

# An Alternative Model for Financing City Infrastructure in Delta State Nigeria

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**Abstract-** *This study explores the challenges associated with the existing financing model for city infrastructure in Delta State, Nigeria, and proposes an alternative model to address these issues. The study aims to assess the effectiveness of the current financing approach and provide a viable alternative that better aligns with the unique context of Delta State. The objectives include evaluating the performance of the existing financing model, identifying key stakeholders' perspectives, and developing a comprehensive alternative model for financing city infrastructure. The research design adopted for this study is the triangulation method, combining qualitative and quantitative approaches to enhance the robustness of the findings. The target population comprises contractors, end users, government regulatory agencies for infrastructural-related matters, and users of the infrastructures. Using a purposeful sampling technique, the study collected opinions from 504 respondents. The results are presented through tables and figures, offering a comprehensive overview of the current challenges and stakeholders' perspectives. The findings indicate a significant underperformance of the existing financing model in the study area. In light of these challenges, the study concludes by presenting an alternative model for financing city infrastructure in Delta State. The proposed model takes into account the unique socio-economic and institutional context, aiming to enhance the efficiency and sustainability of infrastructure development in the region*

**Indexed Terms-** *Alternative Model, City Infrastructures, Delta State, Financing Model, Urban Planning.*

## I. INTRODUCTION

Infrastructure is the basic physical and organizational structures needed for the operation of a society like industries, buildings, roads, bridges, health services, governance and so on. It is the enterprise or the products, services and facilities necessary for an economy to function (Sullivan and Sheffrin, 2003). The term typically refers to the technical structures that support a society, such as roads, water supply, sewers, electrical national grids, telecommunications, and so forth, and can be defined as "the physical components of interrelated systems providing commodities and services essential to sustain or enhance societal living conditions" (Fulmer, 2009).

It is widely acknowledged that investments in infrastructure can play a fundamental role in stimulating economic growth particularly in developing countries (Esfahani and Ramirez 2003; Canning and Pedroni 2008). Indeed, infrastructure serves as an input in the production process and can enable improvements in productivity and efficiency through reductions in time wastage resulting from decreased service interruptions, as well as better communications capabilities, improved access to information and markets, and lower costs of transportation and logistics. Furthermore, by improving access to services such as water, sanitation, electricity, and information communication technologies (ICT), the living standard of the people is enhanced. (Straub 2011; World Bank 2010).

There is a growing consensus right now in Nigeria; it is on the need for investment in infrastructure to reduce the cost of doing business and to make Nigerian businesses competitive. The lack of adequate

infrastructure serves as one of the most significant obstacles to building, sustaining and distributing wealth. Therefore, the availability of it is the trajectory to economic growth and poverty alleviation.

The development of infrastructure in Nigeria has customarily been financed through traditional forms of contract awards by the government, but this has been faced with the formidable challenge of a sudden drop in the price of crude oil in the international market, which translates to a shortfall in the oval volume of revenue available. In the face of the diminished government revenue, the government has been unable to finance the required infrastructure development by itself given its budgetary deficits and significant debt levels. More so, as the government's ability to provide long-term financing for city infrastructure development shrinks, many worry that the national infrastructure gap will widen to unprecedented levels .

It is against this backdrop that this paper identifies the challenges plaguing the existing financing paradigm and also provides practical solutions for policymakers, urban planners, and stakeholders interested in the region's infrastructure development by addressing the limitations of the current model and proposing an alternative model,

### 1.1 The State of Basic Infrastructure in Nigeria

The availability of adequate infrastructure facilities is imperative for the overall economic development of a country. Infrastructure adequacy helps determine success in diversifying production, expanding trade, coping with population growth, reducing poverty and improving environmental conditions (Kohli, 1995; Nayak, 1999; Andrew, 2001; Dabara et al, 2012b).

Possible types of major infrastructure projects may include: Airports – including new runways, runway extensions and airport terminals; Power stations – including thermal, nuclear and renewable energy sources and overhead electricity lines; Nuclear facilities – including facilities for fuel fabrication, spent fuel reprocessing, waste storage or disposal; Ports and piers; Dams and reservoirs; Major roads; Railway lines; Oil and gas facilities – including extraction facilities, pipelines, terminals, storage facilities and refineries; Chemical works; Quarries and mines;

Government developments such as large military projects etc (Nayak,1999; Ndulu, 2006; Lee, 2010; Kingley, 2011)

With infrastructure as a key driver of economic growth, developing countries are particularly aware of their infrastructure needs. Lee (2010) observed that for developing countries infrastructure investment providing access to energy, clean water and basic transport may mean the difference between life and death. However, it has been observed that in developed nations, not only is the stock of infrastructure capital much greater than in developing countries, but there also exist sustainability measures for the vast infrastructure.

A World Bank study has estimated that developing countries as a whole invest about \$200 billion per year in physical infrastructure facilities (World Bank, 1994). This is about 4 per cent of their GDP. The study further revealed that about \$160 billion (80%) is financed through domestic public resources \$25 billion (12.5%) through international development assistance and the remaining \$15 billion (7.5%) through private capital. The private sector's share in infrastructure investment is still small though rising at a faster rate in many developing countries.

Perhaps the challenges encountered in these developing nations is because basic infrastructure is provided and maintained by the government solely (Andrew, 2001; Gunatilake, 2010; Lee, 2010). The state of infrastructure in Nigeria particularly is pitiable. A survey carried out by the World Bank (2002), found that Nigeria's infrastructure in terms of quality and quantity, is grossly inferior to that existing in other parts of the world; this has been found to exert a negative effect on the cost of doing business in the country. Out of 102 countries assessed in the global competitiveness report in 2004, Nigeria's quality of infrastructure was ranked 3rd to the last; this is consistent with the World Bank survey results where manufacturing firms listed infrastructure as their most severe business constraint (World Bank, 2002). The infrastructures listed as lacking include Insufficient or lack of provision of pipe-borne or portable drinking water, where 50% of the city dwellers lack access, as a result, 44 per cent of households have their private boreholes and very many rely on water vendors whose

high prices amount to more than 30 per cent of the household income for the poorest, as a result, a large proportion of households have resorted to drawing water from unhygienic sources (Hall, 2006). The poor road network is also another infrastructure in a very poor state, the Nigerian roads, e.g. Lagos, Gombe and Ibadan are the lowest in density in Africa, where only 31% of the roads are paved as compared to 50% in the middle-income countries, and even where roads are provided only 40% of these roads can be said to be in good condition (World Bank, 2002).

Waste management, especially solid waste, Nigeria is said to be generating 80,000 metric tons of solid waste daily, but only 30% of this is collected for proper disposal. This has built up the unsavoury cultural habits that encourage the indiscriminate disposal of solid wastes in any available open spaces, including main streets and open drains (Omuta, 1988; Odemerho, 2005).

This assertion is congruent with the findings of Dabara et al. (2012a) the researchers found that Gombe township drains now form the final destination of unclear refuses. The blockage of these drains and natural drainage routes has been attributed to the causes of flooding in Gombe, Lagos and other Nigerian cities. Electricity, Power Holding Company of Nigeria (PHCN), which was recently privatized for efficiency, is yet to be impressive in performance. Mainly due to maintenance inefficiency, the transmission system is unable to deliver power to a major part of the country and its performance is unreliable. There are transmission losses of 30-35%. Currently, only 10% of rural households and approximately 40% of Nigeria's total population have access to electricity. The aforementioned weaknesses in infrastructure provision are a reflection of factors such as lack of involvement of the private sector in infrastructure provision, dissemination; negligence of the duty of the maintenance units and mostly misguided policies, weak selection of administrative projects and political interference and corruption (Obiegbo, 2005).

## 1.2 The Existing City Infrastructure Financing Models in Delta State

### 1.2.1 Direct public funding

Dirican, (2016) described direct funding as the process of providing financial support or resources directly to a specific individual, organization, project, or cause without intermediaries. Direct public funding includes State budget money invested in transport and logistics infrastructure projects. The direct public funding model used in the Delta State is the type where budgetary funds owners may be local governments, subdivisions of ministries, public organizations, or other institutions. The Central Government gives finances according to the state budget to the budgetary fund's owner, who uses it to finance transport and logistics infrastructure projects. Usually, the objects of investments are owned by the State.

### 1.2.2 Public-Private Partnership

Several PPP projects are based on the following principle: a private sector representative obtains a building title and constructs the necessary infrastructure (e.g. a school, municipal residential building, or physical training facility) with his finances, and the public sector grants investment profitability using future user fees. PPP can be seen as cooperation between the public and private sectors using a company owned by the State, a so-called state-owned joint-stock company (Fotak, 2016). Such companies operate and manage independently, but 100% of the stocks are owned by the State. There are many different ways to finance infrastructure projects by using the Public Private Partnership model.

### 1.2.3 Private investment

Private investment is a financial model where a private investor finances transport or logistics infrastructure objects which usually belong to him/herself. Such private investors may be private companies and enterprises or individuals (Yuri. et al, 2013). In this model, the private investor uses his/her own money or borrows it from the financial market and invests it in his/her infrastructure objects. When using financial market finances, the private investor is obliged to repay the loan with interests

II. METHODOLOGY

This study employed a mixed method research design: The descriptive design collected information regarding infrastructure and financing models in the study area through a questionnaire (field survey) while the structure, operation and weaknesses of these models were obtained via interview and focus group discussion. The target population comprises contractors, end users, government regulatory agencies for infrastructural-related matters, and users of the infrastructures. Using a purposeful sampling technique, the study collected opinions from 504 respondents. The results obtained were analyzed using SPSS version 22 and presented in Tables and figures

III. RESULTS

Table -1: Pearson’s Correlation Result for the Study Hypothesis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2144.300	1	2341.382	117.254	.152 <sup>b</sup>
	Residual	319.150	214	1.234		
	Total	4131.030	214			

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 1 shows the Pearson’s correlation result for the hypothesis that states that there are no weaknesses in the existing infrastructure financing models in the study area. From the Table, the correlation coefficient is .872 showing that there are 88% weaknesses in the infrastructure financing models in the study area. The p-value as seen in the Table is .0152 which is less than the level of significance of .05. Going by this therefore, the alternate hypothesis is accepted and it is stated that there are statistically significant weaknesses in the infrastructure financing models in the study area. This revelation therefore amplifies the need for another city infrastructure financing model

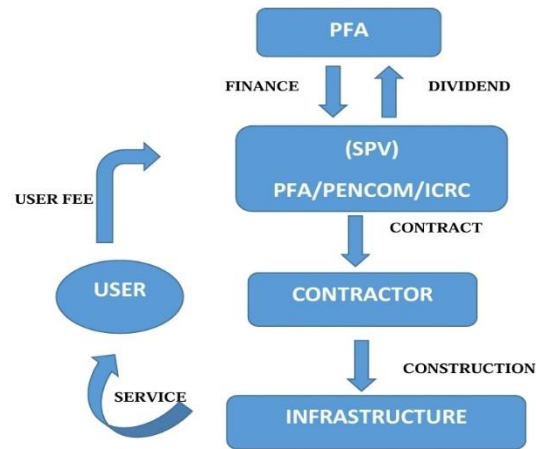


Fig -1: PFA-Looped Model for City Infrastructure Financing in Delta State

The alternative financing model for city infrastructure financing in Delta State, Named the PFA-Looped model in Fig. 1 provides the basis for how well the private sector can be actively involved in the improved city infrastructure financing model. The model in Fig. 1 describes the relationships among the various project stakeholders; and the influence of private sector involvement in the performance of the new financing model. The model proposes that the PFAs will finance the SPVs for the development of a typical infrastructure for the city. The SPVs will in turn award the contract to any selected and approved contractor(s) who will now be charged with the construction of these infrastructures. Now, the infrastructures will provide the services for which they were designed and constructed. The users of these infrastructures will in turn pay user fees back to the SPVs for making use of the services provided by the infrastructures. The SPVs will now pay returns in the form of dividends back to the PFAs as the financiers of the infrastructures. The proposed model when followed systematically could be an efficient alternative to the existing financing models in the study area.

CONCLUSION

The study examined the existing financing systems for infrastructural upgrade, maintenance and development in Delta State, to develop a financing model for effective infrastructural development, operation and

maintenance within the study area. Findings from this study lead to the conclusion that. The existing financing models currently being used in the state have become inadequate given the current economic and social realities and therefore the need for an alternative. The study developed a model for an alternative financing model for city infrastructure in Delta State that involves the active participation of the private sector that is geared towards providing the common needs of their community is an innovative initiative.

#### REFERENCES

- [1] Andrew, F. H. (2001). Infrastructure and Social Welfare in Metropolitan America. Retrieved on 23/02/2012, from: <http://www.newyorkfed.org/research/epr/01v07n3/0112haug.pdf>
- [2] Dabara, D. & Ankeli, A. & Guyimu, J. & Oladimeji, E. & Oyediran, O. (2015). *Infrastructure Financing and Urban Development In Nigeria*.
- [3] Dabara, I.D., Ankeli, I.A., Odewande, A. G., & Oluwasegun, A. (2014). Decision theory and its relevance to real estate development decisions. *British Journal of Economics, Management & Trade*. 4(12), 1861-1869. Available online at <http://www.sciencedomain.org/abstract.php>
- [4] Kingley, C. M. (2011) "Taking Infrastructure Finance to The Next Level" Retrieved on 5th August 2012, from: [http://www.icrc.gov.ng/wp-content/uploads/2011/08/ICRC\\_PPP\\_Forum\\_-\\_Remarks\\_by\\_DG-FSS\\_1\(11\).pdf](http://www.icrc.gov.ng/wp-content/uploads/2011/08/ICRC_PPP_Forum_-_Remarks_by_DG-FSS_1(11).pdf) Lee, 2010;
- [5] Kohli, H. (1995): *Infrastructure Development in Asia and Pacific: Toward A New Public-Private Partnership*, World Bank, Washington DC.;
- [6] Nayak, P. (1999): "Infrastructure: Its Development and Impact on Agriculture in North-East India", *Journal of Assam University*, (4)1, pp. 59-65. Ndulu, 2006;
- [7] Yuri V. F. et al (2013). *Guidebook to Financing Infrastructure for Transport and Logistics Within the Northern Dimension (FIND)*. LUT Scientific and Expertise Publications Research Reports 7