Issues in Nigeria's Transport Data for Planning and International Comparison

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Data play a crucial role in transport planning. Most plan failures in Nigeria are attributable in part to planning data problems. This paper examines the types, sources and shortcomings of transport data required for planning and international comparison in Nigeria. The paper found that transport data as published in Nigeria are deficient in terms of transport-development indicators, projections, comprehensiveness, consistency, adequacy and classification accuracy, among others. For Nigeria's transport data to be very useful for planning and international comparison there is the need for the government to adequately fund transport surveys regularly; harmonize the functions of the various agencies responsible for transport data collection and publication and; computerize the data storage and retrieval system.

Keywords: Transport; data; planning; adequacy; funding; Nigeria.

JEL Classification: L91, O20, R40.

I. Introduction

Post - independence planning in Nigeria spans over forty years. The essence of planning is to achieve overall national economic development and sectoral progress. The results, however, have generally been disappointing both at the national and sectoral levels. At the transport sector level, the 'sights and sounds' or 'voices and visions' are those of road deterioration, alarming rate of road and air crashes and associated casualties, vehicular air pollution above international benchmarks, non-functional rail system, corrupt and inefficient port system, pipeline vandalization and sabotage, poor coordination of transport modes, etc. Instead of transport efficiency and effectiveness, what obtains is transport disorder which vibrates to the remaining sectors of the economy given the role of transport in economic and socio- cultural development.

Many reasons have been adduced for national and sectoral planning failures in developing countries, Nigeria inclusive. These reasons include:

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deficiencies in plan formulation and implementation; unanticipated economic disturbances both nationally and internationally; insufficient and unreliable database; institutional weaknesses and bottlenecks; lack of political will; etc. (See Todaro, 1980). These reasons for plan failures are true of the Nigerian transport experience. Most of these reasons are post-planning failure factors with the exception of one, which is insufficient and unreliable database. Insufficient and unreliable database is a pre-planning failure factor. Transport plan is highly dependent on data not only from the transport sector but also from the other sectors of the economy based on the fact that transport is a *sin qua non* for the effective operation of other sectors of the economy. This makes the demand for transport a derived demand. Therefore, any transport plan requires data that are of high quality, and highly reliable. A transport plan may be as good as the database on which it was based or formulated.

Various transport plans have been formulated in Nigeria, which were embedded in the National Development Plans of 1962–1968, 1970–1974, 1975–1980, 1981–1985 and the subsequent Rolling Plans. These transport plans were based on available transport data. The deteriorating state of the Nigerian transport system, which is a consequence of the failure of the various transport plans, could be due to data problem. While it is difficult to draw this correlation emphatically because of the interactive and combinatorial nature of failure factors in plans, it is equally possible to admit that data constraints contribute significantly. This admission is predicated on two works Stolper (1966) and Fadare and Ogunsanya (1989). Inadequate data in the transport sector makes evaluation of progress difficult. This is buttressed by an evaluation report on the transport sector by a foremost government agency (NISER 2001). The report (NISER, 2001:9) noted that;

> *"It must be acknowledged right from the outset that for any meaningful performance evaluation of the transport sector, several performance indicators, covering each mode of transport are needed for requisite analysis. However, the type and scope of available data have limited the indicators that were ultimately used in evaluating the performance of the various transport modes covered...."*

The above citation is just one of the many observations about transport data in Nigeria and its limitations for planning, evaluation and international comparison. The poor database of the transport sector in particular is a national problem which requires urgent attention. It is, therefore, the aim of this paper to examine the status of transport data in Nigeria. Specifically, the paper examines the nature, types, sources, shortcomings and implications of existing transport data in Nigeria. It also looks at the causes of the data problems and recommended measures for improving transport data in Nigeria. It is imperative to note that there are many international conventions on the standards of transport data and its measurement across various modes with minor variations across countries. Nigeria, as a country, uses these standards and conventions subject to the constraints inherent in its data management system. This paper is, therefore, not primarily concerned with these conventions per se but the adequacy and usefulness of what presently exist in Nigeria's transport data system within the domain of these conventions.

II Review of some Conceptual Issues

Transport Planning

Transport planning is the conscious governmental effort to influence, directly and indirectly, key transportation variables over a period of time in order to achieve a predetermined set of transport and transport-related objectives. A transport plan is a set of quantitative transport goals or targets expected to be achieved in a given period of time. A transport plan may be comprehensive or partial. A comprehensive transport plan has its targets on all modes and related sub-systems of the transport sector, while a partial transport plan covers only a mode in the transport sector or a transport issue across the various modes. Transport plan could be a long term, medium or short term plan.

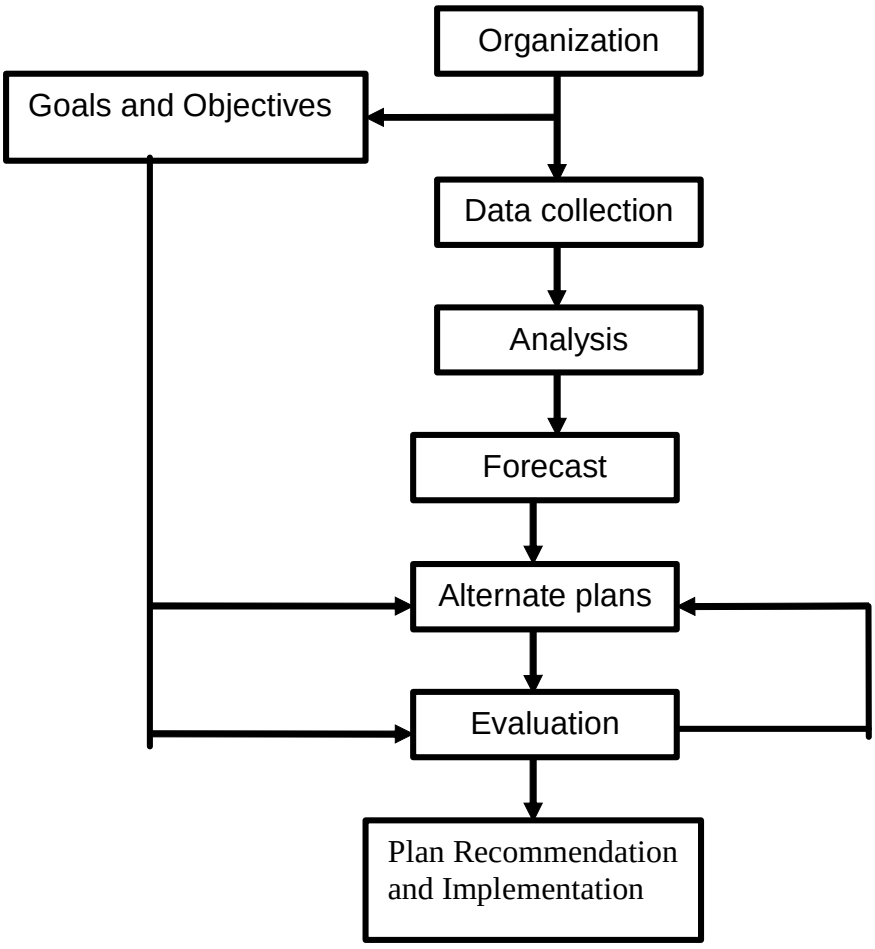
In the transportation planning process, some critical questions which define the basic elements involved in the process have been idealized by Expenditure Committee (1972:164), Starkie (1976:6&7) and Tolley and Turton (1995:199).These consist of ; (a) Definition:- What problem is the plan

intended to solve? (b) Diagnosis:- What are the causes of the problem? (c) Projection:-How will the situation develop if the problem continues? (d) Constraints:- What are the limits of finance, time, legal powers, politics, etc, within which planning must take place? (e) Options:- What are the alternatives for tackling the problems and what are their respective pros and cons? (f) Formulation:- What are the main alternative plans i.e. packages of available options within the prevailing constraints? (g) Testing: - How would each of the alternative plans work out in practice? How would they differ in their practical results? (h) Evaluation: Which plan gives greatest value in terms of solving the problems defined in (a)?

The above basic elements can be subsumed into the scheme for transportation planning process, which is summarized in Figure I. It is important to note that flexibility is allowed to take cognizance of the proposed planning peculiarities. The transportation planning process consists of six steps or stages that ultimately lead to plan recommendation and implementation. These stages are: setting of goals and objectives, data collection, analysis, forecasting, alternate plan development, plan testing and evaluation.

The schema below has been compartmentalized into three stages in some cases namely; pre-analysis phase, technical analysis phase and post analysis phase (see Tolley and Turton, 1995). Data collection is among the issues at the pre-analysis phase. It is not out of place to state that data play a dominant role in any transport planning process. Unrealistic transport data will lead to errors and unrealistic and unrealizable targets.

Figure 1: The Transport Planning Process (main steps).



Source: Witheford, 1976:522 (for other versions, see Starkie 1976 and Pas 1986).

Transport Data

Data are given facts from which other facts or conclusions may be inferred. This shows that data are not ends in themselves but lead researchers, planners and policy makers alike to a conclusion about certain phenomenon, after the processing and analysis of the given data. Data could be qualitative or quantitative in nature (Conyer and Hills 1991, Ojameruaye and Soyibo 1995). In order to conceptualize transport data it is necessary to have a working definition of transport. Transport is the spatial repositioning of

persons and goods from origin to destination for economic, political, social, military, cultural, leisure and any other utility (Arosanyin 2002a). Alternatively, it can be defined as that part of economic activity which is concerned with increasing human satisfaction by changing the geographical position of goods or people (Benson and Whitehead 1975:1). Whichever definition is adopted, one feature is that the demand for transport is a derived demand. Transport data, therefore, are transport and transport-related evidences often used by planners, researchers and policy makers to ensure cheap, safe, efficient, effective and sustainable transport system that is at the same time environment friendly.

Transport data and transport information are often used interchangeably, obviously for convenience, but in the technical sense of transport planning they are not the same. Transport data refer to any form of factual material or evidences which may be available on transportation while transport information refers more specifically to transport data which are of a special nature and in a form which makes them useful for whatever decision-making process and purpose that is under review. Transportation data could either be quantitative (numerical) or qualitative (non-numerical) in nature. In reality, it is usually a combination of both quantitative and qualitative data.

Quantitative transport data are transport data that can be expressed in numerical form thereby facilitating computation and accurate comparison. Qualitative transport data on the other hand vary in form; they range from description of modal characteristics, ways, and features to records of social norms, customs and ethics regarding any transport mode or issue. The numeric characteristics of transport objects are called transport variables while the non-numeric characteristics of transport objects are referred to as attributes. It is important to emphasize that observed characteristics of objects, whether numeric or not can be converted into numeric values called variables.

Transport data like any other data are not ends in themselves but means to arriving at an expected end if properly processed. Therefore, if the end results to which transport data are meant for will be adjudged adequate,

the data and its sources (collectors) must be reliable and trustworthy. The primary end uses of transport data are for transport planning and international comparison. And the essence of good planning is good quantitative intuition (Taylor 1979:47). Good planning requires huge and reliable database. Transport database are sourced from two main points. These are primary and secondary sources. These sources provide the clear demarcation between primary transport data (PTD) and secondary transport data (STD).

Primary transport data (PTD) are those facts which are collected through field work, such as traffic count, weighing, questionnaire administration, observational studies, etc. These sets of data are raw and original in content, facts or evidences. Secondary transport data (STD) consist of existing information collected by others and are available from sources secondary to the current collectors or users. These secondary sources include articles (published or unpublished), statistical bulletins, abstracts of statistics, statistical compendia, mimeos, reports, etc.

Transport data can be classified again on the basis of the length of time for which such data are available or during which they were collected. On the basis of this we have time series transport data, cross-sectional transport data and pooled transport data. Time series transport data are sets of numerical values of a transport variable or variables collected during successive time periods or different dates. The period may be sixty minutes (hourly transport data as in traffic count to determine peak hour), a day or twenty four hours (daily transport data), a week (weekly transport data), a month (monthly transport data), a quarter (quarterly transport data), a year (annual transport data), etc. Time series transport data are often spaced in time usually from one time to the other. Examples are: aircraft-kilometer flown ('000) from 1980-2004; road crashes from January to December 2004 in Nigeria, etc. These data provide the basis for trend analysis (and its components) of transport variables.

Cross-sectional transport data are sets of values of a transport variable or variables taken from individual units or geographical entities. It is usually taken across the entities at the same time. The bulk of transport surveys

are for the purpose of generating cross-sectional transport data. While both time series and cross sectional transport data are good individually and serve distinct purposes, they are better when combined in some cases. This combination is called pooled transport data. Pooled transport data, therefore, refers to a cross-time-series data or a time series of cross-section data. The main advantage of pooled transport data is that it enhances the degree of details available on a particular transport variable or variables. An example is the road network of African countries between 1960 and 2004. The time series component is the road network of individual African countries for the period 1960-2004 while the road network of individual African countries in a given year constitute the cross sectional component of the pooled road network data.

Transport data are wide as they cover the various modes of transportation. It may also include complementary data outside the transport sector that will assist in decision making on any transport issue. Transport data must of necessity encompass the four major components of transport which are the way, the terminal, the unit of carriage and the unit of propulsion. All these data including the flow and impact data are required for transport planning.

Ideal Structure of Transport Data

There is no universally acceptable structure for presenting or organizing transport data. The choice of format is dependent on the transport data collectors. Whichever structure adopted must employ the conventional methods of data presentation such as tables, pie chart, bar chart, maps, graphs, etc. Other issues that must be adequately addressed in any ideal structure of transport data are: the level of details, the degree of standardization and the spatial/temporal units for which data is reported.

Level of details: Good transport data must be sufficiently detail with respect to the issue under consideration and should not be ambiguous in interpretation. While a hundred percent data coverage and detail may not be feasible or achievable, the level of detail must be sufficiently high such that planning will not be hindered or based on *guesstimates.* As earlier

stated, the modal data structure must encompass network, nodes/terminals, flows and impacts. The detailness of transport data is generally very low in developing countries due to problems of data gathering, collation and retrieval. In a federal structure, the details must include federal, state and local authority components where the various tiers of government have control over the transport issue such as roads, mass transit vehicles, etc.

Degree of standardization: An ideal structure of transport data must exhibit a considerable level of standardization with respect to conceptual definitions, units of measurement and time of collection of data. Standardization ensures that data are comparable across time and space both within the national geographical entity (among states) and international frontiers (among countries). Some issues in standardization include, length (kilometer/miles), period of analysis monthly/quarterly/annually/ biennially); weight (kilogram/ton/metric ton); area (meter squared/hectare), distance traveled (vehicle-kilometre/vehicle-miles), categorization of vehicle types, etc. Standardization also ensures that transport data are less prone to error in the conversion process. A typical example of need for standardization at the international level is the conceptual definition of time within which death from road crash must occur for it to be classified as fatal. While the 1968 Vienna Convention on Road Traffic defined a road death as deemed to have occurred when a person injured dies within 30 days of the crash and as a result of the crash, not all countries use a 30-day definition. Some use 'on the spot', 'within 24 hours', 3 days, 7 days, etc. (See Arosanyin, 1999:491, Jacobs, et al, 2000).

The non-standardization of day – definition makes comparative analysis of death from road crashes often difficult at the international level without some adjustments which are sometimes subjective. Once standards are defined, inference and comparative analysis of transport data are enhanced.

Spatial-temporal units of reported data: Transport is spatial in nature as it can be located within a specified territory. A territory or geographical entity is made up of spatial units. Transport data, apart from covering the aggregate, must feature prominently the spatial components of the aggregate data. An example is the total international air passenger

movement to and from a country. Apart from the aggregate which should be movement from all the international airports in the country, the detail movement of passengers through individual international airports is important to show capacity utilization of airports and facilities for the purpose of planning for optimum resource use at the micro level. It also allows for examination of spatial variations thereby making targeted planning possible within a broad planning process. Also, good transport data must show trend for progress to be measured and evaluated. For instance, the trend in rail freight to the seaport would show its relative importance over time, and when compared with other modes it will show modal shift.

Once the above three issues have been addressed, then the structural adequacy of transport data must be evaluated. These structural adequacies are distributions adequacy, relationship adequacy and transport-development indicators adequacy.

Distribution adequacy: The structure of transport data must be such that it can adequately provide information about distribution. These may be statistical distributions. Also, it must be adequate in enhancing information about spatial distributions. Distributions provide important and valuable descriptive information which can then be used to compare different groups, times, activities or geographical areas, particularly in the context of identifying transport development problems and potential.

Relationship adequacy: Transport data must be highly responsive to information about relationships. These relationships may be spatial or aspatial. Any transport data structure should be able to show or provide insight into the pattern and forms of the relationships which exist between different factors of interest. For instance, road transport data must provide the necessary information for the computation of Smeed's equation, motorization level, road density, among others.

Adequacy of transport-development indicators: A structurally good transport data must also of necessity be able to provide information indicating the degree or level of development attained in a particular

transport mode or transport issue of interest. Transport development indicators are used on the one hand, for purely analytical purposes and, on the other hand, as aids to policy formulation and planning. They are important both as a means of identifying areas of transport with particular needs or problems and, as a means of evaluating the impact of specific transport policies or programmes overtime. They show where we were in time past and where we are today for progress evaluation and future adjustments.

The above ideal ingredients expected from a well structured transport data are seldom met in most developing countries, but provide an ideal which each country aspires to meet. Over the years attempts have been made to make data available across the various modes of transportation in Nigeria as evident in the numerous primary agencies involved in the collection and publication of transport data, and secondary agencies responsible for publication of general data on the Nigerian economy of which the transport sector is a subset. It, therefore, suffices to examine some pertinent issues in transport data in Nigeria. The expositions here are restricted to published data. It is important to note that volumes of transport data are collected by these agencies which are never published, but stored away in files and not in any computer - based data storage systems.

III. Sources and Types of Transport Data in Nigeria

Transport data is wide and diverse as it covers the various modes of transport available in Nigeria. Transport data also include transport-related or complementary data. For the purpose of convenience a modal approach is adopted in classifying the agencies involved in the collection of modal specific data and the data available. It is important to note that first the type of transport data highlighted here are by no means exhaustive, and secondly, there may be more than one agency responsible for the collection of a particular data because of the federal structure of Nigeria and duplication of agencies with overlapping functions. These agencies do complement each other, although there are cases of data conflicts. The transport data sources and types are examined under road, rail, air, pipeline, water, transport manpower, and general transport data.

Road Transport

Federal and State Ministries of Works: The data emanating from these agencies include: length of road network, categories of road network by trunk, types of road network (earth, bituminous, etc), road distance between Nigerian major cities (km), volume of traffic on roads (vehicle, type), road maps, road complementary facilities, other qualitative data, road user charges, expenditure on road (construction, rehabilitation and maintenance), etc.

Licensing Offices/State Boards of Inland Revenue: Available data from these establishments include: Vehicle registration (number, type, category by purpose), vehicle licensed (number, type, category by purpose), driving licenses issued (number, type, category), annual receipts from road taxation, etc.

Nigeria Police/Federal Road Safety Commission: generate data on road crashes (total, fatal, serious, minor), road crash casualties (total, persons killed, persons injured), causes of crashes, percentage distribution of road crashes and casualties by state, traffic offences committed, prosecuted, acquitted, other road crash related data, etc. Nigerian Ports Authority supplies data on vehicles imported into the country through the ports, CKD imported into the country through the ports, goods evacuated to the ports through the road mode, other qualitative and quantitative data such as volumes and types of tyres imported, spare parts, etc.

Other agencies where data could be sourced on road transport sub-sector include; Road Transport Employers Association, National Union of Road Transport Workers, Road Haulage Firms, State Mass Transit Agencies, Agricultural Development Projects, Nigeria Custom Service, etc.

Rail Transport

Nigerian Railway Corporation (NRC) provides data on the following, among others: passengers and goods carried; freight tonne-kilometre; passenger kilometer; length of rail track; number and condition of

locomotives and coaching stock; number and conditions of rail cars; accidents and casualties on railways; charges and revenue; kilometres from Lagos terminus; kilometres from Port Harcourt terminus; rail facilities; other qualitative data.

Nigerian Ports Authority (NPA): provides data on goods evacuated to the Nigerian seaports through the rail mode; rail equipment, wagons, locomotives, etc. shipped to Nigeria; other qualitative data on rail-related imports.

Air Transport

FAAN, Federal Ministry of Aviation and Association of Private Airline Operators: These agencies and association generate data on: passengers carried and passenger-kilometre (domestic, international); cargo tonne carried and cargo tonne-kilometre (domestic, international); mail volume (domestic, international); domestic aviation operations (aircraft movement, passenger movement, cargo movement, mail movement). Other data include: aircraft–kilometer (domestic, international); international aviation operation (aircraft movement, cargo movement, passenger movement, mail movement); charges on passengers and cargo services (domestic, international); capacity utilization (airports, aircrafts); domestic air distances; international air distances from Nigeria; list of registered airlines and aircrafts; aviation accidents and casualties; causes of aviation accidents; aviation facilities; other qualitative data.

Pipeline Transport

Nigeria National Petroleum Company (NNPC)/ Subsidiaries: provides data on volume of petroleum products transported to the various locations of depot through the pipeline mode; volume of gas piped to industrial plants; number of depot served by pipeline; inventory of pipeline facilities; other qualitative data on pipeline transport; number of pipeline vandalization and impact data. Nigerian Ports Authority gives data on goods evacuated to the ports through the pipeline mode.

State Water Corporations provide data on volume of water pumped to various cities and urban centres through their pipeline network, water pipeline inventories, etc.

Water (Ocean) Transport

State-Owned Mass Transit Agencies (Riverine States) / National Inland Waterways Authority: These agencies generate data on: number of passengers carried and tonnage of goods carried on domestic routes; length of rivers in Nigeria; navigation statistics of rivers (dry and wet seasons); capacity and net registered tonnage of inland waterways ferries and other vessels; existing ferry route; qualitative data on inland water transportation in Nigeria; accidents and casualties on inland waterways; causes of accidents on inland waterways, etc.

Nigeria National Petroleum Company (NNPC)/Pipeline Product and Marketing Company (PPMC): provide data on volume of crude oil and refined products shipped outside the country; volume of petroleum products shipped into the country; distribution of petroleum products by barges, etc.

Nigerian Ports Authority provides water transport data on the following, among others; Ships entering Nigeria from overseas; ships cleared to overseas; net registered tonnage for ships entered from abroad; net registered tonnage of ship cleared to abroad; oil shipment; non-oil shipment; ship accidents at ports; causes of accidents at ports and its casualties; cargo throughput; container traffic; international passenger traffic; goods evacuated to the Nigerian seaports through the water mode; analysis of import cargo; analysis of export cargo; labour productivity at ports; turn-round time of ship; berth occupancy rates; personnel strength of ports; personnel wastages at ports; inventories of port facilities; qualitative data on water transportation and ports.

Other sources of data for water transportation in Nigeria include: Niger Dockyard, National Maritime Authority, National Shippers Council, International Maritime Organisation, etc.

Transport Manpower Development Data

Data on transport manpower can be sourced from the following institutions: Maritime Academy of Nigeria, Oron; Nigerian Institute of Transport Technology, Zaria, Nigerian College of Aviation Technology, Zaria.; Nigerian Universities and Polytechnics, etc.

General Transport Data

Federal Office of Statistics: It publishes data on transport sector's contribution to Gross Domestic Product by various modes (road, rail, ocean and air); production and imports of road motor vehicles and accessories; total vehicle stock and vehicle in use; value added in the transport sector, etc.

Central Bank of Nigeria: publishes data on loans and advances to the transport sector; cost of fund to the transport sector; Federal government expenditure on the transport sector, etc.

State Budget Offices provide data on State governments' expenditure on the transport sector, etc.

National Meteorological Centre: is responsible for data on weather forecast for the aviation maritime sub sectors; weather forecast for other travelers outside the aviation sector, etc.

It is important to stress that transport data, particularly secondary data are published in both general and specialized outlets. The general outlets include Annual Abstract of Statistics, Digest of Statistics and Social Statistics of Nigeria published by the Federal Office of Statistics. The second of the general outlets are publications of the Central Bank of Nigeria such as Statistical Bulletins, Economic indicators of Nigeria, etc. The specialized outlets are outlets that are exclusively dedicated to transport data. These outlets include publications of the Nigerian Railway Corporation, Nigerian Ports Authority, Federal Ministry of Transport, Federal Ministry of Aviation, Federal Ministry of Works, Federal Urban Mass Transit Agency, etc.

Prominent among these publications are Annual Reports and Accounts, Digest of Transport Statistics, Aviation Statistics, Abstract of Port Statistics, etc. It is also important to stress that some of these transport data are published in international outlets such as the World Bank and African Development Bank statistical bulletins.

Primary-transport data are mostly found in post-graduate thesis of most Nigerian universities where the studies relied on primary data. They are also found in commissioned studies of the Federal Ministries of Transport and Aviation, parastatals, African Development Bank and the World Bank. A feature of primary transport data is that they are usually restricted, that is, they are not all readily accessible for public use.

IV. General Features of Nigerian Transport Data

A review of the various existing transport data in Nigeria shows some distinct features about its structure.

(a) Modal divide: Transport data in Nigeria are usually structured along modal divide which include rail, road, air, and water (ocean). Pipeline transportation data are still sketchy and in most cases not accounted for in general transport data publications. Within specific modal structure, data on network, nodes/terminal, flows and impacts are reported, but are usually not harmonized for ease of understanding and for establishing functional relationships.

(b) Report format: Most transport data in Nigeria are reported in aggregate as national figures. There are, however, isolated cases of disaggregation on state basis, individual airports, ports, etc. Beyond the state level, there are no local government based data. Also transport data in Nigeria are usually scanty along rural-urban divide. For instance, road accident statistics are presented for the whole nation and the various states. Road accidents and associated casualties by local governments and rural-urban classification are usually not published. They are hidden in police records, so also are road accidents and casualties along major highways that cut

across various local governments and states such as Lagos-Ibadan expressway, Kaduna-Kano expressway, etc. These data are important for evaluating road safety measures required for individual highway. There is a high level of standardization among related data locally. For instance, most road networks are expressed in kilometers while freights are in tonnage. Also, most transport data in Nigeria are reported yearly. There is little evidence of monthly or quarterly transport data which are quite necessary for evaluation of time series fluctuations.

(c) Tools of Presentation: Transport data are presented in Nigeria with the use of tables, pie charts, bar charts, graphs and maps. Analyses seldom go beyond percentage share or distribution. Transport development indicators which are in most cases in index form are hardly shown. Secondly, projections are usually not found in published transport data in Nigeria as it is usually done for population data. Projection of transport data and indices are mostly found in private research papers and commissioned studies.

It is important to note that the features above and their scope vary in depth from mode to mode and within the same modal system.

V. Shortcomings of Nigeria's Transport Data and its Implications

A critical examination of transport data in Nigeria revealed the following structural shortcomings or inadequacies. There is the general absence of regular National Transport Surveys required for generating requisite data for planning. No serious National Transport Survey has been conducted since 1981 when Louis Berger was commissioned by the National Transport Coordination Commission. The report was submitted in 1984. The follow up was the National Transport Survey and Projection (NTSP) commissioned by the Federal Ministry of Transport in 2000, which seven years later, has not moved from the pilot survey for Port Harcourt only. It means that for over two decades Nigeria has not conducted any National Transport Survey. The implication is that no serious planning has been done for the transport sector as a whole since the 1981-1985 Plan.

Transport data in Nigeria are hardly sufficient for establishing relationships. For instance, data on licensed vehicles or newly registered vehicles, even though not comprehensive, are published but no indication of average kilometer traveled to really show whether travel rate is increasing or decreasing. Travel rate is vital when examining changes in road crashes. Also transport-development indicators along modal classification are mostly lacking. Some of these include road ton-kilometer per Naira or Dollar of Gross Domestic Product (GDP), rail ton –kilometer per Naira or Dollar of GDP, water ton- kilometer per Naira of GDP. Others are the mode (road, rail, air, water) related passenger kilometers per capita.

There is the general absence of projected data in officially published data. Published data on transport in Nigeria should go beyond just what is. They should include what should be in the future based on scientifically determined projection techniques. Projected transport data are mostly found in commissioned studies or reports, which should not be so. They should be in official data outlets. The absence of continuous traffic flow data and projections for most Nigerian cities is partly responsible for the chaotic nature of urban transportation in Nigeria in terms of congestion, parking problems, etc. The projected transport data could assist planners to re-examine their position in the future when they evaluate their projected data with reality on ground. It will help in identifying what went wrong and provide the basis for improved forecasting. The absence of these projected data is denying Nigeria of the potential benefits thereof.

Nigeria's transport data is replete with too many provisional data. This is often due to non-rendition or late rendition of data to the collating agencies from the constituent units or incomplete data form these units. This means that the published data are usually under-estimation of the reality in the transport sector. Closely related to this is the fact that published transport data in Nigeria may not serve the current purposes. For instance, the 1999 edition of the Annual Abstract of Statistics may not be out until the year 2003. The transport data in the publication will terminate in 1998. For a good research and planning conducted in 2003, it should at least cover up to 2002. But most often they are not available, which makes currency of research output to be very poor in terms of data.

Transport data in Nigeria exhibit inconsistencies in figures emanating from the same source and conflicting data on a particular issue from different official sources. One visible example is the road crash data emanating from both the Police and the Federal Road Safety Commission (FRSC). The figures are irreconcilable and suggest that one of the agencies is 'polishing' its figures or has what is called 'press figures'. Apart from the incidence of 'polished or press data', computational errors or errors of addition abound in published data. Errors of addition make usage of data often difficult because researchers and planners will not know where the error comes from and how to resolve it. Computational errors in road crash data in Nigeria are well documented (Arosanyin 2004). An extract from it is shown in Table 1, which is just a tip of the iceberg in computational errors in transport data documentation in Nigeria. These inconsistencies in figures mean data input into the planning process is 'questionable', which will ultimately lead to 'questionable output', and incorrect placement of Nigeria in international comparison.

Table 1: Addition Errors in Road Crash Data

Source	State	Year	Fatal cases	Serious cases	Minor cases	Total as published	Correct total
FRN(1998)	Edo	1996	290	506	438	1,103	1,234
FRN(1998)	Bayelsa	1997	124	144	33	271	301
FRN(1995)	Nigeria	1991	6,513	8,385	6,275	65,658	21,173
FRN(1996)	Anambra	1991	47	51	36	2,142	134

Source: Arosanyin 2004:489.

There is the absence of many requisite transport data across modes. In road transport such data include non-motorized transport, vehicle stock, vehicle kilometre traveled (VKT), etc. Closely related to this is the fact that transport data in Nigeria are not regularly collected and published. The implication is that Nigeria is yet to comply fully with international conventions. Also, background information to transport data presentation in Nigeria is scanty and, is hardly enough to give first time user any idea of past developments. Poor and wrong classifications of variables in a data set also exist in transport data in Nigeria. Some data are lumped

together which makes analysis impossible when the interest is just on one of the variables. An example is the combination of output of railway with the output emanating from the pipeline mode of transport in the Statistical Bulletin of the Central Bank of Nigeria, sourced from the Federal Office of Statistics (CBN 2003). The extract is shown in Table 2.

Table 2: Transport Output at 1990 Constant Prices (1998-2003) (₦M)

Mode	1998	1999	2000	2001	2002	2003[1]
Road	6,020	6200.6	6392.8	6667.7	7910.3	8003.7
Rail and Pipeline	1.2	1.2	1.3	1.4	1.4	1.5
Water	293.9	298.9	305.8	313.2	287.9	286.7
Air	200.4	205.5	213.7	222.2	264.5	284.0
Transport Services	458.8	550.5	594.6	654.0	752.4	762.2

[1]/ provisional, *Source: CBN (2003:243-244).*

From Table 2, the output of rail transport was lumped with the output of pipeline transport. They are not compatible as they are distinct modes of transport. The question is, for a researcher interested in examining the contribution of pipeline transport to the economy, which figure is appropriate? Using the above output figures as published will amount to over-estimation. Another problem with the above classification is the treatment of 'transport services'. The question is which transport services? Transport services cut across the various modes of transport namely road, rail, air, water and pipeline. Are these estimates not part of the ones already computed under the various modes? If they have been separated from them, are the transport services for passenger or freight or both? A look at previous publications shows that this 'transport services' is a new entry into the transport data set. If it is a new entry, it ought to have been explained in the explanatory note to the data in order to avoid ambiguous interpretation. Another area is the lumping of expenditure on transport with communication, which is no longer in vogue (see CBN 2003:203-212).

The above structural shortcomings make transport data emanating from Nigeria to be incomplete, less valuable and less suitable for planning and for international comparison. Government transport plans and policies are conceived and implemented without requisite data. This may account for

the various bottlenecks in the transport sector as progress is difficult to measure and evaluation very weak. Apart from the consequences at the transport sector level, the poor transport data beams wrong signals to the rest of the economy. For instance, no institution in Nigeria today can give a correct estimate of the vehicle stock on Nigerian roads. Without this data it may be difficult to correctly estimate the volume of premium motor spirit (PMS) required daily in order to determine the supply mix of domestic refineries and import to meet local demand. At the international level, development indicators in the Nigerian transport sector are often lacking or scanty. This makes international comparison very difficult. This assertion is evident in the international transport data sections of both the African Development Indicators and World Development Indicators published by the World Bank (see World Bank 2000:255-259 and 2005:175,303).

In spite of these shortcomings and consequences, there are ample rooms for improvement in transport data in Nigeria if certain reforms and attitudes are accepted and implemented. These reforms derive directly from the causes of the data problems.

VI. Causes of the Data Shortcomings

The causes of the deficiencies of Nigeria transportation data can be categorized into two. These are; the general causes and specific causes.

General Causes: Nigeria is a developing country with its inherent limitations and constraints which hinder the effective, efficient and consistent gathering, storage and retrieval of data for planning purposes. These limitations include poor economic and financial base, lack of facilities and low political will, which translate to poor database (see Muhammed 1983; Adamu 1990; Ajayi 1991; Ojameruaye and Soyibo 1995; Arosanyin 2004).

Poor database is a feature of developing nations as opposed to the well articulated data system of industrialized nations. In most developing countries including Nigeria, investment in data gathering and management are still considered wasteful because they do not yield any 'visible benefits'

at least in the short-run. Given the financial position of most developing countries vis-à-vis, low per capita income, debt crisis, etc, resources are seldom allocated for data investment. The end result is usually a weak database. Since Nigeria is a developing nation it is, therefore, not immune from poor database of which transportation data is a part. Second, is the "Nigerian factor", which is a combination of factors that are socially and culturally entrenched in the Nigerian society which limit the quality and adequacy of any database. Prominent among these factors is the attitude of the ruling elites to data generation and management. The insensitivity of the ruling elite to accurate and consistent data has led to the use of 'falsified' data for political and economic gains, and not necessarily for planning purpose. Even where they are used for planning they often lead to unfulfilled expectations because the data were 'spiced' or 'polished'.

The bulk of the data system in Nigeria is full of conflicting figures on the same issue. For instance, Garba (1999:151) observed in her study on structural adjustment and women's share of employment in Nigeria that;

> *"Reliability of data poses considerable problems especially with respect to two years; 1990 and 1991. Four publications of the Federal Office of Statistics report different data set*".

From the above, therefore, if transport data in Nigeria are not reliable, it is just a reflection of the data culture in Nigeria.

Specific Causes: These are causes that are peculiar to the transport sector and its data generation capacity and constraints. Prominent among these causes are the following:

- Poorly equipped and inadequately manned Planning, Research and Statistics Departments of the various transport and transport-related parastatals. At times fund for data gathering may not be released, may be released late and/or may be released but inadequate to cover the required scope. This may be the cause of data-gap.
- Poor data storage and retrieval system. The use of computers is still not advanced which often lead to errors of varying degrees especially transcription and summation.

- The bulk of transport data gathered through the filling of proforma and questionnaires suffer setbacks due to late rendition of data returns and poor and in some cases non response. This often causes data-gap, incomplete data and sometimes provisional figures.

The above general and specific causes, among others contribute individually and collectively to the poor transportation database of Nigeria. While acknowledging the state of transportation data in Nigeria and its deficiencies for planning, there are still ways of correcting or improving them.

VII. What Must We Do?

For Nigeria transport data to be reliable, realistic, valuable and suitable for planning and international comparison, the government must of necessity do the following, among others:

- Nigeria as a country must invest heavily on data generation across the economy of which transport is a subset. The lack of investment in data gathering in Nigeria as a whole is having its toll on the transport sector too. An improved data culture in Nigeria will definitely affect the transport sector positively.

- Reduce duplication of similar transport data gathering and documentation efforts to free scarce financial and human resources and reduce conflicting transport data.

- Reactivate, equip and staff the Planning, Research and Statistics Department of concerned agencies for result-oriented data collection objective. The Federal Office of Statistics should be reorganized to meet the demands and expectations associated with any apex data management outfit. There is the need for the Federal Office of Statistics (FOS) now National Bureau of Statistics (NBS) to engage Transport consultants to guide the agency on what data are required in the various modes of transport and how to classify them. Also, the National Transport Data Bank (NTDB) should be reactivated, staffed and funded to fulfill its mandate. The statutory custodian

of NTDB is the Nigerian Institute of Transport Technology (NITT) Zaria. At present the bank is only on paper.

- Fund transport surveys on each mode and issues cutting across modes regularly. A good transport database for planning is anchored on regular transport survey.

- A highly computerized data retrieval system must be put in place in all the outfits responsible for specified transport data collection to reduce collation and transcription errors.

VIII. Concluding Remarks

Data play a crucial role in transport planning. Most plan failures are attributable in part to data problems. For data to be highly useful for planning and international comparison there is the need for the government to adequately fund data gathering investment, harmonize the various agencies responsible for transport data collection and publication, and computerize data storage and retrieval systems.

The task of generating transport data is enormous. The government through the Federal Ministry of Transport must be interested in funding transport data collection projects. There are still many untouched areas of transport data which must be adequately addressed by the government. These transport data areas include bicycle, bicycle usage, bicycle-kilometre, wheelbarrow, carts, camels, donkeys, canoes, passengers and freight passing through inland waterways, walking, etc. Without a reliable and consistent transport data, transport planning and coordination will be chaotic and given the pivotal role of transport in any economic system, the other sectors may be prone to distortions vibrated into them through the transport sector anomaly.

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