Lagos State Public Senior Secondary Schools

<table>
<thead>
<tr>
<th>Technical Drawing Checklist</th>
<th>LNSG Educational District 1</th>
<th>LNSG Educational District 2</th>
<th>LNSG Educational District 3</th>
<th>LNSG Educational District 4</th>
<th>LNSG Educational District 5</th>
<th>LNSG Educational District 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Technical Drawing studio</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2 Classroom</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>3 Drawing sheet/paper</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4 Tee-square</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5 Set-square</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6 Drawing Board</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>7 Drawing set</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8 Protractor</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>9 Pair of compasses</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>10 Pair of Dividers</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>11 Models, pictures, illustrations</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>12 Scale rule</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>13 Template</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>14 Flexible curve</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>15 French curve</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>16 Overhead Projector</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>17 Slide projector</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>18 Television set Computer set (monitor, CPU)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>19 Printer, UPS, Keyboard/ Software packages (AutoCAD)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>20 2008)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>21 DVD player</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>22 Compact Disk (VCD, DVD)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>23 Pencils</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>24 Technical Drawing textbooks</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
The results in table 3 are illuminating. All the state schools have classrooms, which are adequate for the few number of students offering the subject. But conventional classrooms are not conducive for effective teaching and learning of technical drawing.

None of the public schools has a standard technical drawing studio. The modern technical drawing facilities such as computer set, relevant software packages and other audio visual materials which stimulate learning are conspicuously absent. Audio visual materials such as models, pictures and illustrations add variety to teaching methods. They make learning more meaningful, easy to understand and more permanent. Audio visual helps in developing manual skills and appeal to various senses of the learner. But ironically these items are not available in our secondary schools.

Technical drawing is a practical subject. For a result-oriented teaching-learning the teacher is expected to explain, demonstrate and actually perform every learning task while the students listen, watch, observe, ask and answer questions, and assimilate with keen interest. Each student is expected to replicate every step taken by the teacher.

RECOMMENDATION
According to Callaham (1972), our schools are in a sense factories in which the raw materials ‘students’ are to be shaped and fashioned into products to meet the various demands of life. The specifications for manufacturing come from the demand of the 21st century civilization. It is the business of the school to build its pupils according to the specifications.

The ability of Nigeria to march towards the 21st century rests on the degree of development of her industries, and development can only be oriented if the required manpower is available. Students should be trained with materials, tools, equipment, processes and in the replica of the work milieu of the eventual employment.

There is need to improve and bring up-to-date the technical competence and versatility of technical teachers. A teacher who has not left his studio, workshop or laboratory for 5 years may already be on his way to becoming a walking anachronism.

Technical teacher should be permitted to teach for more than 5 years without a refresher course or equivalent experience. Teachers who keep abreast of professional development by attending in-service courses, seminars and conferences are in a better position to translate the content of the curriculum into learning experiences.

A bold and courageous review of technical teachers’ remuneration should be undertaken to forestall further drift of the best of technical manpower resources to the industrial and business sectors. In the light of the fact that every citizen of Nigeria should be equipped with the necessary skills to contribute effectively to the economic development of our nation, this study strongly recommends that technical drawing should be made a compulsory subject in our senior secondary schools.

CONCLUSION
The world today is witnessing an accelerated growth in technology also call for considerable technical know-how and training. Mechanics for example are required to possess some technical knowledge in addition to manual skills. Their work demands an acquaintance with both the theory and construction of automobiles of various models. Similarly it is in the nations interest if commercial drivers are well educated to understand the rules and ethics of the profession. Modern construction requires more plumbers, painters, blocklayers, carpenters, electricians, metal fabricators, tilers, welders, qualified ventilation and air-conditioning specialists, and other vital personnel in the building services industry. After all, a well-built house pre-
URBANIZATION IN LAGOS: DEVELOPMENT OR DEGENERATION?
A STUDY INTO URBAN TRANSPORT SITUATION ALONG OSHODI-SANGO OTA TRANSPORT CORRIDOR.

OKE J. O.

&

P. O FAGBOHUN
Department of Urban and Regional planning
Yaba College of Technology.

ABSTRACT

Nigerian cities, especially Lagos over the years has been witnessing sporadic increase in population increase and the incidence of urbanization. The development has resulted in some benefits as manifested in housing development, industrial development, employment opportunities, as well as good source of revenue generation for the government. With this numerous benefits, there are some problems that are associated with urbanization, which include traffic and transport problems, overcrowding, the incidence of slums, high crime rate, waste management and housing problems just to mention a few. The paper identifies transport as a key pillar on which urban socio-economic activities rest upon, and becomes the main subject of this study. The research work identifies that transport problem in Lagos is very alarming, and has significantly affected socio-economic activities, which include long journey hour, overloading, loss of lives and properties, tiredness and psychological problems just to mention a few. As a result of these problems, there tends to be low productivity among the urban workers, low level of social interaction among the metropolitan dwellers. The consequence of this is low social and economic returns to both private and public investment companies. It is against this background that some suggestion is made for the transport improvement programme, which includes mass transit programme, construction of metro line among other things.

1.0 INTRODUCTION

Urbanization is a worldwide phenomenon, except that its history and process vividly vary from one region to another. To Industrialized Nations, it is the history of industrialization i.e. Industrial Revolution. To the Developing World, particularly the African sub regions, it is the history of colonization and colonialism i.e. the history of modern political and economic development. Two major incidences usually accompany urbanization of any society. They are benefits and the losses. The fact is that no coin has one side, and that coin with one side is an illegal tender. There is no nation in any part of the world that has been undergoing urbanization without experiencing the two incidences. What makes the difference is how far the affected nation has learnt from its personal experience and the one read from the literature of other nations to build a well committed and articulated government to take a bull by the horn in order to address its urbanization problems.

Urbanization as a process of city development and urban way of life supposed to bring more benefits to the city inhabitants, as well as the government. But the situation is not so in Nigeria. The problems are becoming overwhelming, and a shadow, which the government from regime to regime have been pursuing without any meaningful achievement. Both the development and the degenerative aspects of urbanization are of three categories. These may be social, economic or environment benefits or problems. Since Urban and Regional Planners are preoccupied with problem solving, just like the Geographers and the Sociologists, urbanization problems have become an interesting subject of research and debate. The belief is that the level of urbanization problems in most of the Third World cities is outweighing the benefits, and something meaningful has to be done to address the malady.

However, the main purpose of this study is to examine the problems posed by urbanization on the city functionality, with a view to identifying policy measure to address the problems. Since the problems of urbanization are numerous, transport problem was identified as one of the major problems that accompany incidence, and becomes the main focus of this research work.

1.2 Scope of the Study

The focus of this research work is to examine the problems that are associated with urbanization. Since urbanization problems are numerous, transport problem is identified as the key issue of this research, where Oshodi-Sango Ota traffic route on the Lagos-Abeokuta Expressway was selected as a case study for primary data collection. The reason is that other roads in the state possessed similar characteristics of this expressway.

1.3 Research Methodology

Both the empirical and conceptual methods were used to conduct this research work. Since the major aim of the study is to examine transport problem as one of the urbanization problems in Lagos. Oshodi Sango Ota route on the Lagos-Abeokuta Expressway was selected as case study. Although, examples were drawn from other routes, but primary data collection was carried out on this route. This was analyzed, where conclusion was drawn based on the research findings.

2.0 BACKGROUND OF LAGOS TRANSPORT PROBLEM

Lagos is the most urbanized area in Nigeria, where its rapid urbanization started as far back as 1800, particularly, when it became the headquarters of the colonial government in 1861. It grew from being the federal capital territory to become a full fledged state in 1967, when a substantial proportion of the old Western
Region became its major component parts. Odumosu (1998) identifies that before Lagos State was created the component parts that presently made of it were belonged to different administrative units. These component parts include Mushin, Ifepe, Ikeja, Agege, Alimosho, Ikorodu, Epe, Badagry, Ipaja, and Ayobo. During this period, it had become the commercial and administrative centre for the country. Because of this, the government policy was always positively favourable for the metropolis. Its population rose from 1.6 million in 1972 to 5.7 million in 1991, and this has risen to 9.014 million in 2006.

The increasing need for mobility in Lagos started significantly since the colonial period, reflected in its morphology and population composition (Bolade, 1993). It became prominent, when the metropolis became the only first class town in 1919, which conferred new roles on it. These new roles necessitated greater movement of both goods and people. Being a pre-colonial settlement, the major transport problems were inadequate vehicular transport, and road transport infrastructure problem, such as narrow road, lack of adequate motor park, garage and bus stop.

Because of these road transport problems, Lagos which had grown into twin cities with Lagos Island and Lagos Mainland was planned in 1899 with tramway (Ikya, 1993). The tramway connected the twin cities, which were spatially inter-relate and inter-dependent by tramway at Iddo Terminal in the Mainland with the hope to improve the functional inter-relationship between the two areas. The tramway, which was completed in 1902 was used for both passengers and goods, had two vehicles, and was increased between the inception period and 1910 to four.

However, by 1913, the operations of tramway discontinued, because of what Mabogunje (1985) describes as tight fisted policy of the government with regard to provision of new rolling stock that could make the operations of tramway economically viable. The tramway track gauge was 2ft 6ins, instead of 3ft 6ins that was obtainable in the UK by then would have no doubt considerably increased the revenue drive and could have run over the rail line to Ebute-Metta, and branched out into streets again. During this period, the colonial government conceived the plan to construct a min-metro type of mass transit to address the urban mobility that perpetuated in Lagos, but the idea was not actualized, instead, the government concentrated its effort on road transport development.

As a result of the government inability to fund the tramway, there was increase in motor transport development. By 1907, the literature says that Lagos only had two motors cars, some bicycles and rickshaws for intra-city movement. By 1937, the number of motor vehicles had increased to 7,507; the number of bicycles had risen to 7,603, while the rickshaws and carts were 28 all together.

However, the transport problem in the metropolis has been showing a very dangerous signal as far back as 1940s. For instance, by 1946, according to Mabogunje (1985) Lagos had started experiencing traffic problem to the extent that the major streets in Lagos Island had been converted to one-way, while traffic signs were placed at the strategic places as a means to control traffic.

In order to cushion the transport problems, in 1915, the operation of the public transport commenced in Lagos, which was the first of its kind in Nigeria. The public transport, which was owned by an individual commenced operation with two buses. By 1929, Zarpas Transport Company began its own transport operation, when the buses were plying Obalende, Apapa and Ibi-Oro.

In 1958, the Lagos Municipal Authority bought the private own public transport, and formed the first of its kind the Municipal Public Transport Service in Nigeria. The bus transit, which serviced the Lagos and its sprawls, was able to convey an average of 1000,000 passengers per day Filani and Abumere (1993). In the 1970s, Lagos State established its own road transport service outfit called Lagos State Transport Corporation (LSTC). The corporation provided passengers bus transport service within the state. The Federal Military Government in 1987 introduced Federal Assisted Mass Transit and Labour City Transport. LSTC ceased to operate around the period the new mass transit was introduced. Bus rapid transit (BRT) is an innovation in the Lagos mass transit. The BRT policy execution was under processing during this research proposes to recognize private and public partnership in its transport service provision. Presently, over 75% of the road mass transit service in the state is provided by the private sector.

In the area of road infrastructure development, there is tremendous increase in the road construction. Because of inability of the government to provide rail mass transit as alternative to road transport, there has been concentration of effort on road development by all tiers of government. Carter Bridge was constructed in early 1960s, and was the first major bridge to link the twin cities of Mainland and Island. It replaced the old steel bridge constructed during the colonial period. Carter Bridge was constructed across the lagoon at Iddo in the Mainland to provide access from the Island to such areas as Ebute-Metta, Ikorodu area through Ikorodu-Yaba Road, and Yaba, through Herbert Macaulay way and Murtaala Mohammed way. Badagry and Amuwo-Odofin Alimosho and Mushin-Isolo areas could then gain access to Carter Bridge through Agege-Ojuelegba Road via Western Avenue.

The second bridge which linked the Lagos Twin Cities is Eko Bridge. It was constructed in late 1970s, during the oil boom as alternative access to the old Carter Bridge. It was during this period some flying over head bridges were constructed to ease the traffic conflict, and
also conformation with the morphology of the metropolis.

In order to ease congestion on the two old bridges linking the Lagos Twin Cities, the Federal Government in collaboration with the Lagos State commenced the construction of Third Mainland Bridge. It was completed in 1991, linking the two areas at Bariga. The bridge, which is the longest one in the state, at completion brought a significant relief to traffic bottleneck, except that it shifted the bottleneck to Bariga and Ojota end of the road.

There are many roads in both Mainland and Island. On the Island, there are King Road and express bypass road around the Island. Other includes Marina, Broad Street, Nnamidi Azechwe Street, Ereko, Balogun, Martins, Bangbose-Lewis and Igbosere Roads. Most of these roads have east-west direction. There are some major roads linking the Island with such places like Epe and Ajah areas. On the Mainland, there are such roads like Apapa-Ikeja Expressway, Badagry Expressway, Abeokuta-Lagos Expressway and Muritala Mohammed Airport Road, Bank Anthony Way linking Lagos-Ikorodu Expressway and Lagos-Abeokuta Expressway together at Maryland and at Muritala Muhammad Local Airport at Ikeja respectively. However, Odewunmi (1999) has researched into road transport and infrastructures in Lagos State.

3.0 THE PRESENT TRANSPORT PROBLEM SITUATION IN LAGOS

3.1 Background of Lagos-Abeokuta Expressway

3.2 Types of People Living In Sango-Ota and Agbado Area.

Higher proportions of the Lagos workers that reside in Agbado and Sango-Ota area were both government staff and private sector workers. They comprised both the junior and senior staff, and both made use of the public transport vehicles. The reasons why they decided to be residing in this area are as indicated in Table 1

<table>
<thead>
<tr>
<th>Reason</th>
<th>No. Of Commuter</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Accommodation Cost</td>
<td>23</td>
<td>42</td>
</tr>
<tr>
<td>B. Accommodation Scarcity</td>
<td>31</td>
<td>22</td>
</tr>
<tr>
<td>C. Living In Non-Rented Accommodation</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>D. Personal Interest In Ling In The Area</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>E. For Reasons A And B.</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Interview with the Commuters (2007)

3.3 Characteristics of Road Transport in Lagos

Vehicles on Lagos roads are of two types: private and commercial. The vehicles used for commercial purposes are also of two groups. The first group is passengers’ vehicles, which includes taxi cabs and buses of different size and category, while the second group comprises those industrial vehicles, which may be passengers or industrial haulage vehicles.

On the other hand, two groups of road users can be conspicuously noticed. They are both legitimate users and illegitimately users of roads infrastructure and facilities. Some of them supply transport services in an illegal way. The first group make use of various types of categories of vehicles, which include bicycles, motorcycles, tricycles, assorted motor cars, mini-buses, articulated and non articulated truck trailers, lorries, pick-up, and other non conventional motors used for conveyance of goods and services. These types of vehicles are used for trade, commerce and industrial purposes, while the first five types are used for both private individual personal mobility and for trade, commerce and industrial activities. Other legitimate road users are the pedestrians, and the cart and wheel barrow pushers. The second group is illegitimate roads users, comprises the street traders and hawkers. It also comprises the beggars and destitute, touts, abandoned damaged vehicles and other physical objects, shops and kiosks built on the road setback or on reserved area.

The activities of illegitimate road users predominantly take on the road in the urbanized area of Lagos State. The attitudes create conflicts, tension and insecurity to both road and non road users. There is incompatibility in the use of road infrastructure and facilities. Street traders and hawkers in their activities obstruct smooth vehicular movement. They have taken over large number of bus stops spaces, and occupied between the range of 40% and 65% of the road right of way in such locations as Cappa via Oshodi-Bolade area, PWD -Ile Zik via, Ikeja area, and Onilekere-Iyana Dopemu (Under Bridge). These traffic conflict points, their approximated lengths and the travel hours are as shown in Table 2.

3.4 Causes of Traffic Problems on Lagos-Abeokuta Expressway

The study, through field survey, interview and the study of literature identified some factors affecting free flow of both pedestrian and vehicular movement in Oshodi-Sango Ota end of Lagos-Abeokuta Expressway.

- The first prominent one is the activities of street traders and illegal market operators who have occupied higher proportion of the expressway as in indicated in Table 2 to market place.
- The activities of the passenger vehicle operators were not professional and very barbaric. In disobeying the traffic rules, they have turned the main stream of the road to parking space and bus stops.
The consequence of this is commotion and traffic conflict at the points as shown in Table 2.

- The condition of the expressway was not appealing, due to uncountable number of potholes. On the other hand, there was poor design of the intersections, which made traffic flow difficult when approaching the location. It should be noted that all the traffic conflict points along Lagos-Abeokuta Expressway as indicated in Table 1 are road intersections.

### Table 2: Traffic Conflict Points along Oshodi-Agbado Portion of Lagos-Abeokuta Expressway

<table>
<thead>
<tr>
<th>Location/Area</th>
<th>Causes of Conflict</th>
<th>Estimated Length (km)</th>
<th>Travel Hour (Min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caso-Agbado</td>
<td>Activities of unions, drivers, illegal u-turning, road condition, interchanging problem to Agbado and Kollington, AIT</td>
<td>1</td>
<td>10-20</td>
</tr>
<tr>
<td>Moshalasi-Alakuko</td>
<td>Activities of unions, drivers, road condition, illegal u-turning, interchanging problem to Alakuko</td>
<td>1.5</td>
<td>10-13</td>
</tr>
<tr>
<td>Ajegunle-Tollgate</td>
<td>Activities of drivers, police checkpoint, road condition, interchanging problem to Alakuko and Ajegunle, illegal u-turning, tollgate u-turning</td>
<td>2</td>
<td>10-35</td>
</tr>
</tbody>
</table>

Source: Field Survey and Interview (2007)

- Urban environment vividly has its own culture and tradition, which the inhabitants must imbibe. The absence of good urban culture would make urban system collapse. However, urban culture goes beyond adherence to rules and regulation to maintenance culture, doing things according to the rule of the game and orderliness. Because of the absence of this culture among the Lagosians, there was poor traffic behaviour. The commuters were always in a hurry. Instead of forming queue at the bus stops or garages they were use to struggling to enter the buses.

- One of the efficient methods of ensuring free flow of traffic is strict enforcement of traffic law and other related laws, specifically, the law prohibiting street trading and illegal market operation. The enforcement of such laws was lacking in Lagos, particularly, along, along Lagos Abeokuta Expressway.

Generally in Lagos State, the government has not been able to prepare a specific policy plan to tackle the pathetic urban transport problems. Some of the policy measures applied in the metropolis in the recent past are impromptu, a short term approach, with little investigation on the transport problems, and were not capable of addressing the present and foreseeable future situation.

The way and the manner the total environment is planned would have a significant impact on the urban system, where transport is one of the important elements. Physical planning in Lagos urbanized area suffered a great set back. Lagos-Abeokuta Expressway has been encroached by illegal structures occupied by the traders and the artisans.
The condition of a large number of passenger vehicles was in poor and ugly conditions. The traffic counts conducted along Lagos-Abeokuta Expressway showed that:

- At every 10 molie buses counted, 9 or 8 of them were in dilapidated condition,
- At every 10 mass transit buses counted, 8 or 7 were in worst condition,
- While at every 10 combe buses of 14 or 18 passenger vehicle counted, 7 or 6 were not road worthy.
- Over 80% of these buses were imported fairly used vehicles, their age ranged between 10 to 15 years before they were imported, and they have been on the Lagos roads for between 5 and 10 years.
- Similarly, there were inadequate road infrastructures and facilities. From Oshodi to Sango end it was only two pedestrian cross bridges that were available. These were at Oshodi and Ikeja, and there was no street light and pedestrian way on Oshodi and Ikeja, and there was no road infrastructures and facilities by the vehicles operators, and street traders. The road were characterized by reckless driving, over speeding, rough driving overtaking, illegal one-way driving, incompatibility in the use of vehicles, such as using non passenger vehicles to carry passengers.

The traffic took similar case and shifted to Oshodi-Sango Ota side in the evening time. However, the traffic was always lighter in later night and early morning at both ends, as explained in the travel time as indicated in Table 3.

### Table 3: Approximated Travel Time from Sango-Ota End to Oshodi at Different Period

<table>
<thead>
<tr>
<th>Period</th>
<th>Approximated Travel Hour In Minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.30-5:30</td>
<td>45min-1hr</td>
</tr>
<tr>
<td>5.30-6:30</td>
<td>50min-1hr20min</td>
</tr>
<tr>
<td>6:30-7:30</td>
<td>1hr30min-1hr40min</td>
</tr>
<tr>
<td>7:30-8:30</td>
<td>1hr40min-2hr</td>
</tr>
<tr>
<td>8:30-9:30</td>
<td>1hr30min-1hr40min</td>
</tr>
<tr>
<td>9:30-10:30</td>
<td>1hr20min-1hr30min</td>
</tr>
<tr>
<td>10:30-12:00</td>
<td>1hr1hr20min</td>
</tr>
<tr>
<td>12:00-2:00</td>
<td>1hr20min-1hr30min</td>
</tr>
<tr>
<td>3:00-4:00</td>
<td>1hr1hr20min</td>
</tr>
<tr>
<td>4:00-5:00</td>
<td>1hr20min</td>
</tr>
<tr>
<td>5:00-6:00</td>
<td>1hr20min</td>
</tr>
<tr>
<td>6:00-7:00</td>
<td>50min-1hr</td>
</tr>
<tr>
<td>7:00-9:00</td>
<td>45min-1hr</td>
</tr>
<tr>
<td>10:00-12:00</td>
<td>45min-50min</td>
</tr>
</tbody>
</table>

Source: Field Survey and Interview With The Commuters (2007)

Other activities that have significant impact on vehicular movement include conversion of roads to waste disposal centres. This has resulted in road encroachment. There was abuse in the use of transport infrastructures and facilities by the vehicles operators, and street traders. The road were characterized by reckless driving, over speeding, rough driving overtaking, illegal one-way driving, incompatibility in the use of vehicles, such as using non passenger vehicles to carry passengers.

3.5 Problems Confronting the Commuters in the Use of Road Transport along Lagos-Abeokuta Expressway (Oshodi-Sango Ota Ends)

Oshodi-Sango Ota ends of Lagos-Abeokuta Expressway have two major traffic pick hours. In the morning, between 5am and 9:30am, there was always uneasy traffic flow from Sango Ota-Agbado ends to Oshodi-Mushin ends. In the evening period between 5pm and 9pm, the traffic situation was just like what was obtainable in the morning. The problem was almost the same throughout the week except on Sunday and became tougher on Friday evening period (4pm up ward). This is because Lagos during the week is a working place to some people, and would like to travel outside Lagos, especially, last and first week of the month.

However, the pick hours, both in the morning and in the evening periods were not accompanied with uneasy traffic movement alone, but with high cost of traffic fare, security problems just to mention a few. These are discussed here, based on field study and the commuter's perception during the interview.

- Long hour waiting at bus stops for passenger's vehicles.
- Long journey hour to and from work, as indicated in Table 4.
- Tiredness at both work and in the evening time at home.
- Boring uninteresting travel hour, as a result of long journey hour.
- Low performance at work with low economic returns.
- Low social interaction during the weekend, resulting from life situation on the road during the week.
- Fear of rubbery and attack by miscreants, the tugs popularly known as Area Boys.
- Fear of road accidents.
- Unstable and unreasonable transport cost, which was a response to pick hour periods, as indicated in Tables 4 and 5.
- Commuters were always packed like sardine in the bus. The vehicles were used to overloading.
Table 4: Workers Departure Period to Work in the Morning Hours

<table>
<thead>
<tr>
<th>Departure Hour</th>
<th>No.</th>
<th>%</th>
<th>Fare Cost($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:30-6:30</td>
<td>19</td>
<td>38</td>
<td>80-120</td>
</tr>
<tr>
<td>6:30-7:30</td>
<td>10</td>
<td>20</td>
<td>150-200</td>
</tr>
<tr>
<td>7:30-8:30</td>
<td>4</td>
<td>8</td>
<td>150-250</td>
</tr>
<tr>
<td>8:30-9:30</td>
<td>2</td>
<td>4</td>
<td>150-250</td>
</tr>
<tr>
<td>9:30-10:30</td>
<td>1</td>
<td>2</td>
<td>100-200</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Source: Interview with the Commuters (2007)

The variation in the transport fare was whether the passenger vehicle is molue, federal assisted mass transit or combi bus. It was also depended on passenger population waiting for bus, which varied from minute to minute.

Table 5: Workers Arrival Periods from Work from Oshodi End

<table>
<thead>
<tr>
<th>Arrival Hour</th>
<th>No.</th>
<th>%</th>
<th>Fare Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6</td>
<td>3</td>
<td>6</td>
<td>50-80</td>
</tr>
<tr>
<td>6-7</td>
<td>4</td>
<td>6</td>
<td>80-150</td>
</tr>
<tr>
<td>7-8</td>
<td>11</td>
<td>22</td>
<td>150-250</td>
</tr>
<tr>
<td>8-9</td>
<td>5</td>
<td>30</td>
<td>150-200</td>
</tr>
<tr>
<td>9-10</td>
<td>9</td>
<td>18</td>
<td>150-200</td>
</tr>
<tr>
<td>10-11</td>
<td>8</td>
<td>16</td>
<td>150-179</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Source: Interview with the Commuters (2007)

Those workers that came home lately between 9pm and 11pm were those that left home early between 4:30am and 5:30am, and worked in such places like Lagos island, Apapa, Victoria Island and Ikorodu.

However, the problems confronting the commuters as discussed above have something to do with security of life and time, and scarce economic opportunities. The problems of this nature are interwoven. Time factor is very important to an individual, a firm or a nation. Chapman et al (2003) identify that the loss which a country made per day as a result of urban transport problem is very high. In Auckland for instance, a research indicated that the externality costs associated with traffic congestion and time delay in 1997 alone was 755 million dollars, and exceeded 1 billion in 2003. Traffic delay to urban dwellers reduces fulfillment of commitment; it reduces efficiency of labour, and retards concentration, focus and assimilation, either at work or at study. Interview with some students of higher institutions in Lagos indicated that at every 6 late comers to class lectures 3 to 4 were because of traffic delay, 1 to 2 were because of tiredness that are associated with the previous day journey to and from schools. Considering the peculiar nature of transport problem in Lagos, as a typical Third World city, the economic loss may be more than double of the Auckland case.

5.0 Conclusion and Recommendation

The present transport problems in the metropolis have posed more danger on urban security, particularly on life and property, limited time and economy. However, the level of the problem posed by lower level of free flow of transport on urban socio-economic development in the state has reached an alarming stage, in such a way that economic and life propensity is declining in the face of precious time insecurity. The reason is that as longer hour is wasted in traffic is the level of economic development is declining. Similarly, road transport accidents increase urban death rate, and lower life expectancy.

Similarly, the strategies and approach adopted by the government are not capable of arresting these precarious problems. This is because the government policies over the year are not based on a specific and on in-depth investigation; rather they are just key programmes. Whereas, key programmes should be based on a specific policy plan, i.e. transport development plan, which Lagos State does not have, except its laissez-faire approach. That is why the government efforts, instead of ameliorating the problems, other way round are the consequence. It is in view of this scenario some suggestions are made here. These measures if taken should be capable of arresting the problems posed by the road transport on urban socio-economic development.

5.1 Comprehensive Development Policy

The paper has discovered that the present government strategies employed to deal with the problem of road transport in Lagos State are not based on a specific investigation or a well prepared plan, and as such can not tackle the problems holistically. In view of this, it is suggested that a comprehensive development plan should be prepared, and should be based on a thorough investigation on the existing situation. However, the plan should be able to identify such institutional measures to arrest the problem of management, maintenance, rehabilitation and provision of transport infrastructures, facilities and services in a long term way. The plan would now become a guide for the government and its agencies in finding solution to the transport problems ravaging the metropolis. The comprehensive plan should be able to find alternative means of mass transport to Agbado-Sango Ota corridor. It is recommended that:

- The existing rail transport infrastructures should be improved, in order to make the rail system perform to meet up with the demand and the present needs.
The railway should be reconstructed to standard gauge, and should be dualized.

- The plan should be prepared in a way that would guide road transport development.
- All major roads in the metropolis should be provided with adequate facilities, especially pedestrian bridges, pedestrian walkway, bus-stops and street light.

5.2 Establishment of a Specialized Ministry

Because of pathetic situation and peculiar nature of transport in the metropolis, there is a need to create a specific ministry to deal with these problems. This ministry should be made capable to initiate and execute policy programmes on such matters that relate to transport. Under this ministry, there should be the establishment of important departments to facilitate the execution of the ministry policies. The following departments are hereby suggested:

- Urban Road Transport
- Metropolitan Rail Transport
- Metropolitan Inland Waterways
- Urban Transport Research and Statistics
- Works and Services
- Traffic Control and Management
- Traffic Behaviour and Attitudinal Change

These departments should be equipped with adequate number of qualified personnel, working instruments and capital, which would enable them carry out their assignment.

5.3 Introduction of a Standard for Measuring The Quality of Transport Infrastructure, Facilities and Services

As it has been discussed in this paper, the infrastructure and its facilities including the services that come out of them are below an acceptable standard. These infrastructures and facilities, such as roads, rail track, bus stops, garages, and pedestrian bridges have to be upgraded to meet the existing required standard and need of traffic demand. Similarly, the vehicles used for urban transit, particularly buses should be gauged as a standard that is both locally and internationally acceptable. This is necessary because higher proportion of these buses on Lagos roads is not desirable in terms of number, size and condition. Therefore, they can not take care of transport demand, and provide the quality of transport needed by the Lagosians.

5.4 Establishment of Road Transport Training School

In order to promote efficiency, all categories of workers in the road transport industry should be encouraged to acquire adequate training. Such categories of workers include drivers, bus conductors, mechanics, road transport company owners, and transport allied government agencies, such as LAMATA and LASTMA. These set of workers should be issued a certificate after the training, which would become a prerequisite for participating in transport business, especially in issuing the driver's license. Other measures that can be taken to address the problem of transport in Lagos include:

- Effective implementation of traffic rules and illegal street trading law would help in preventing abuse use of road.
- Solution should be made to address the plight of the streets traders that constituted larger proportion of Lagos workers. This can be done by creating job opportunities in other area that would not constitute nuisance to traffic.
- Law enforcement agencies should be prevented from mounting road block on the major roads in the metropolitan Lagos.
- Government should provide an environment that would make transport business easier to run in modern way. This can be done by making fund available in form of loan government should not completely leave transport business in the hand of unorganized private sector that dominated the state transport business. Transport should be seen as essential service which must be taken more seriously.

5.5 Implementation of Some Existing Policies

In order to bring sanity to the use of roads, there is need to prohibit street trading and illegal market activities. This can be achieved by enforcing the Lagos State Environmental Sanitation Edict 1984. The state development control policy should be strengthened to impose adequate control on sporadic redevelopment and change of use of buildings and space. That is, development control activities should be given priority as a measure to ameliorate the traffic problems in the metropolis.

REFERENCES


RESOLVING ROAD TRANSPORT CHALLENGES IN LAGOS MEGA CITY: INTELLIGENT TRANSPORT SYSTEM (ITS) OPTION

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08054855522

ABSTRACT
Road transport planning of Lagos Mega city that has the prospect of becoming a global city in Africa requires the application of Intelligent Transport System (ITS) to urban traffic control through computers and communication devices; to allow easy flow of traffic 24 hours round the clock. This paper focuses on Lagos Mega city which is one of the 10 ranked mega cities in the world, one of the 10 cities that requires congestion relief in the world and also a mega city that has the potentials of becoming a global city in West Africa Sub-Region. It examines the capacity, functionality and associated problems of the 3 sub-systems of road transport system in Lagos mega city towards meeting the mega city challenges, especially during the peak periods for the purpose of conveying people and goods. The 3 sub-system of road transport system in Lagos mega city include roads which include expressways and urban roads; class of vehicles such as cars, taxis, vans, Lorries among others. And parking which include on-parking and off-parking. It identifies possible link between road transport system and ITS and possible areas where ITS can be applied to road transport planning in Lagos Mega city which includes traffic management, traveller information, public transport etc. and the associated benefits include reduction in travel time, reduction in rate of accident and safety.

Key words: Mega City, Global City, Intelligent Transport System and Sub-System of Road Transport.

1.0 INTRODUCTION
Transport means to carry or move people, goods and services from one point to another through road, rail, air, water and pipeline. Road Transport is a physical movement of people, goods and services on land via carriageway, and is characterized by motorized and non-motorized vehicles using a road system. Road Transport has trip origin and destination through terminals where passengers can embark or disembark, or where goods and services can be loaded or off-loaded in urban areas. Urban road transport is a service with primary function of providing mobility and access to movement of people and goods in urban areas. Cities and metropolitan areas worldwide experience one form of delay or the other. One form of traffic congestion or the other (Oyesiku, 2002). Cities are also known for parking, pollution, road infrastructure and landuse, problems. The consequences of these two trends - the process of urbanization, and its increasing concentration in developing world is most strikingly illustrated by the increase in number of mega cities (WBCS, 2001). According to United Nations (2001), in 1950 New York was the world’s only mega city, with a population of 12.3 million. By 2000, 19 cities worldwide had grown to that size only four of them were in the industrialized world. The report estimates that the number of megacities will increase to 23 by 2015 and 18 of them will be in developing world.

The number of megacities cities with over 10 million inhabitants is expected to double, with three-quarters in developing countries. Of all cities, megacities have the highest travel times, the greatest congestion, and most polluted environment. Megacities have some of the worst problems of urban poverty as well the problems of urban transport (WorldBank, 2002). This is accentuated in countries that are dominated by their capital cities (Karan, 1994).

Megacities in developing countries have been using various traffic management techniques to solve road transport problems without traffic demand management techniques called Intelligent Transport System (ITS). Abernethy (2004) defined Intelligent Transport System (ITS) as a processing of infusing technology into surface transportation management. Intelligent Transport System (ITS) has been accepted to signify the beginning of a renaissance in the applications of communications, sensors, display devices and positioning technologies integrated into the transportation, infrastructure and vehicle (Pickord, 2004).

Lagos Megacity is one of the three emerging megacities in Africa. This paper focuses on road transport challenges in Lagos, considering the three sub-systems of road transport in Lagos which include roads, class of vehicles and parking system; and associated problems. Furthermore the paper examines various areas where Intelligent Transport System (ITS) can be applied to resolve road transport challenges in Lagos Megacity.

1.1 CONCEPTUAL FRAMEWORK
Transport system as a concept systematically analyses the relationship among components within a whole unit that will make the units to work. According to Goodman and Freund (1968), the road transport system can be considered to consist of three basic inter-related sub-systems which include: the travel way, class of vehicle and terminal facilities. The problem of one of the sub-systems can easily affect the other two sub-systems and the road transport system as a whole.

In Lagos Megacity, there are many expressways and major roads that carry...
high volume of traffic during the peak periods. Some of the roads include: Third Mainland Bridge, Carter Bridge, Eko Bridge, Lagos Badagry Expressway, Apapa-Oshodi Expressway, Lekki-Epe Expressway, Ikotun Road, Western Avenue, and Agege Motor Road among others. These roads experience increase level of motorization with inadequate road infrastructure, causing traffic congestion at different times, during the morning and afternoon peak period. This consequently leads to long commuting time to work, environmental pollution, accident and stress. The expressways and major roads in Lagos megacity are plied by various classes of motorized vehicles which include: cars, taxis, minibuses, molue/omnibuses, staff buses, heavy duty buses, and motorcycle on a daily basis for movement of people and goods. In addition, there are terminals located in the 20 local government local government areas in Lagos for embarking and disembarking on journey; and loading and unloading of goods and services. The terminal facilities are owned controlled by government and private operators and they provide both intracity and intercity transport services. Many of these terminals are without facilities to facilitate easy embarkment and disembarkment of people and also loading and off-loading of goods and services.

All the three sub-systems of road transport system in Lagos Mega city must be coordinated together through computer based system Intelligent Transport System (ITS) to achieve high degree of mobility on the side of commuters, passengers, and haulage firms transport carrier companies. This can be achieved through the use of Intelligent Transport System. (Fashina, 2008). According to Oyesiku (2002), Intelligent Transport System (ITS) and Transport Information System (TIS) influence the travel related decision of individuals through available information, such as departure time, mode of travel and route choice of destination.

At this stage, the three sub-system of road transport and road transport system as a whole in Lagos megacity should be link together through cameras, sensors, display devices and positioning technologies so as to achieve high level interaction and coordination among them. This will help to create first hand information on traffic situation on the road, parking situation in both intracity and intercity terminals and general road information to commercial and travelers.

2.0 EMERGING MEGA CITIES IN AFRICA

Africa's three giant urban agglomerations, Cairo, Kinshasa and Lagos continue to rise rapidly in their rankings amongst the world's largest metropolitan regions. In 2007, the urban agglomeration of Cairo had 11.9 million inhabitants; Lagos had 9.6 million inhabitants and Kinshasa 7.8 million. In 2015, Cairo will have 13.4 million, Lagos 12.4 million and Kinshasa 11.3 million inhabitants making them 11th, 17th and 19th respectively among the world's largest metropolitan regions. Projections show that Kinshasa, with 16.7 million inhabitants will be Africa's largest urban agglomeration in 2025, Lagos 15.8 million and Cairo 15.5 million, thus ranking 11th, 12th and 13th respectively among the world's largest mega cities. (United Nations, 2008).

2.1 LAGOS MEGA CITY-Geographical Boundary and Global City Potentials.

Lagos occupies a landmass of 3,577 sq.km, representing only about 0.39% of Nigeria landmass of 921,773 sq.km and with a population density of 4,193 per sq kms (LMEP&B, 2004). According to Lagos Mega City Report (2006), Lagos Mega city region is thus a continuously expanding area comprising for the moment all the or parts of the 20 Local Government Areas of Lagos State, as well as at least four local government areas in Ogun State, notably Ado-Odo/Ota, Ifo, Obafemi-Owode and Sagamu Local Government area.

The importance of Lagos as a commercial center and port city and its strategic location has led to it being the end-point of both national and international highway routes. The Trans-West African Coastal Highway leaves the city as the Badagry Expressway to Benin and beyond as far as Darkar and Nouakchott. Lagos is by far the largest urban agglomeration in the corridor, and indeed in the ECOWAS region. This corridor has linked Lagos to regional and global supply chains and trade. (United Nations, 2008). As a result of this, many of the commercial banks that have their administrative headquarters located in Lagos now have branches in many ECOWAS states. Examples are Zenith Bank, Guaranty Trust Bank, United Bank for Africa (UBA).

2.2 ROAD TRANSPORT SITUATION IN LAGOS, MEGACITY

There are more than 2,600 kilometers of roads in Lagos that are frequently congested, with over 1 million vehicles plying the roads the roads on daily basis (LAMATA, 2008). Along the Lagos metropolitan area of Nigeria is known to have the highest density of vehicles per square kilometer in Nigeria, 224 vehicles per square kilometer compare to average of 15 vehicles per square kilometer in other states of the Federation (The Sun Newspaper, March 17, 2008).

2.3 TRAFFIC VOLUME IN LAGOS MEGACITY

Lagos Mega city experiences high volume of traffic, and this has resulted to traffic congestion during the peak periods. A survey of Lagos urban traffic recently conducted, by Oni (2004) revealed ever-increasing vehicle traffic and three peak periods morning, afternoon and evening. In Lagos Mega city high volume of traffic moves towards Lagos Island in the morning and towards Lagos Mainland in the evening, due to rigid location of central business district and business offices on Lagos Island. Lagos Island and Lagos Mainland are linked together by three highways-Third Mainland Bridge, Carter Bridge and Eko Bridge. A total of 264,311 vehicles move from Lagos Island to Lagos Mainland and vice versa on daily
bases; 139,440 (53.0%) vehicles move through Third Mainland Bridge, 37,792 (14.1%) vehicles move from Carter Bridge, and 87,079 (32.9%) vehicles move from Eko Bridge. The implication is that Third Mainland Bridge is the most ply bridge (route), follow by Eko Bridge and Carter Bridge.

Table 2.3: Number of vehicles that move to Lagos Island from Lagos Mainland and vice versa

<table>
<thead>
<tr>
<th>Highway</th>
<th>Number of Vehicle</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third Mainland Bridge</td>
<td>139,440</td>
<td>53.0</td>
</tr>
<tr>
<td>Carter Bridge</td>
<td>37,792</td>
<td>14.1</td>
</tr>
<tr>
<td>Eko Bridge</td>
<td>87,079</td>
<td>32.9</td>
</tr>
<tr>
<td>Total</td>
<td>264,311</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Adopted from LAMATA – 12 Hours Data (11/07/2001)

2.4 ROAD CAPACITY IN LAGOS MEGACITY

The capacity of an highway or street road is defined as the maximum number of vehicle which has a reasonable expectation of passing over a given section of a lane or a roadway in one direction or both directions for a two-lane or three-lane highway during a given time under prevailing roadway condition, (Oglesby 1975). In the process of measuring road capacity, traffic volume on a roadway per hour must be converted to Passenger Car Unit (P.C.U), by apportioning weights or grades to various classes of vehicles plying urban road. The weights or grades are as follows: Car = 1.0, Taxi = 1.0, Minibus = 2.0, Molue/Omnibus = 3.0, Staff bus = 2.0, Heavy Goods Vehicle (HGV) = 2.0 and Motorcycle = 0.75; and compare the total passenger car unit with standard highway manual. Table 2.4a, Table 2.4b and Table 2.4c showing the hour that has the highest volume of traffic and conversion to Passenger Car Unit (P.C.U) on Third Mainland Bridge, Eko Bridge and Carter Bridge.

Table 2.4a: Traffic Volume on Third Mainland Bridge between 9:00 am to 10:00 am and conversion to Passenger Car Unit (P.C.U)

<table>
<thead>
<tr>
<th>Class of Vehicle</th>
<th>Car</th>
<th>Taxi</th>
<th>Minibus</th>
<th>Molue/Omnibus</th>
<th>Staff Bus</th>
<th>Heavy Goods Vehicle</th>
<th>Motorcycle (Okada)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Standard</td>
<td>1.0</td>
<td>1.0</td>
<td>2.0</td>
<td>3.0</td>
<td>2.0</td>
<td>2.0</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,813</td>
<td>765</td>
<td>1,458</td>
<td>500</td>
<td>180</td>
<td>124</td>
<td>4,67750</td>
<td></td>
</tr>
<tr>
<td>Passenger Car Unit (PCU)</td>
<td>Conversion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban Standard</td>
<td>1.0</td>
<td>1.0</td>
<td>2.0</td>
<td>3.0</td>
<td>2.0</td>
<td>2.0</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5000</td>
<td>245</td>
<td>2,290</td>
<td>380</td>
<td>56</td>
<td>580</td>
<td>8,424.75</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>13,102.75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adopted from LAMATA – 12 Hours Data (11/07/2001)

Table 2.4b: Traffic Volume on Carter Bridge between 7.00am to 8:00am, which is the highest peak period, a total of 1,517 cars, 282 taxis, 1,239 minibuses, 471 molues / omnibuses, 253 staff buses, 219 heavy good vehicles and 219 motorcycles ply the bridge making a total of 4,540 vehicles and 6,043.25 passenger Car Unit (p.c.u) in both directions.
Table 2.4b: Traffic volume on Carter Bridge between 7:00a m to 8:00am and Conversion to Passenger Car Unit (P.C.U.)

<table>
<thead>
<tr>
<th>Class of Vehicle</th>
<th>Car</th>
<th>Taxi</th>
<th>Minibus</th>
<th>Motor</th>
<th>Omnibus</th>
<th>Staff</th>
<th>Bus</th>
<th>Heavy</th>
<th>Goods</th>
<th>Vehicle</th>
<th>Motorcycle</th>
<th>(Okada)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Standard</td>
<td>1.0</td>
<td>1.0</td>
<td>2.0</td>
<td>3.0</td>
<td>2.0</td>
<td>2.0</td>
<td>.75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.002</td>
<td>89</td>
<td>926</td>
<td>266</td>
<td>135</td>
<td>34</td>
<td>256</td>
<td>2,636</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passenger Car Unit</td>
<td>(P.C.U)</td>
<td>Conversion</td>
<td>1.002</td>
<td>89</td>
<td>1,852</td>
<td>798</td>
<td>270</td>
<td>64</td>
<td>177</td>
<td>4,252</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2.4c: Traffic volume on Eko Bridge between 7:000 A.M to 8:00am in both directions. The absence of intelligent transport system technologies and infrastructures such as Advanced Traveler Information System (ATIS) that consists of cameras and sensors and video dector, that are connected to single central mainframe computer make it impossible to disseminate useful information to motorists on the best route to take during morning, afternoon and evening peak period; and when there is accident or heavy rainfall in Lagos. It is clear from table 2.3 that Third Mainland Bridge carries 53% of volume passing through it, with an excess of 5,043.25 passenger car unit compare to expected 4,000 passenger car unit between 7:00am to 8:00 am in both directions, and Eko Bridge carries 19,360.25 passenger car unit with an excess of 15,360 passenger car unit compare to the expected 4,000 passenger car unit between 7:00am to 8:00 am in both directions.

Table 2.4d: Road Capacities of the Three Highway Bridges

<table>
<thead>
<tr>
<th>Road</th>
<th>Facility</th>
<th>Expected Passenger Car Unit per Hour</th>
<th>Passenger Car Unit per hour</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third Mainland</td>
<td>Three lane highway for both direction</td>
<td>4,000</td>
<td>13,102.75</td>
<td>Excess of 9,102.75 P.C.U.</td>
</tr>
<tr>
<td>Carter Bridge</td>
<td>Two lane highway for both direction</td>
<td>2,000</td>
<td>7,043.25</td>
<td>Excess of 5,043.25 P.C.U.</td>
</tr>
<tr>
<td>Eko Bridge</td>
<td>Three lane highway for both direction</td>
<td>4,000</td>
<td>19,360.25</td>
<td>Excess of 15,360.25 P.C.U.</td>
</tr>
</tbody>
</table>

Adopted from Oglesby (1975: 212) - Highway Capacity Manual

525 motorcycles ply the bridge making a total of 16,907 vehicles and 19,360.25 passenger car unit (p.c.u) in both directions.

Table 2.4c: Traffic volume on Eko Bridge between 7:000 A.M to 8:00 A.M and Conversion to Passenger Car Unit (P.C.U.).

<table>
<thead>
<tr>
<th>Class of Vehicle</th>
<th>Car</th>
<th>Taxi</th>
<th>Minibus</th>
<th>Motor</th>
<th>Omnibus</th>
<th>Staff</th>
<th>Bus</th>
<th>Heavy</th>
<th>Goods</th>
<th>Vehicle</th>
<th>Motorcycle</th>
<th>(Okada)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Standard</td>
<td>1.0</td>
<td>1.0</td>
<td>2.0</td>
<td>3.0</td>
<td>2.0</td>
<td>2.0</td>
<td>.75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12,860</td>
<td>190</td>
<td>1,130</td>
<td>127</td>
<td>104</td>
<td>70</td>
<td>210</td>
<td>14,694</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passenger Car Unit</td>
<td>(P.C.U)</td>
<td>Conversion</td>
<td>12,860</td>
<td>190</td>
<td>2,260</td>
<td>381</td>
<td>218</td>
<td>140</td>
<td>157.50</td>
<td>16,196.58</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adopted from LAMATA – 12 Hours Data (11/07/2001)
Motorization is occurring so quickly in developing cities that not only is overwhelming the operational sustainability of those cities infrastructures system. It is also causing social, economic, and environmental imbalance and inequities (WBCSD, 2001). The scale of problems, in terms of both mobility and external impact is the largest in mega cities like Bangkok, Cairo, Lagos and Mexico city and most damaging to their economies (Willoughby, 2004). Emissions are generally assessed in terms of average speed. Nitrogen oxide emissions are the highest at lowest cruise speed. It is evident that in congested traffic the vehicle produces the highest emission rate, whereas in free flow traffic it generate the least emissions (Bell et al, 2007).

Table 2.5 reveals that level of motorization and congestion rate has made motor vehicles in Lagos to be releasing damaging pollutants such as Carbon monoxide (CO), Hydro Carbon (HC), Nitrogen oxide (NO), Sulphur Oxide (SO) and Suspended Particulate Matter (SPM). In 1988, CO (91%), HC(20%), NO(62%), SO(27%), and SPM (69%).

2.6 PARKING SITUATION IN LAGOS MEGACITY
Parking is a component of road transportation system that caters for embarking and dis embarking on trips by people; and loading and off-loading of goods and services. According to Oni (1992) in terms of distance traveler, the use of road transport by passenger movement covers 66 percent by buses, 25 percent by private cars, 4 percent by taxis, and 5 percent motorcycles. This require high level of utilization of motor parks in Lagos by both intercity and intracity transport services to meet the travel and parking demand. According to Lagos state ministry of transportation a total of 216 motor parks are located the 20 Local Government in Lagos State.

Most of these motor parks are located arbitrarily without following planning standard, thus making it impossible for their classification. Furthermore they are located directly close to the major road.
corridors in Lagos a scenario that lead motorists to part converting the major roads to parking areas where these motor parks are indiscriminately located there by resulting in traffic congestion. The capacities of these motor parks are inadequate to meet up with the parking demand of motorists in Lagos. In addition, the fact that there is no installation of parking meters or issuance of parking disc to parkers to charge them per hour to discourage long time parkers and encourage short time parkers aggravate the problem. Most of the 216 motor parks in Lagos are located within developed or built up areas which has no room for extension depicted in table 2.6, reinforcing the requirement the application of Intelligent Transport system (ITS) technologies to allow easy parking operation.

Table 2.6 No of Motor Parks located in LGA of Lagos State

<table>
<thead>
<tr>
<th>S/n</th>
<th>Local Government</th>
<th>Motor Parks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Agege</td>
<td>9</td>
</tr>
<tr>
<td>2.</td>
<td>Ajeromi</td>
<td>9</td>
</tr>
<tr>
<td>3.</td>
<td>Alimosho</td>
<td>27</td>
</tr>
<tr>
<td>4.</td>
<td>Amuwo Odofin</td>
<td>8</td>
</tr>
<tr>
<td>5.</td>
<td>Apapa</td>
<td>4</td>
</tr>
<tr>
<td>6.</td>
<td>Badagry</td>
<td>7</td>
</tr>
<tr>
<td>7.</td>
<td>Epe</td>
<td>10</td>
</tr>
<tr>
<td>8.</td>
<td>Eti Osa</td>
<td>3</td>
</tr>
<tr>
<td>9.</td>
<td>Ibeju Lekki</td>
<td>4</td>
</tr>
<tr>
<td>10.</td>
<td>Ifoko Ijaiey</td>
<td>12</td>
</tr>
<tr>
<td>11.</td>
<td>Ikeja</td>
<td>11</td>
</tr>
<tr>
<td>12.</td>
<td>Ikorodu</td>
<td>11</td>
</tr>
<tr>
<td>13.</td>
<td>Kosofe</td>
<td>10</td>
</tr>
<tr>
<td>14.</td>
<td>Lagos Island</td>
<td>10</td>
</tr>
<tr>
<td>15.</td>
<td>Lagos Mainland</td>
<td>9</td>
</tr>
<tr>
<td>16.</td>
<td>Mushin</td>
<td>20</td>
</tr>
<tr>
<td>17.</td>
<td>Ojo</td>
<td>14</td>
</tr>
<tr>
<td>18.</td>
<td>Oshodi</td>
<td>13</td>
</tr>
<tr>
<td>19.</td>
<td>Shomolu</td>
<td>11</td>
</tr>
<tr>
<td>20.</td>
<td>Surulere</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>216</td>
</tr>
</tbody>
</table>

Source: Lagos State Ministry of Transportation (2005)

3.0 INTELLIGENT TRANSPORT SYSTEM (ITS) CONCEPT AND MODELS

Intelligent Transport System (ITS) has been associated with large range infrastructure projects. Both Urban Traffic Control (UTC) and Electronic Toll Collection (ETC) systems have both been given priority in developed and developing countries to date. Two vital components are the Advanced Traffic Management System (ATMS) and the Advanced Traveler Information System (ATIS). Urban Traffic Control (UTC) and Electronic Toll Control (ETC) are seen to represent the platform on which more sophisticated ITS application can be developed (Sayeg, 2004).

Model in terms of computer representation of urban area, the two traditions are expressed in mathematical models of city structures use in urban simulation and the visualization of city in computer aided design and computer based three dimensional modeling (Lloyd Jones and Erikson, 1996). Intelligent Transport System Model offers an environment “data fusion” for a variety of traffic and transport data which provides full utilities in a wide area like: traffic management and decision support, short term traffic forecast, impact analysis or feasibility studies and information visualization (Barceló and Garcia, 2004).

Intelligent Transport System models ranging from Traffic Simulation Model, Continuous Traffic Assignment Model (CONTRAM) and Dynamic Assignment Model have their own data format due to integral requirements. Traffic Simulation Model assists the Analyst on the design and evaluation of traffic and applications or to support advance traffic management. Continuous Traffic Assignment Model (CONTRAM) is used to for studying the time varying congestion problems. Dynamics Assignment model predict time varying traffic routes link flows, link queue and link delays (Barceló and Garcia, Rotertson, 2004)

3.1 INTELLIGENT TRANSPORT SYSTEM (ITS) CHAIN

Data Management systems are the main brains of ITS taking in data and parceling it out to the various applications and entities that require it (Leavitt, 2006). ITS consist of steps that make up the chain. According to Vleeser (2008) a simplified description of steps involved in the chain for most ITS applications are: (a) Data Collection: on the road conditions like the number of vehicles passing a certain point and average speed, as well as weather conditions. Other is the positioning of vehicles through mobile phone tracking or satellite based systems. (b) Data Transfer Processing and analysis: The Communication of collected data to central units for aggregation and transformation into decision- making information. (c) Use of the information: This might be a decision by operators to apply certain measures on the road network; it could also be a decision by road users to alter his route after receiving traffic information.
3.2 INTELLIGENT TRANSPORT SYSTEM INFRASTRUCTURE

According to Neil (2007), Infrastructure ITS encompasses technologies that fall under existing terminology such as Advanced Traffic Management System (ATMS); Close Circuit Television (CCTV) cameras; vehicle detection equipment such as inductive loops; weather detection and systems; roadside warming and information system such as freeway and arterial applications of coordinated traffic signal systems; establishment and ongoing enhancement of roadside communication bandwidth, including wire line, fiber optic and wireless.

3.3 INTELLIGENT TRANSPORT SYSTEM (ITS) APPLICATIONS

Successful ITS applications are to be found wherever there is significant road traffic data. Precise priorities depend upon local circumstances, reflecting the structure of cities, relative distances, traffic densities, and balance of transport modes. All applications share common aims: increased safety, reduced emissions and improved traffic flows. (Visser, 2008). Below is figure 1 showing components and applications of Intelligent Transport System (ITS) technologies on road transport system Wu (2007) observed that the key to an efficient operation and utilization of ITS is to be able to process and manipulate the information at the graphical level versus application integration level, and be able to share data contextually with others. For example, an alarm indicator on the incident detection system can be graphically extracted and coupled with the associated video independently, without having to integrate the video into the incident detection software. This newly composed view can then be shared with others within the network.

![Figure 1: Components and Applications of ITS Technologies on Road Transport System](data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAAAEAAAABCAQAAAC1HAwCAAAAC0lEQVR42mO8/wDQ40RgACmQAAAABJRU5ErkJggg==)

**Table: Components and Applications of ITS Technologies on Road Transport System**

<table>
<thead>
<tr>
<th>Typical ITS System</th>
<th>Security System</th>
<th>Surveillance System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic Management</td>
<td>Incident Management</td>
<td>Road Control</td>
</tr>
<tr>
<td>Land Control</td>
<td>Depoach Service</td>
<td>Communications</td>
</tr>
<tr>
<td>Reporting</td>
<td>Integration</td>
<td>Event Field</td>
</tr>
<tr>
<td>Onboard</td>
<td>ACC</td>
<td>Accident Management</td>
</tr>
<tr>
<td>Crash Course</td>
<td>CCTV Management</td>
<td>Camera Security</td>
</tr>
<tr>
<td>Accident Recovery</td>
<td>Call Center</td>
<td>Video Surveillance</td>
</tr>
<tr>
<td>CCTV</td>
<td>Driver Behavior Database</td>
<td>Security System</td>
</tr>
<tr>
<td>Cameras</td>
<td>Changeable Message Signs</td>
<td>Communications</td>
</tr>
</tbody>
</table>


Intelligent Transport System has been applied in Urban Transport Control, in many developed and developing countries of the world, especially in the area of Advanced Traffic Management System (ATMS) and Advanced Travelers Information System (ATIS). Each working day London (United Kingdom), facilitate 11 million cars, 6 million bus passengers and 400,000 cyclists through a high tech watching over the city's busiest road every minutes of the year at London Traffic Control Centre using 1,200 closed circuit cameras and 2,800 intelligent Traffic signals (Wordsworth 2007).

In United States of America (U.S.A), Intelligent Transport System (ITS) are employed in metropolitan cities. Chicago, 2002 recorded 20.5 million vehicles daily on roadways and additional 1.5 million daily trips were made to transit, using 22 changeable message signs that display real time traffic information on freeways, over 2,400 loops detectors, to collect such information and 113 ramp meters, closed circuit television cameras and video surveillance cameras; San Francisco, recorded 17 million trips daily in 2002 on roadways and an additional 1.4 million daily trips were made on transit using 511 service system which provides the callers and those who visit the 511 website with real time traffic information about conditions and incident including point to point driving time on routes and 4,700 traffic sensing detectors; Lag Vegas, recorded 3.6 million trips daily in 2003 on roadways and an additional approximately 124,000 daily trips were on transit system, using an integrated freeway and arterial management system designed to reduce congestion and improve incident respond time and management to control and monitor traffic; Indianapolis (Indiana), recorded 5.5 million vehicle trips daily in 2002 on roadways and an additional 28,000 trips were made to transit systems, through Traffic Management Center that was opened in 2004 and has incorporated cameras, sensors, and other technologies with posting traffic highway via changeable message signs, highway advisory radio, pagers and real time on the web to inform drivers. (GAO, 2005)

In France, By December 2005, over 1,000 speed detections devices (700 fixed and 300 mobile) had been installed on French roads in areas considered as accident prone by the authorities, in July 2006, additional batch of 500 new-generation speed detection radars, a reward that was directly attributable to the positive safety impacts already experienced. For the first time in France, the average speed has been decreased by 10%, while it is estimated that over the past five years, 9,000 lives have been saved and 100,000 injuries avoided resulting from road accidents (Rabaud, 2006).

3.4 MAJOR CONSTRAINTS IN APPLICATION OF ITS IN NIGERIA

Data acquisition is a major problem in applying ITS in Lagos Mega city. Current relevance data on road transport are not available. This is because Lagos State
Ministry of Transportation and other agencies have no data bank. Installation of ITS furniture is capital intensive that requires huge amount of investment on the side of the government for easy application of the system to road transport system in Lagos Mega city. Government requires pumping huge amount of money from its purse for installation of ITS technologies. Failure to invest on ITS on the side of Lagos State can hinder the road development in Lagos Megacity.

CONCLUSION

Lagos Mega city is faced with many road transport challenges that affect the three main sub-system of road transport system. This is because the government have been concentrating on traffic management only with out considering traffic demand management like Intelligent Transport System (ITS), which can be used to predict, control, and direct high volume of traffic in Lagos. Deployment of Intelligent Transport System (ITS) technologies is capital intensive, as a result of this government should encourage Public-Private Participation (PPP) in providing these ITS infrastructures and technologies through Road Concession and least contract.

The Private Public Participation Model exist on a spectrum that increases with level base on the number of years involve in the contract agreement which includes: Service contract of a period of few month to few years; management contract for a period of 5 years; Lease contract for a period of 15 years; concession for a period of 25 years and Build operate and Transfer for a period 30 years. Considering the fact that provision of road infrastructure and intelligent transport system is capital intensive and involve a lot of fund, private sector should be encourage by Lagos State Government to sign Road Concession and Build and Operate Transfer agreement or contract that will aid the provision of Intelligent Transport System and technologies on major corridor roads in Lagos Megacity.

REFERENCE


Oyesiku, O.O. (2002): From Womb to Tomb 24th Inaugural Lecture Olabisi Onabanjo University, Ago-Iwoye, Ogun State.

