NAME: BELLO FOLASHADE SHAKIRATU

MATRIC NUMBER: 17/MHS01083

DEPARTMENT: CIVIL ENGINEERING

TOPIC: ENGINEERING LAW AND MANAGERIAL ECONOMICS FOR INFRASTRUCTURE DEVELOPMENT IN NIGERIA.CHALLENGES AND WAY FORWARD.

COURSE CODE: ENG 382

COURSE TITLE: ENGINEERING LAW

# ABSTRACT

This will present a macroeconomic outlook on the benefits of a strong infrastructure base to the Nigerian economy.

It provides an informed perspective on the economic impact infrastructure development has on nation building. Though infrastructure linkage to an economy may come in a multiple of ways, it is often known to be complex and sometimes convoluted, creating both positive and negative add-on effects, due to the large flow of expenditure. Attention is given to the impact infrastructure has on economic growth.

Special focus is given to the strategic position the Construction industry takes in bridging the gap between - a state of underdevelopment (economic-anorexia) and economic prosperity. A look at strategic procurement options through the use of Public Private Partnerships (PPP) as a viable alternative to Traditional procurement is also discussed.

#

#

# Objective:

 The overall objective is to highlight the importance of infrastructure development to economic growth and the need for government to take a more strategic approach to tackling its dearth in Nigeria. Infrastructure development should be a key priority in the country’s journey towards development.

Contents

[ABSTRACT 2](#_Toc37619385)

[Objective: 3](#_Toc37619386)

[CHAPTER 1 5](#_Toc37619387)

[INTRODUCTION 5](#_Toc37619388)

[1.O DEFINATION OF ENGINEERING 5](#_Toc37619389)

[1.1Civil engineering 5](#_Toc37619390)

[1.2 Structural engineering 6](#_Toc37619391)

[1.3 Geo technical engineering 6](#_Toc37619392)

[1.4 Roles of civil engineering 6](#_Toc37619393)

[1.5 Definition of engineering law 6](#_Toc37619394)

[1.6 NIGERIA DEVELOPMENT HISTORY 6](#_Toc37619395)

[CHAPTER 2 8](#_Toc37619396)

[LITERATURE REVIEW 8](#_Toc37619397)

[2.1 INFRASTRUCTURE – A DEFINITION 8](#_Toc37619398)

[2.2 INFRASTRUCTURE – AS A CATALYST FOR ECONOMIC GROWTH 9](#_Toc37619399)

[2.3 STATE OF INFRASTRUCTURE IN NIGERIA 9](#_Toc37619400)

[2.4 Infrastructure and Economic Development 11](#_Toc37619401)

[2.6 Risk factors affecting Private investments 13](#_Toc37619402)

[2.4 . Engineering Challenges in Nigeria 14](#_Toc37619403)

[2.5 Possible solution to the infrastructure development in Nigeria 16](#_Toc37619404)

[1. Better Resource Control 16](#_Toc37619405)

[2. Discipline in Planning 16](#_Toc37619406)

[3. Mass Education on Development Plans 16](#_Toc37619407)

[4. Efficient Data Collection 16](#_Toc37619408)

[2.6 CONCLUSION 17](#_Toc37619409)

[Reference 17](#_Toc37619410)

#

# CHAPTER 1

# INTRODUCTION

#  1.O DEFINATION OF ENGINEERING

It can be defined as the scientific understanding of the natural world and using it to invent, design and build things to solve problems and achieve practical goals. This include the development of roads , bridges, cars , planes, machines , tools , processes, and computer.

 Engineering can be divided into different branches such as

* Civil engineering
* Mechanical engineering
* Electrical engineering
* Chemical engineering
* Mechatronics engineering
* Computer engineering
* Petroleum engineering
* Bio-medical engineering. Etc

# 1.1Civil engineering

It can be define as the profession in which the knowledge of the mathematical and physical science gained by studying and experience and practices is applied with judgement to develop ways to utilize economically the material and the force of natures that will be progressive to the wellbeing of man.

 Civil engineering can further divided into different branch such as

* structural engineering
* geo technical engineering
* water resource engineering
* highway engineering
* survey
* project management
* environmental engineering
* irrigation engineering. Etc

# 1.2 Structural engineering

 It involves analysis of various structure like building, water tanks, chimneys, bridges etc and designing them using suitable materials like masonry, RCC, etc. A structural engineer has not only to give a safe structure but he has to give economical structure. To get economical sections , mathematical optimization techniques aare to be used.

# 1.3 Geo technical engineering

 It involve obtaining information on the physical properties and chemical properties of soil and rock around a site to design earthwork and foundation for proposed structure and for repair of distress to earthwork and structures caused by subsurface condition. It involve study of ground improvement techniques.

# 1.4 Roles of civil engineering

* Measure and map the earth’s surface
* Plan and develop extensions of towns and cities
* Build the tanks and dams to exploit water resources
* Build river navigation and flood control project
* Provide, build, and maintain drainage and water disposal system
* Purify water supply to needy areas like houses , school etc

# 1.5 Definition of engineering law

**Engineering law** refers to the application of [laws](https://en.wikipedia.org/wiki/Laws) applying to the practice of professional [engineering](https://en.wikipedia.org/wiki/Engineering). Engineering law is the study of how ethics and legal frameworks should be adopted to ensure public safety surrounding the practice of engineering

# 1.6 NIGERIA DEVELOPMENT HISTORY

Since Nigeria’s Independence in 1960, successive governments of the federation have devoted a lot of effort to the creation of physical facilities, such as roads, power supply, water supply, educational buildings, housing, hospital, communication etc., which are basic requirements for the social and economic well-being of the nation. And itis obvious that the nation has been faced with a lot of engineering challenges since independence.

The issue now is the extent to which Nigerian Engineers responded to these engineering challenges for sustainable development. Much has been written about sustainable development. The varying definitions are based on the economic, social, environmental and political realities, sustainable development suggests a condition wherein the decisions undertaken today do not prevent possible alternative decisions in the future. In addition, it is generally accepted that sustainable development is driven by a need to demonstrate increased environmental awareness in our day-to-day lives and decision making. And the Nigerian Engineers just as their counterpart in other part of the world who have acquired the Art and Science which would enable them to harness and direct the resources of nature for the benefit and convenience of mankind, should be able to harness and direct the resources of nature for the economic, social, environmental and political well-being of mankind.

#

#  CHAPTER 2

#  LITERATURE REVIEW

 Nigeria, with a population of 154 million and a landmass of about 900,000sq km, remains the most populated country in Africa (World Bank 2011). e country is the largest exporter of oil in the continent and sixth largest in the world, with huge natural gas reserves and currently ranks second to South Africa in the league of the continent’s biggest economies (World Bank 2011).

 In spite of its acclaimed wealth, the country is currently suering from severe infrastructure decit (Okonjo-Iweala and Osafo-Kwaako 2007, Soludo 2007). Nigeria is lagging behind among its peers in infrastructure development and this is due to issues such as the exposure to the incessant uctuations in oil revenue which constitutes about 86% of its total revenue (Gidado 2010), lack of transparency and prevalence of corrupt practices within the realm of public procurement. Other factors include; – lack of

the requisite project management skills, poor regulatory capabilities, weak local nancial markets (Gidado 2010, Okonjo-Iweala and Osafo-Kwaako 2007). is has led to strident calls for the adoption of private nancing to serve as a boost for the much anticipated infrastructural development initiative (Okonjo-Iweala and Osafo-Kwaako 2007). It is envisaged that major investments in Infrastructure would aid the growth of the Nigerian economy, thus providing employment and avenues for the empowerment of the

teeming army of unemployed people and enhancing the country’s chances of attaining the Millennium Development Goals (MDG)’s in the nearest future (Alkali 2005).

 This paper carries out a literature review of the salient issues hindering the successful delivery of infrastructure in Nigeria and highlighting areas where further studies are required for the purpose of proposing ways of eliminating these hindrances.

# 2.1 INFRASTRUCTURE – A DEFINITION

A universal definition for the term infrastructure continues to evade most researchers thus causing Sineska and Simkunaite (2009), Baldwin and Dixon (2008) and Prud’homme (2004) to posit that there is no generally accepted definition for the term infrastructure. They further stated that instead of proffering a definition for the term infrastructure, most researchers were content on stating what constituted the term infrastructure. As if to buttress this point, Oyegoke, (2010) refers to Miller (2002) to have defined infrastructure as comprising of capital facilities, transportation, public services and utilities and environmental restoration. Howes and Robinson (2005) cited Jochimesen (1966) as having described infrastructure as “the sum of all basic materials, structures, institutional conditions

and human resources available to the society, needed for the proper functioning of the economic sector. Infrastructure has often been classified along the economic and social divides (Sineska and Simkunaite 2009). Jochimesen’s attempt at classifying infrastructure led to the creation of three categories namely, institutional infrastructure, personal infrastructure, and physical infrastructure (Howes and Robinson 2005).

# 2.2 INFRASTRUCTURE – AS A CATALYST FOR ECONOMIC GROWTH

 Infrastructure has been identified as a major factor, imperative for sound economic growth (Schubeler 1996;Kirkpatrick et al. 2006; Esatche 2004; Estache and Limi 2008; Sineska and Simuknaite 2009; Akampurira et al. 2009; Akinyosoye 2010). e impact of infrastructure on the economic productivity has also been highlighted by several authors (Prud’homme, 2004; Liang et al. 2004; Harris 2004; Estache 2004; Khan 2005; Kirkpatrick et al. 2006, Sineska and Simuknaite 2009; Gidado 2010; Infrastructure UK 2010; Hawkins and Wells 2006; Akinyosoye 2010). thus the inherent processes leading to effective and efficient infrastructure delivery has become a

central theme to most economic and construction discourse in contemporary times. Akinyosoye (2010) captures it aptly when he asserts that direct investment in infrastructure would lead to the development of intermediate inputs to production and the improvement of productivity levels in other sectors of the economy such as manufacturing. He further draws a relationship between the declining investment in infrastructure in Nigeria and the attendant retarding economic growth. This is more prevalent in developing countries where much emphasis is laid on infrastructure development as means of achieving any meaningful economic growth.

# 2.3 STATE OF INFRASTRUCTURE IN NIGERIA

 In a recent study carried out by Foster and Pushak, they successfully catalogued the current state of Nigerian infrastructure ranging from telecommunications to power and energy, from transportation through to water projects (Foster and Pushak 2011). ey lamented the absence of access to potable water projects for a majority of the citizenry and the inadequate power generation and transmission capacity (Foster and Pushak 2011). ey stressed the negligible number of motor able roads and when they were, they were in very bad condition (Foster and Pushak). e recent success of the telecommunication sector which was privatized was also highlighted in their study, using it to serve as a poser to the need for private sector nance and expertise in hitherto public sector areas. Infrastructure delivery in Nigeria is decentralized along the various tiers of governments namely; – Federal, State and Local governments in such a manner that is similar to the USA approach to infrastructure delivery (Miller et al. 2000). at these various tiers of government have performed abysmally in the provision of the required infrastructure is no longer news given the vast amount of available literature which highlight this fact (Okonjo-Iweala and Osafo-Kwaako 2007; Gidado 2010; Akinyosoye 2010; Ibrahim et al. 2006; Kaumann 2008; Foster and Pushak 2011 ), what would be received as news is the development of a more efficient and effective means through which this abysmal tide can be overturned in the nearest future, and this is what this study is all about.

 Nigeria ranks top among African countries wherein the state of the transport infrastructure among others has been described by Kauman (2008) and Hammouda (2006), as strikingly underdeveloped. Aer a thorough appraisal of the transportation infrastructure in Africa, she lends credence to the views held by Soludo (2007) and Okonjo-Iweala and Osafo-Kwaako (2007) that the continent in general needed more than government’s investment to bridge the infrastructural decit (Kaumann 2008). Kaumann (2008)

opines that the problems which have given rise to the falling standards in infrastructural development in Africa are as a result of the following namely:

* Lack of a coherent policy framework,
* Inadequate nancing, nancing of socially desirable but non-bankable projects and high transaction costs.

These factors where taken under consideration and a possible solution was provided by the UK National Infrastructure Plan

* Good governance
* Maintenance of Pipeline of works
* Ensure proper commissioning of projects
* Standardization of contracts

there has been severe clamour for the adoption of private ehance for the bridging of the infrastructure deficit currently stifling the country given the attendant costs which the government would have to incur if the public sector were to shoulder such expenditure (Okonjo-Iweala and Osafo-Kwaako 2007; Soludo 2007; Gidado 2010). In the raging debate about the amount needed to shore up the nation’s infrastructure stock, Soludo (2007) insisted that there is need for an annual investment of approximately $10 billion (£6.3BN) per annum for a period of 10 years to bring Nigerian Infrastructure up to date or at par with that of its contemporaries. Okonjo-Iweala and Osafo-Kwaako (2007) have called for an annual investment of $5billion annually (£3.1BN) over a period of 10 years. e sum mentioned by these parties portrays the lack of proper and effective information with regards to the cost of bridging the

attendant infrastructure deficit in Nigeria. The UK with its current infrastructure stock according to the National Infrastructure Plan (NIP) is budgeting to spend about £40BN per annum over the next five years (Infrastructure UK 2010). Foster and Pushak (2011) posit that Nigeria needs to invest $14BN (£9BN) or 12% of the GDP over the next decade to address its infrastructural constraints.

they reveal that the current investment in infrastructure in Nigeria at the federal level stands at $5.9BN (£3BN) per annum (Foster and Pushak 2011). this signifies a percentage increase of 200% from the present day funding arrangements if any success is to be achieved over the next decade. It is worthy to mention here that the figures given are only with regards to the federal infrastructure

as there was no evidence of prior investments and/or projected future investments in infrastructure among the federating states, as at the time of writing this paper, from the litany of literature available on the subject area.

 Gidado (2010) in assessing the possibility of implementing a PFI model within Nigeria, through an extensive review of literature, identified certain factors as being responsible for the failure of most infrastructures being delivered through the traditional infrastructure delivery system in the country. ese factors include the following, namely:

• Declining funds in real terms

• Spiral corruption resulting from lack of transparency

• Lack of legal and financial frameworks

• Poor capacity in managerial and technical expertise (Gidado 2010)

Whilst comparing these factors identified by Gidado (2010) with the ones established by Kwak et al. (2009) earlier on, it becomes glaring that the same issues also affect infrastructure projects being procured through private sector intervention in other regions

. Ibrahim et al (2006) whilst advocating for the utilization of the PPP medium as an avenue to improve on Nigeria’s Infrastructure deficit, evaluated the potential risks of the PPP scheme and suggested that the public sector need to accept to bear some risks which they are better placed to bear. Kaufmann (2008) is of the opinion also that the cooperation between the private sector and the public sector should be arranged in such a manner that it would be in the overall interest of the public through the employment of strong accountability mechanisms, consistent contractual arrangements and effective relationship management.

According to Nigeria National Bureau of Statistics, Construction accounted for 1.7% of GDP in 2007 and only 1.95% of GDP8 over the last decade. This contribution to GDP is meager in comparison with other developing countries, such as those found in Asia. According a 2007 KPMG report, Asian Development Bank came out with a study suggesting investment in infrastructure should contribute a minimum of 6%9 to GDP in developing economies, to sustain growth. This is well in excess of what Nigeria’s infrastructure industry contributes currently. From 2004 - 2009, movement in Nigeria’s economy has cycled between 5% and 11% (2004 – 2008), averaging out at 6.6% over the period (World Bank, 2009).

# 2.4 Infrastructure and Economic Development

 Infrastructure contributes to economic development by increasing productivity and providing amenities which enhance the quality of life. The services generated as a result of an adequate infrastructure base will translate to an increase in aggregate output. Two categories of derived benefits to direct investment are:

- Investment in infrastructure services, such as transportation (roads), electricity and water are intermediate inputs to production.

- Infrastructure services tend to raise productivity of other factors. Infrastructure is often termed the “unpaid factor of production”. Investment in infrastructure in a given location often attracts additional flow of resources.

Both effects contribute to economic growth by stimulating aggregate supply as well as demand.

 However, these contributions on aggregate output, take time for the benefits to be realized. In a paper by Canning and Fay (1993), it was concluded that developing countries showed a high rate of return on transport infrastructure comparable to those of developed countries. Conclusive evidence linked increased output to increased investment in transport infrastructure, but little evidence with that link being immediate (ibid). From the foregoing, it was concluded that infrastructure was not to be considered a factor of production, but rather a condition for higher rates of economic growth.

From the above, the outputs of infrastructure to economic growth are wide and far reaching. Far reaching that there impacts should never be underestimated. Ability to foster infrastructure development is best tackled at a strategic level from where the necessary energy lies to drive its implementation.

 Strategic planning combined with a strong political will needs the right procurement approach to achieve long term results. PublicPrivate Partnerships will not only meet such goals but have been found to accelerate them. PPP allows governments to free up fiscal funds for use in other pressing areas.

**Infrastructure Procurement Strategies**

 The huge cost associated with infrastructure investment could be overwhelming. To address this, a procurement strategy different from the traditional approach, seems a more optimal route to go. Traditional procurement2 methods remain the major vehicle for procuring infrastructure projects within Nigerian and Africa in general. However there are risks inherent with them often in the areas of schedule completion delays and cost overruns. More long term strategic impact includes:

• Poor maintenance cultures of governments preclude efficient and adequate maintenance and operation of infrastructure.

 • Financial risk: Excessive advance payment (mobilization) to contractors places a huge risk on public funds in light of weak public institutional capacity responsible for providing contractual oversight.

 • Short term gains. Traditional approach provides minimal post construction service after the defect liability period (Uff, 2005).

• Long term revenue generation risks due to undercollection. High amongst inefficient government run infrastructures like the power sector. The result is inadequate funding for operations and maintenance. (V. Foster and C. Briceno-Garmendia, 2010)

 Primarily because of the above, there has been a global move towards models which are able to optimally share risks with the private sector. The generic procurement term for this is defined as Public-Private Partnerships (PPP) – involving public bodies (governments) and private companies (Howes & Tah, 2003)

 PPP procurement strategies could come through bilateral or multilateral funding assistance such as the World Bank, European Commission in collaboration with the private sector. Countries can benefit tremendously through such schemes. In return, the nation will enjoy access to strong infrastructure base, which has a multiplying effect on development and aggregate output. Such as:

- Increased agriculture output of farmers through improved roads

 - creation of a sea ports

 - Rail links.

 - Electrical generation, transmission and distribution.

 - Water and irrigation projects - Increase quality of life of its citizens

 - Urbanization of different areas.

 PPP allows for the finance and operational burden to be transferred from the public to the private sector. In return government is able to focus on strategic areas like policy making, planning and demand risk. This is important as governments have better leverage on demand through attractive policies. Governments are known to be better managers of such risk and control it more effectively (KMPG, 2007).

# 2.6 Risk factors affecting Private investments

 However, certain reforms have to be in place to attract private investment. External risks appear to be the main risk preventing organizations / financial institutions from investing in long concession contracts in Africa.

To attract private investors, the right business climate must be available. Governments need to identify and reduce external threats; otherwise they become the main bottleneck to flow of investment.

There are those that are widely known and are listed below:

- Political risk

 - Economic risk

 - Social risk

- Technology risk

 - Legal risk

**Political risk**:

(a) Confiscation, Expropriation and Nationalisation - Creeping expropriation, series of acts that over time have an expropriatory effect. Government must be able to demonstrate, through a reformed legal system, limits to their influence and power. This will promote investor confidence and flow of capital.

 (b) Breach of Contract - Breach or repudiation of a contractual agreement with the investor/lenders by host government.

 (c) Regulation imposing requirements. Government’s ability to impose new regulations that could have negative effect on business decisions of private investors.

 **Economic risk:**

 (a) Currency fluctuations: This could be a major factor especially in concession contracts spanning many years. Having a steady economy to mitigate such risk is essential. Use of currency devaluation adjustment factors is another. Other mitigating actions include the use of forward exchange rate agreements on future transactions (Howes & Tah, 2003).

 **Legal risk:**

(a) The legal framework of the country must appear transparent and be known to be quick and fair in addressing legal issues

(b) Arbitration and conflict resolutions methods must be of international standards and widely accepted.

These risk factors may appear low in frequency of occurrence but their impacts are usually high; sometimes to the demise of organizations and strategic objectives. As such, they are to be adequately addressed to encourage private participation in infrastructure development programs. Institutional reforms will help mitigate such risks. These risks are not insurmountable but require strong political will from governments to reduce their likelihood of occurrence.

# 2.4 . Engineering Challenges in Nigeria

• Engineers being all in all: In most government and private establishments in Nigeria, engineering

personnel are assuming to know all. A civil engineer can be employed to do the work of an

electrical engineer, chemical engineer, Mechanical Engineer etc. at the same time. instead of

seeking the services of engineering professionals in these other areas of engineering.

• Corruption: most engineering projects in the country is carried out using the fifty percent (50%)

rule, thereby eating the capital and not the profit. That is, contractors giving even more than fifty

percent of the total cost of a project to some corrupt government officials and politicians before

actually embarking on a project and in most cases, since the remaining part of the money will not

be enough to do the job, the project may not be carried out and if it is carried out at all, it is usually

sub-standard or abandoned.

• Non-Engineers carrying out engineering contracts using engineering credentials: Most

engineering contractors carry out engineering projects using engineering credentials of

engineering professionals in order to win or get engineering contracts.

• Politics: the nature of the training of the engineers does not actually expose him/her to be actively

involved in politics, though they may be passively involved. For instance, a power engineer in a

power station cannot be actively involved in politics. Since power stations are usually sited in

secluded areas

.

• Existing engineering facilities and infrastructures not being upgraded: most engineering

establishment ever since they were commissioned have not been upgraded, thereby not able to

meet up with the present-day demand.

• Non-adherence to workshop sections in conferences: most engineering conferences do not adhere

to workshop sections, usually after technical paper presentation, then, it is all over.

• Attitude towards maintenance: our industries and infrastructures are built “once and for all”

without any routine maintenance work, the result is the general decay of industries and

infrastructures in the country.

• Reverse engineering not in our engineering curriculum; hence, making technology transfer

somehow difficult.

• Engineers are not fellowshipping with their colleagues; most engineering personnel occupying

managerial positions are not registered with the Nigerian society of Engineers (NSE) and the

council for the regulation of engineering in Nigeria. (COREN). Hence, such person’s may seem

not concern with the advancement of engineering and technology in the country.

• Research and Development: Government lackadaisical attitude towards research and

development hinders research opportunities in research institutions and universities. Government

considers research and development to cost a lot of money and there is no link between research

institutes, universities and industries in the country.

7. The Task Ahead for A Sustainable Development

• Different engineering personnel in various fields should be employed in all engineering

Departments in both government and private establishments, so that specific jobs can be given to

an engineer in his/her chosen area of specialization. That is, there should be division of labor.

• The pay package of engineers in Nigeria should be commensurate with their counterparts in

Europe and America, so that they will not be tempted to eat the capital of any project.

• Engineers should be discipline and avoid non-engineers using them to achieve their selfish aim.

They should only tender their certificate when they are involved in a project. And establishments

should be mandated by the Nigerian society of engineers, to employ at least one registered

engineer.

• Just as the office of the Attorney General is occupied by a lawyer, the offices of the ministers

and commissioners of Energy, Works and Housing, Environment and Transport should be

specially for engineers.

7

• Existing engineering facilities and infrastructures should be upgraded with the present-day state

of the art facilities in order to meet up with the present-day demand.

• Engineering conferences organized in Nigeria should always adhere to workshop sections after

technical paper presentation, this will go a long way to develop our local technology.

• Routine maintenance work should be carried out, on a regular basis after a project have been

commissioned, this will increase the life span of such infrastructures and facilities.

• Reverse engineering should be introduced into our educational curriculum, in order to make

technology transfer very easy, we should all embrace the popular “Igbo-made “and stop using

foreign labels on our locally manufactured goods.

• Engineers should be mandated to belong to their professional bodies and without this, they should not be allowed to practice. That is, they should be mandated to fellowship with their professional

colleagues.

• Government should make money available for engineering research and development, in order

for the country to advance technologically.

#

#

# 2.5 Possible solution to the infrastructure development in Nigeria

### ****1. Better Resource Control****

Human capital development should be greatly encouraged since the efficient use of human resources will cause rapid economic growth. Also, allowing more resource control at the local levels of government and creating a system that holds them accountable will greatly improve the country’s development at these levels.

This will also see to maximum development in every state and not just a select few as is the case presently.

### ****2. Discipline in Planning****

As earlier stated, change in government officials brings about change in policies and projects. These new projects compete for resources with already approved ones and most times, the plan is distorted. Laws should be enacted to enforce discipline in the completion developmental projects no matter the ruling party.

### ****3. Mass Education on Development Plans****

Mass media should be employed to educate the people on plans being considered, its objectives, strategic implementation plans and feedback mechanism installed. This will go a long way to ensure commitment of the masses to bring these plans to realization.

### ****4. Efficient Data Collection****

The relationship between a good development plan and efficient data collection cannot be overemphasized. The data gotten greatly influences the projection of the economic needs of the people and requirements of the nation generally.

# 2.6 CONCLUSION

To attain significant accelerated development over the next 10 -15 years, Nigeria will have to expand its infrastructure development funding in tangible capacities by 24% of GDP over 10 years or 18% of GDP over 15 years to catch-up with most Asian14 countries. This of course is based on the assumptions that Asian countries will maintain a modest growth rate of 6%/annum with spending on infrastructure remaining in the average 6% range.

 While Nigeria’s economy continues to grow, strategic investment in infrastructure is an important element of that growth and must be encouraged by government. Government, on the other hand, need to concede that they lack the resource to acquire the infrastructure base required to support or sustain economic development. Though there are risks associated with increased spending over a short period on the overall macro economy (e.g. inflation), this can however be mitigated through tactful and well orchestrated spending without compromising macroeconomic fabric of the country.

 Summarily, this study concludes with the view that the concept of viable infrastructure delivery systems, especially within the comity of developing economies, should be given worthy consideration by the construction industry in the future as success for this set of societies transcends the iron triangle and the adoption of private enhance but rather lies within the ambit of local socio-economic benefits.

# Reference

AKAMPURIRA, E., ROOT, D. and SHAKANTU, W., May, 2009. Stakeholder Perceptions in the Factors Constraining the Development andImplementation of Public Private Partnerships in the Ugandan Electricity Sector Journal of Energy in Southern Africa,20(2).

AKINYOSOYE , M. 2010.Infrastructure Development in Nigeria: Road Map to Sustainable Development. Greenhill Technical Services, November, 2010

The Nigerian society of engineers, proceedings of the national engineering conference, opening address by the federal commission of works, Literamed press; Ikeja, December 1977.

 Jim Webber and Dave Hill: reverse engineering the sustainable Development process: adapting eight decades of Experience to enhance the future., WWW, google.com, 2007.

 Babalakin, B. (2008). Developing & Improving Air Traffic into Africa. 2008 US-Africa Infrastructure Conference. Washington DC: BiCourtney Ltd.

Binswanger, H, Khandker,S and Rosenzweig M. (1993). How infrastructure and Financial institutions affect agricultural output and investment in India Journal of Econometrics.