

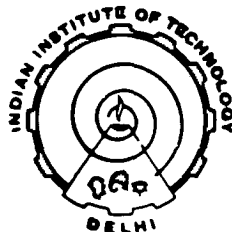
ROLE OF TRANSPORTATION AND PETROLEUM INDUSTRY IN ECONOMIC DEVELOPMENT OF NIGERIA

BY

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**A THESIS SUBMITTED
IN FULFILMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY**

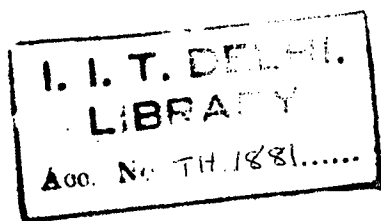


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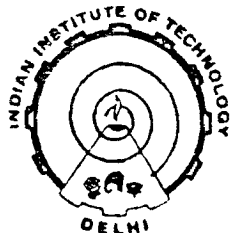
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CERTIFICATE

This is to certify that the thesis entitled, "ROLE OF TRANSPORTATION AND PETROLEUM INDUSTRY IN ECONOMIC DEVELOPMENT OF NIGERIA " which is being submitted by Mr. Paul Chukwunyere Njoku to the Indian Institute of Technology Delhi, for the award of the degree of Doctor of Philosophy is a record of bonafide research work carried out by him. He has worked under our guidance and supervision and has fulfilled the requirements for the submission of this thesis, which has attained the standard required for a Ph. D. Degree of this Institute. The results presented in this thesis have not been submitted elsewhere for the award of any degree or diploma.

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D E D I C A T I O N

The Lord is good, His love is eternal for ever. And His faithfulness lasts for ever. We are people He cares for. The flock for which He provides.

To the members of my beloved family. Mr. EVEREST NJOKU, MRS. FIDELIA NJOKU and the family of Col. A.V. MANUEL, Mrs. ASHA MANUEL who have constantly given me love and affection, and have been continuously encouraging and helping me tangibly during my student career.

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PAUL CHUKWUNYERE NJOKU



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A B S T R A C T

The research investigations presented in this thesis pertain to the Transportation System and Petroleum (energy) Industry of the Federal Republic of Nigeria. The economic development of Nigeria, as of today, is dependent on its oil. Nigeria is a member of the Organization of Petroleum Exporting Countries, its abundant oil resources should be utilised in such a way that the people of Nigeria would benefit most. In this context, the transportation system of Nigeria would play a significant role in its development.

There have been few studies in which the socioeconomic implications of the transportation system as well as the petroleum industry have been analysed. In this thesis, it is argued that the development of transportation facility encourages increased economic activity which in turn , gives rise to an increased demand for transportation over a period of time. In chapter 2, this inter-relationship has been examined in terms of the impact of transportation system on the socioeconomic development of Nigeria. Towards this end, a few indicators or variables of socioeconomic system have been considered for which adequate data are available. A statistically significant regression equation has been fitted between each of the identified socioeconomic variables and an appropriate transportation variable, It is inferred from the regression relationships so identified that there is a positive impact of the transportation system on the socioeconomic development in the sense that the socioeconomic variables change for the benefit of the people with the increased transport facility. This chapter includes relevant details of the present

transportation system of Nigeria in terms of different modes such as road, rail, waterways and air. A systemic framework for the National Transport Network Planning for the Federal republic of Nigeria is presented in chapter 3. It is based on the development of Transport Priority Indices (TPI) Model for a Reference Level/Rational Development Scenario for each state keeping in view their characteristic features and locations vis-a-vis. The location of the activity centres. States with higher TPI values are picked up first to suggest improvement and / or construction of new transport links to enhance accessibility and thereby reduce their TPI's. The TPI scores are also used to compute aggregated benefits (weighted with population) accrued due to new transport links as envisaged in reference level/ rational development scenarios to justify their construction.

Attempt has been made in chapter 4 to identify the indigenous demand and supply of oil products in Nigeria, the potential for export, the contributions of domestic refineries and the import of specialised heavy crude on the basis of observed data. In this connection, the interzonal petroleum product flows over the transport network have been modelled through a suitably calibrated and validated gravity model with predictive capability for future target years. The estimate of interzonal flows for future years are on the basis of projections of the demand in future as well as the identified export-import models for assessing domestic supply availabilities.

The current energy scene in Nigeria and its future needs have been analysed in chapter 5. The five major demand sectors

considered are : Industry, Agriculture, Transport, Commercial/Services/Government and Residential certain major determinants of demand are identified before making demand projections, In this respect, an attempt is made to build three scenarios. Scenario I is for major sectoral growth remaining unchanged from the trends observed in the past. Scenario II is for the situation where the total energy demand mix may change as the economy adopts higher energy intensity growth path, and Scenario III is for the case where the total energy demand mix may change further as demand management measures are adopted. The petroleum policy alternatives are dealt with in chapter 6. The rationale behind analysing petroleum supply options for three demand scenarios is only to illustrate the importance of energy demand management as an energy policy tool. The methodology of evaluation of the Net Present Value (NPV) is applied to the Nigerian situation, to analyse the implications of the international oil market developments on the Nigerian Petroleum Industry in particular and on the Nigerian economy in general. Different simulation runs suggest a range of policy options for utilisation of Nigeria's oil reserves. The issues related to potential growth of the Natural Gas utilisation are also highlighted.

The thesis ends with a concluding chapter highlighting the research contributions and delineating future scope of pertinent research work.

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