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# Rail Transport Operation and Organizational Performance of Manufacturing Firms in Nigeria

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**Abstract:** *This study investigated the relationship between rail transport operations and organizational performance of manufacturing firms in Rivers State. The study was conceptualized with rail transport operation as the independent variable to predict organizational performance with decent measures such as effectiveness, efficiency and productivity. The study adopted the cross-sectional survey research design to study a population of five (5) selected manufacturing companies in Rivers State. However, 20 copies of questionnaires were produced and administered to each of the 5 manufacturing firms making it a total of 100 respondents for the study. Data generated were analyzed and presented using both descriptive and inferential statistical techniques. The hypotheses were tested using the Spearman's Rank Order Correlation Statistics and the tests carried out at a 95% confidence interval and a 0.05 level of significance. The study findings revealed that there is a significant and positive correlation between rail transport operations and organizational performance of manufacturing firms in Rivers State. The study therefore, recommended that the government of the country should invest in railway transport as this will go a very long way in changing the economic fortunes of the country.*

**Keywords:** *Rail Transport Operations, Organizational Performance, Manufacturing Firms.*

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## INTRODUCTION

Transportation is essential to economic growth and development of nations world over. Its importance is evidenced in the fact that no nation can claim to be developed without effective and efficient transportation system (Nwanze, 2002). In Nigeria, different transportation modes play pivot role in the movement of people and coordination of business activities. (Muogbo, 2013), identifies railway transport as one of the key transportation modes with significant impact on Nigerian economy through the movement of people and industrial and non-perishable commodities from one destination to the other safely.

An efficient transport system, especially railway transport, plays a significant role in any economy through the movement of people and goods from one destination to the other safely. In essence, an effective and efficient transport system aids commerce and helps economic activities of any country. Rail transport therefore plays a significant role in commerce and economic activities of the Nigerian economy due to its ability to haul large volumes of cargo and carry large numbers of passengers at a very low cost. Nigeria is endowed with a total land mass of 351,649 sq. miles (910,771 sq. km) with a total population of about 170 million (Sanusi, 2014).

According to Nworji and Oluwalaiye (2012) the total collapse of the roadway infrastructure, due to the lack of infrastructure investment, poor maintenance and over use of the existing roads, will further restrain the transportation boost required for speedy economic growth. In order for Nigeria to join the league of world developed economies by 2020, as per its projected national plan, it requires a mode of transport, like rail, which not only has a capacity advantage over other land modes, but also enjoys the advantages of energy efficiency as cost-effectiveness. Therefore, a rejuvenation of the existing railway structure and construction of a new rail network, will act as a spring board for sustainable economic development and growth in the country (Oni, 2010).

Railway system plays a significant role in the development and overall growth of any economy. It is often regarded as the wheels of economic activity because of the crucial role it plays in providing the bulwark upon which production and distribution stand. It opens up regions, hinterlands and rural by facilitating agricultural development as well as the growth of cottage and large-scale industries. It also attracts residential, commercial, educational and recreational settlements and developments around its corridor. Due to the role it plays in growth and development process, rail transport is seen as the mainframe around which an integrated national transport system is built. Its capacity, which is further accentuated by its safety and security factors, coupled with its ability to travel longer distance with ease and lower unit costs, places it in good stead to serve as the hub of a transport system of a nation (Nwanze, 2002).

The movement of people and goods is currently done inefficiently through road transportation, but in contrast, efficient rail transport could provide an efficient distribution that is both cost effective and assists in achieving Nigeria's economic development initiatives. Jaekel (1997b) argues that "an efficient NRC will act as an aid to the development of other sectors such as agriculture, mineral resources, tourism and manufacturing, through the effective transportation of people and goods throughout the country to and from the seaports, linking companies with the outside world. Odeleye (2010), in concluding a research paper, noted that, "today, Nigeria's economy ultimately relies on road mode for sustenance of its economic activities." Ironically, the road mode is largely constrained due to its limited carrying capacity relative to rail transport.

Efficient railway transport enhances the economic development of any country, in terms of the movement of people and goods from one destination to another. Nigeria is an oil producing country, yet the supply chain of the petroleum product distribution is poor, inefficient, and abysmal let alone effective. The distribution of petroleum products is done through the road haulage system which equally drives up the distribution cost as well as an increase in the pump price. Inefficient product distribution results in delays in the petroleum products reaching the filling stations quicker which sometimes lead to product shortages and results in fuel scarcity and fuel queues at filling stations. Nigerian Railway Corporation (NRC) was therefore established by the Act of 1955 (amended by 1990 Act) for the sole aim of moving of passengers and haulage of freight and given the monopoly power and exclusive right for this purpose. Although development and construction of the railway track started as far back as 1898 and over years, numerous amounts of money invested on the rail system in Nigeria have also seen little impact. NRC is currently saddled with the problem of dwindling revenue; operational costs are increasing, as is the mounting debt. There is demand for the services that is currently not satisfied, but due to limited operational capacity, the yearnings of the teeming population for efficient transport system are still not fulfilled let alone effective.

Achieving entrepreneurship especially in emerging economies cannot be attained if transportation which is an important component of globalization and economic growth and development is not properly overhauled especially the railway system which encourages long distance travel and haulage of bulk goods at a very low cost. Therefore, the purpose of this study is to examine the relationship between rail transport operations and organizational performance of manufacturing firms in Nigeria.

The specific objectives of the study therefore are:

- i. To examine the relationship between rail transport operations and efficiency of manufacturing firms in Nigeria.
- ii. To examine the relationship between rail transport operations and effectiveness of manufacturing firms in Nigeria.
- iii. To examine the relationship between rail transport operations and productivity of manufacturing firms in Nigeria.

This study also seeks to provide answers to the following questions:

- i. To what extent does a rail transport operations influence efficiency of manufacturing firms in Nigeria?
- ii. To what extent does a rail transport operations influence effectiveness of manufacturing firms in Nigeria?
- iii. To what extent does a rail transport operations influence productivity of manufacturing firms in Nigeria?

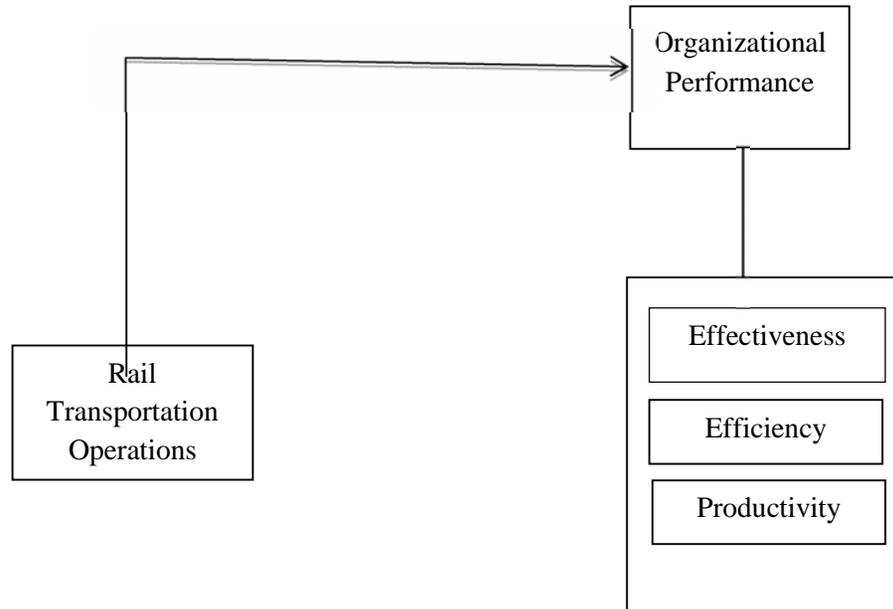


Fig 1.1: Conceptual framework of the relationship between rail operations and organizational performance

Source: Desk Research, 2019.

## LITERATURE REVIEW

### Theoretical Foundations of the Study

#### Resource-Based View

This theory takes a strong view of procuring and sustaining a state-of-the-art infrastructure, which gives the enterprise a competitive advantage. The firm's infrastructure will enhance the achievement of competitive advantage, performance indicator improvements and simultaneous advancement will be achieved. Whereas, if left in the public sector, this objective of a sustained and effective infrastructure will not be considered as of importance and, hence, the enterprise will become less competitive, as presently observed in the case of Nigerian Railways (Omoleke, et al., 2011).

Wade and Hulland(2004), cited in Carter (2013) argued that resources that are valuable and rare can lead to the creation of competitive advantage, and the competitive advantage can be sustained over longer time periods to the extent that the entity is able to protect against resources being imitated, transferred or substituted. Whereas, in most SOE, because of the monopoly power advantage and lack of competition or substitutes for a similar service provide little or no motivation for efficient service

compared with the private sector's competitive environment, which enhances competition, efficiency and profitability. For example, Fatemi&Behmanesh (2012) noted that new public management does not emphasize on processes (input) but on efficiency (output). A view shared by Adeyemo (2008) who also suggested that this theory would reap the advantages of the market system and competition, namely effectiveness, productivity, and efficient service.

### **Concept of Rail Transport Operation in Nigeria**

The impact of rail transport is evaluated by how its operational measures (rail distribution network, number of rail passengers and value of rail freights) enhance other economic activities. An assessment and discussion of the Nigerian Railway Corporation (NRC) and its relations with other ancillary sectors on the performance of the railway service is also included. Generally, an efficient transport system, especially railway transport, play significant role in any economy through the safe movement of people and goods from one destination to the other (Jaekel, 1997). In essence, an efficient and effective transport system aids commerce and helps economic activities of any country. Rail transport therefore is imperative in the actualization of commercial and economic goals of Nigeria given its ability to haul large volumes of cargo and carry large number of passengers at a very low cost (Oni, 2010).

Nigeria is endowed with a total land mass of 351,649 sq. miles (910,771 sq. km) with a total population of about 186 million (Fatemi 2012). The main source of external revenue for Nigeria is predominantly from crude oil exploration and crude export. The movement of people and goods is currently done inefficiently through road transportation, but in contrast, an efficient rail transport could have provided an efficient distribution that is both cost effective as well as assists in achieving Nigeria's economic development initiatives. Jaekel(1997) argues that an efficient NRC will act as an aid to the development of other sectors such as agriculture, mineral resources, tourism and manufacturing, through the effective transportation of people and goods throughout the country to and from the seaports, linking companies with the outside world.

The railway in Nigeria was originally a government department in 1898 which later metamorphosed to NRC as created by the act of 1955 (amended by 1990 Act). NRC was therefore established to carry on its activities among others including the movement of passengers and haulage of freight in a way that offers full scale transportation services, ensure value for money, adhere to the corporate goals, meet the expectations of passengers, ensure safety of operation with maximum efficiency, meeting the social responsibility of the corporation in the manner that meets and satisfy the needs of the rail users, industry, the general public and other stakeholders (Adesanya, 2010).

Construction of the railway lines started in 1892 and went until 1965. The establishment of the corporation took place in October 1955, by an act of Parliament which also granted the corporation a monopoly power. In total, at the official inauguration, Nigeria had a 3505-kilometer narrow gauge single-track railway network system (Abubakar, 2006; Odeleye, 2010). As discussed earlier, the perceived benefits of efficiency and a cheaper cost of transportation of farm produce to the European market acted as the motivator for early construction of the rail lines in Nigeria by the colonial administration. This early construction was without foresight and consideration of the full potential social benefits of railway system to the community. Hence, the pursuit of cheaper and modest investments in rail transport meant that geographical terrain that was deemed too costly for construction was avoided. As such deep cuttings, high embankments, long bridge spans, tunnels and viaducts which would have potentially increased the cost of construction were avoided. Even though foresight would have dictated that the increased cost of construction would be off-set by the benefits of service efficiency, effectiveness and the connection of major towns and villages across.

The short-sighted view of the colonial administration in the establishment of a rail transport led to the construction of a rail system with a narrow-gauge rail network that was not favourable for the movement of people and goods on the north-south and north-east corridors while leaving out east-west corridor as well as vast areas of the country unconnected (Odeleye, 2010). These areas remained

comparatively under-developed until the construction of roads and national highways was started after the country became independent in 1960. In addition, travel times were also elongated and travel speed was slowed to a maximum of 65km/h due to the steep curves, poor track equipment, sharp bends and the narrow gauge of the rail lines (Dina, 2011). Although there is over 100,000km of national highways, there is a dire need for an extension of the present railway system, construction of new lines serving specific industrial project areas and better integration of the country by providing a cheaper means of transportation (Jaekel, 1997; Balogun, 2005; Oni, 2010; Ademiluy i &Dina, 2011).

### **History of Nigerian Railway Corporation**

The first rail line in Africa was stated in 1852 by the famous railway engineer Robert Stephenson to connect Cairo with Alexandria in Egypt, and then in the Cape Colony of South Africa in 1859. In Tropical Africa, Railway construction started towards the end of the 19th century especially after the Berlin Conference of 1834-5 when tropical Africa was partitioned among various European Powers. It may indeed be said that the period between the late 19th Century and the first world war were the boom years of railway construction in Tropical Africa it was during this period that most of the present railways were constructed.

The railways were the outcome of various economic and political motives and rivalries. For one thing, they enable the colonial powers to administer a territory and convince the rivals that they were in effective control of the area claimed. The second motive for the construction of the railways was the anticipation that they would stimulate increased production in the regions, which pass through. Having secured political control, the economic motive became more important, and the railway line, were constructed or extended to link areas of mineral and agricultural potentials. When these trans Atlantic trade became very lucrative as the agricultural product of the sub Saharan region were in great demand in the European market, it was discovered by the colonial administration in Nigeria that the major transportation mode in the hinterland, the inland waterways, could no longer meet its needs. More over the seasonability of navigation on the river and creeks posed serious problems. The colonial government in Nigeria made application for the construction of rail lines to the secretary of state for the colonial prior to 1892.

As a result of the selfish colonial government interest, the colonial office in 1892 commissioned a survey to estimate the cost of railway construction in Nigeria. This was headed by William Shelfords. Although, Sir William Shelfords came up with favourable result, approval for construction did not come until 1895 when the secretary of state sanctioned the 32km, "1067 mm" gauge railway from Iddo to Otta. Consequently, by 1896 construction of the first railway line began from Iddo (Lagos). It got to Otta and Abeokuta in 1898 and in 1901, it got to Ibadan. That year Lagos – Ibadan line was opened by 1909 the line got to Jebba and linked to Baro- Kano line (already completed in 1911) at Minna by 1915. The Eastern line connecting Port-Harcourt to Enugu was opened in 1916, this line got to Port Harcourt in 1924 from where it was extended to Kaduna through Jos in 1927; this linking the Western and Eastern lines. Jos was linked with Zaria in 1912 by a narrow gauge line designed for the evaluation of tin from the Jos Plateau. This narrow gauge line called the Bauchi light Railway was closed in 1957.

The Nigerian Railway was therefore constituted in 1912 by the amalgamation of the Lagos Government Railway and the Baro- Kano Railway. The 38 Maiduguri line was later opened in 1964. Apart from the two main lines branch lines were also built from Zaria to KauraMamoda, Kano to Nguru and Ifo to Idogo. With the addition in 1966 of a 9.6 Kilometre branch line from Alesa Eleme Oil refinery to Elelenwa in the Port-Harcourt to Enugu line, Nigerian railway has a total of 3505 kilometres of single-track, metre gauge Railway connecting the two principal seaports, Lagos and Port-Harcourt, with the major urban centres in the interior.

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major urban centres in the interior. At the onset, the railway was known as the Nigerian government railway and run as a department of the Federal Government.

However, in 1952, the Government announced its intention to establish the Nigerian Railway Corporation (NRC) as an autonomous body to take over the duties and functions of the railway department. This did not come through until 1955 when the Nigerian Railway Act was passed. The Act set up the NRC, as a statutory Corporation entirely owned by the Federal Government. The act assigned the following function to NRC.

- i. To manage and operate the Railway and provide reasonable facilities for the carriage of passengers and goods
  - ii. To control railway Expenditure
  - iii. To ensure that as far as it is possible, annual revenue are sufficient to meet all expenditure properly chargeable to revenue and
  - iv. To direct and control expansion and extension of the railway system
- The NRC Act empower the minister of transport and Aviation to give to the corporation, directive of a general character as to the discharge of its functions in relation to matters appearing to him (minister) to be of great importance. The minister may also establish the upper limit of rates and fares within which the NRC is free to fix its rates/. Fares as well as appoint an inspector of railways. The NRC is required to furnish any information register by the minister \relating to its operations, property and finances, including annual account and reports.

The idea to establish the NRC was to free the Railway management from the rigidity and formality of government procedure and to establish the corporation as a public utility to run on quasi- commercial lines and in a sound financial basic. The NRC Act advised that uneconomic service could be undertaken at the expense of the government should the later insist on such services. Again, the government while paper on statutory corporations and the state owned companies 1978, emphasized that the corporation was largely of a commercial and industrial nature. However, from its creation, the NRC was saddled with conflicting objectives. The government did not seem to make up it mind whether it should be run as a business or social service. That conflict reflects heavily on the operations of the NRC development of Nigeria.

### **Development of Nigerian Railways after independence**

Throughout the colonial era, rail transport was the most important mode of transport in terms of its infrastructural facilities, traffics, hauled and reliability as an all the year round transport system. For example, while the first motorable road in Nigeria was opened in 1906 (Onakomaya, 1981) train services had begun as early as 1901 on the Lagos- Ibadan route. This foremost position of the Nigerian Railways during the colonial era was overturned shortly after independence. Shortly after independence a five years National Development plan was introduced, beginning from 1962-1968 in which priority attention was given to the critical sector of the economy. The transport sector was given a top priority, because of its potential to open up the country through internal movement of goods, services and people.

However, a new policy for transport development also evolved. Transport development was conceived as an integral part of National development. A multi-model approach was also adopted in which all the major transport modes were given some attention based on the government perceived need, for them. As a result of this thinking, road transport was not only given the most important attention more than half of the resources available for the transport sector was invested into road transport development. Thus for the period from 1960-1978, the railway system did not only lose its importance and relevance to the post independence socio-economic and geopolitical activities, but its role as a major transport system in the scheme of National development. Therefore, for the entire period of 1960 –1970, there was very

little attempt at the development of the Nigerian Railway system. Given the post colonial experiences, the Nigerian Railway Corporation was faced with the problem of how to regain its lost glory and make itself relevant to the socio-economic and Political development of Nigeria.

The first attempt at re-organising the NRC system in 1971, when a new organisational structure was adopted, the reform brought about the cancellation of the post of deputy general manager, Location of secretary to the NRC outside line management making the secretary responsible solely to the Board the abolition of the position of DGM is to cartel the constant right between the General manager and his deputy arising purely from land of specific functions assigned to the post of Deputy General Manager . The re-structuring also see the placement of District managers below the Heads of Department, this was designed to remove the misconception that the District mangers were higher in the organisational hierarchy of the NRC. The restructure experiences more decentralization and clearer liens of reporting compared to the former structure. More units, department and districts were also established. Despite this re-structuring; NRC fortunes continue to decline even rapidly especially in the mid-to late 1970s until the Rail India technical and economic services limited (RITES) was invited in the late 1970s to resuscitate it. The RITES was contracted for three years, from 1979 – 1982 in order to turn the declining fortunes of the NRC around.

The need to inject into the management of the NRC, an external management train was first mounted in 1975 by a Canadian consultant appointed by the federal Government to carry out a management audit of the corporation between 1970-1975. Both the World Bank RITES also made a similar recommendation to the Federal Government in 1976 and 1977 respectively as consultants to the Federal Government on the Nigerian Railways. These external consultants were of the view that there was a counselling need to inject into the NRC an external techno-managerial know-how, which they concluded, was lacking and constituted one of the problems militating against the efficiency and effectiveness of the NRC.

The RITES management team made up of 36 top managers and 470 technicians formally took over the management and running of the NRC in January 1979 (World Bank, 1983). The RITES was contracted for three years at the cost of N462 million and this led to serious improvement in the outrage of wagons, coaches and locomotives, serious reduction in operating ratio, good and effective communication system but with little improvement to the track (Omowa,1995 : P 30) . RITES also trained a lot of Nigerians within and outside Nigerian with 600 Nigerians sent to India to acquire more knowledge and experience. The built a great number of staff quarters, training schools, canteens, medical centres in the division. At the end of the contract, NRC recorded a considerable improvement in its operation, but this could not be sustained. From 1983 to 1985, the passengers carried by the Nigerian Railway Corporation rose from 12.98 million to 15.42 million, since then, the number of passengers carried annually continue to decline, By 1989, the total passenger carried had dropped to 6.5 million, and to 580,000 in 1993. However in 1994, the passengers carried rose to 1.43 million, and further to 1.73 million in 1991 to N39.4 million in 1995, despite a continuous reduction in freight tonnes 1 km from about 282,000 tonnes 1km in 1991 to 108,000 tonnes 1km in 1995. It was the upward review of tariff (CBN Annual Report 1995:110 Adesanya, 1997).

In 1986, there were 187 locomotives of eight different makes in NRC's book stock, while daily availability of locomotives has fallen from 75 at the time to about 25 locomotives in January, 1997; thus constraining the provision of all the 148 programmed services per day. The effective, functional stock of wagon is less than 3,000 as against the required 7,00 wagons. The inability of the NRC to sustain the considerable improvement in this operations recorded after the RITES left Nigeria, led to the contractual agreement which was entered into between the Nigerian government and China civil Engineering and construction corporation (CCECC) and it was planned to cover a period of 36 months. This bilateral pact, which was made in order to improve rail operations in Nigerian worth about US\$528.697,000. In 1996, the Federal Government made move to revitalise the company by signing a memorandum of understanding (MOU) with China civil Engineering and construction company (CCECC) a Chinese firm

to modernise it operation. The firm was to repair damage Rail tracks and reconstruct all the bad bridges along the Rail lines in the county, train staff and supply 400 wagon, 150 coaches and 50 locomotive engines. As of today, the contract that was supposed to last for three years at an estimated N50 billion has not been completed.

In spite of the non-conclusion of the original contract, the Federal Government in the year 2001 signed another MOU with the Chinese firm for the supply of spare parts for locomotive engines. The corporation is using a South African firm to repair some of such engines eight of the engines have been put in proper shape since the beginning of the exercise Apart from the on going project of the Chinese Government has also moved to modernise the railways as it has commissioned a foreign consultancy firm to produce a blueprint that will lead to the development of the nations rail system in the next twenty five years. In the same vein, the Germans area also being contacted to participate in the revitalisation of the Nigerian Railway Corporation. Furthermore, the anti corruption war of government progressed in the company with the Transparency monitoring Unit (TMU) of the ministry of transport which probed cases of looking at the corporations and recommendation the pact of about fifty six officials of the company. The ministry approved the memorandum and relieved the affected officers of their appointment. For now, the Federal Government has appointed a Canadian Technomanagerial consultant to take over the management of the Nigeria Railways. They will manage the corporation, train the work force, re-orient them towards being real railway men and then add value in terms of restructuring to fall in line with the general standard of well managed railways in the world like the one in Canada and in due course prepare the railway for privatisation.

### **Distribution of the Railway Network Between States of the Federation in Nigeria**

The administration of Nigeria at the time of independence from British rule was regional: The Northern, Eastern, and Western regions, all of which were autonomous. The unification took place after independence in 1960. In 1963, just before the declaration of the civil war in 1966, Nigeria became a Federal Republic and has remained so to date. In order to facilitate the reconstruction, reconciliation and development of the destruction that had taken place during the civil war, in 1970, the regional administrative system of the former colonial administrator was abolished with the introduction of the twelve States of the Federation, all in line with the provision of the first national development plan in Nigeria (Odeleye, 2010; Ademiluyi & Dina, 2011). In 1976, at the beginning of the transition programme to the Second Republic, seven more states were created to reflect the stages of development and to enhance the phases of change in Nigeria. This was also in line with the objective of bringing the phase of development to the grassroots level, gaining closeness to the rural dwellers in order to discourage rural urban migration, where the necessary amenities are lacking or inadequate (Okanlawon, 2006).

In 1986, just at the start of another transition programme to the Third Republic which was terminated without materialising in June 1993 by the then military head of state, six more states were created with the same objectives as set in the national development plans. And in 1995, prior to the start of another transition programme, five more states were created, also in accordance with the changes and diversity of the economic and political environment in Nigeria. To date the total number of states of the Federation in Nigeria stands at thirty -six plus the Federal Capital Territory , Abuja, the present seat of government. Despite all the divisions and the creation of more states, the railway network still did not reflect the federal government agenda, neither is the railway network equitably distributed nor is there a strategic transport policy to ensure effective intermodal and railway connectivity with all the States of the Federation, airports and seaports (Odeley e, 2010, News Agency of Nigeria, 2016).

### **Organizational Performance**

Performance is the competency of an organization to transform the resources within the firm in an efficient and effective manner to achieve organizational goals (Daft, 1997). Organizational goals vary depending on the purpose for which they are established. Business organizations, like manufacturing

firms, have profit, growth and survival as the main goals. The popular ratios that measure corporate performance can be summarized as profitability and growth: return on assets (ROA), return on investment (ROI), return on equity (ROE), return on sale (ROS), revenue growth, market shares, stock price, sales growth, liquidity and operational efficiency (Dent, 2005).

Dess and Robinson (1984) proposed two measures of return on assets and sales growth for measuring firm performance: objective (actual amount) and subjective (perception). If objective performance measures are available, they should be utilized (Dess & Robinson, 1984). Otherwise, subjective performance measures will be the alternative due to the absence of accurate objective performance measures (Dess & Robinson, 1984).

Organizational Performance will be measured using financial measures. Financial performance is any mathematical indicator used to assess how efficiently a firm utilizes its resources to generate income over a specified period (Wang & Huynh, 2013). Financial performance is often evaluated on various indicators such as the growth in returns on asset (ROA), returns on equity (ROE) and profit (Zack et al., 2009). Financial performance has also been measured using a five point scale from no growth, a little growth, average growth, fast growth to very fast growth using a comparison of industry average during the last three years for the following three items, namely returns on asset, returns on equity and profit (Wang & Huynh, 2013)

## **Measures of Organizational Performance**

### **Effectiveness Measure**

Effectiveness is a broad concept that is difficult to measure in organisations. According to (Amah, 2014) the concept of organizational effectiveness is an elusive one that there is no single way of defining it. This may be due to the too many criteria used and the many definitions available for the concept. Veldsman(1982) defined organizational effectiveness as a qualification attached to an organisation resulting from the comparison from the actual state of the entity against its ideal state. He posits that an organisation can either be effective or ineffective. Georgopoulos & Tannenbaum, (1915) defined effective organisation as one that is productive, flexible, and lacks organizational strain. This view is supported by (Caplow, 1964), who perceived organization as one that has stability, integration, voluntarism and achievement. For him, an effective organisation is not only stable but achieves its goal. The views of these authors are supported by Yuchtman & Seashore (1967); Price (1968); Schien (1970); Bennis (1971); Mot (1972); &Duncan (1973); Being successful, means being more than just effective. It means making an important input to the long term interests of the shareholders by adding value.

Effective organisations are built on effective individuals who work effectively in groups Lawler, (1972). There are different variables for measuring organizational effectiveness. Maheshwari (1980) said this much when he opined that that organizational effectiveness is a multi-dimensional concept, which has no agreement as to which dimensions are significant and should be used as the basis of the analysis. The starting point in measuring board effectiveness should be to consider how it rates on these principal six variables viz: does the board have the ability to choose members with the right balance of qualities and skills, particularly the right chief executive officer, Is it agreed about priorities in its role, Is it agreed about how to achieve the company's strategy, how good are internal board dynamics and culture (handling dissent, the relationship between executives and non-executives etc., how good are the board's key relationships with major stakeholders, and is there respect for what it does?. Likiermann (2007).

### **Efficiency Measure**

Bernard (1938) argued that the primary measure of an efficient board is its capacity to survive. Many authors have used efficiency as a primary measurement of performance Cameron, (1986); Drucker, (1954); Murphy, et al., 1996; and Venkatraman & Ramanujam, 1986). Ogboso and Amah, (2016) opines

that efficiency refers to the accomplishment of goals with minimum resources or waste. It includes measures such as time minimization, cost minimization, and waste minimization. Speed and time are important resources for any board and must be seen to seek to maximize speed and minimize time. The way a board does this indicates how efficient and productive they are. Speed and time were the essence of time and motion studies since the day of scientific management introduced by Taylor that led to management efficiency. They are sources of competitive advantage.

Doing the right thing in corporate governance terms is an important, but not a sufficient, condition for performance. And doing the wrong thing (e.g. an ineffective audit committee, or lack of independence among the executives) will make it more difficult for a board to perform but is not a measure of success or lack of it either. The questions relating to board efficiency are: How effective is the organization in dispatching businesses (including through board committees in and between meetings) and following up on decisions, does the board identify and focus on key (not just a long list of) issues and risks facing the organisation; is the organization able to take initiatives, dealing with crises and identifying emerging issues? The conception of time here is the duration taken to accomplish a task. These honest questions are both a matter of choice. Since it is usually only after an extended period is it possible to know whether the board has dealt with the right issues, how well it has done so, and which issues have not been addressed. Accordingly, failing to ensure succession or invest in new technology is just as much about performance as successful talent management or systems investment.

Organizations can be really helpful in identifying risks that executive director alone, sometimes preoccupied with current challenges, and may not have spotted. There are two questions rather than one here because a history of dealing with key issues as they arise is not enough. The ability to take initiatives, deal with crises and identify issues that are not part of 'normal business' is a crucial differentiator between an efficient and a tolerable board. For the same reason 'meeting organization objectives' isn't included as a performance measure, since it runs the risk of being too inward-looking and passively taking things too much as they are.

### **Productivity Measure**

Productivity measurement indicates areas for possible improvements and shows how well improvement efforts are faring. It helps in the analysis of efficiency and effectiveness. It can stimulate improvement. Productivity is basic to board performance. Productivity is defined by Amah (2006), as the measure of how efficiently and effectively resources are brought together and utilized for the production of goods and services of the quality needed by society in the long term". This implies that productivity is combination of performance and economic use of resources. High productivity indicates that resources are efficiently and effectively utilized and waste is minimized. High productivity promotes the development of the organisation. Organizational evaluations helps, but no organization can, or should, attempt to quantify the return it makes on each cent stakeholders have invested in it. Good governance does not come with neat measurements or scales. Benchmarking board productivity across company size, industry or location is problematic. If there had to be any single question about the performance of the board, it would be: what is the board's contribution to the company's performance, is the board aware of, and interested in, good practice?

Organizations will understandably want to take credit for things that go well. This disposition applies not only to the success of visible initiatives (new ventures, new people etc.) but also to activities resulting in the absence of problems normally indicating board failure (e.g. deciding against an unfortunate acquisition, recording fewer bad debts than competitors). But making either connection is not easy, particularly for contributions such as establishing ethical standards. So while it may be possible for major individual events, such as acquisitions, to be linked to board decisions, the larger the organisation and the longer the lead time between decision and result, the less plausible the connection. Even for events with a short lead time, quality of execution and overall stock market trends often mask the board's particular role. Left to themselves, organizations tend to become narrow-minded or inward looking.

Working methods become “the way we do things around here”. So even if the board comes out well from questions on all other issue, there still is the issue of whether it is committed to sustaining good practice.

The damage from an unproductive board is far greater than wasting shareholder funds on directors’ fee. It reduces board effectiveness and efficiency, exposes the organisation to greater risk, erodes management confidence in directors and gets in management’s way, getting the right number and mix of directors is a critical factor in maximizing productivity. Bridge (1992), says board composition is the key to lifting board productivity. Having too many directors’ risk creating factions and multiple conversations, just as too few means the board cannot adequately handle the workload. Some signs of poor boardroom productivity according to Bridge (1992) are viz: management lacks confidence in the board, directors get in management’s way, compliance overtakes common sense, the focus is more operational and less strategic, the board pack is large and keeps growing, it contains irrelevant or unclear information, directors haven’t had enough time to read it, conversations often fracture and factions emerge, meetings go off track and discussions get bogged down in detail, directors are not engaged and struggle to keep their eyes open, the board keeps covering old ground, directors keep asking for more information, too many decisions are deferred, meetings are full of long management presentations and directors leave feeling exhausted, frustrated and that nothing was achieved.

### **Empirical Studies - Rail Transport Operation and Economic Growth in Nigeria**

Several authors have examined rail transport-growth nexus both in the developed and the developing countries. Herranz-Loncan (2011) examined the contribution of rail transport to economic growth in the Latin America before 1914. The paper used the growth accounting framework to provide estimates of the contribution of railways to the region’s economic growth using four of the main Latin American economies (Argentina, Brazil, Mexico and Uruguay), in order to obtain the impact of the railway on those economies during the period of export-led growth. Results show that the contribution of railways to growth varied substantially across Latin American countries. More precisely, in the case of Uruguay, the growth impact of railways was very low, lower actually than in some European countries, such as Britain and Spain. This unexpected result may be explained by the features of the Uruguayan geography and economic structure, and provides a clear counterexample to the hypothesis that railways had higher benefits in Latin America than in the core industrialized countries.

Furthermore, Herranz-Loncán (2011) examined the role of railways in export-led growth of Uruguayan economy between 1870 and 1913 using OLS estimation. The results showed that Uruguayan railways did produce some positive effects. They helped to integrate the national market while also promoting the political and administrative unification of the country. However, their economic impact was much lower than in other countries of the region that experienced export-led growth. This indeed has affected the growth prospects of the Uruguayan economy. The results, therefore, provide reason for relatively poor performance of the economy during the period under study. The study concluded that Uruguayan case provides a clear-cut example in which geography limited the potential of railway technology to generate significant levels of economic growth.

Atacket. *al.* (2009) investigated whether railroad induced or followed economic growth in the American Midwest for the period 1850-1860. Using a newly developed GIS transportation database, the study examined the subject matter, focusing on two indicators of broader economic change, population density and the fraction of population living in urban areas. The difference in differences estimates (supported by IV robustness checks) strongly suggest that the coming of the railroad had little or no impact upon population densities just as Albert Fishlow concluded some 40 years ago.

However, the results also imply that the railroad was the reason for mid-western urbanization, accounting for more than half of the increase in the fraction of population living in urban areas during the 1850s. Haines and Margo (2006) used panel data set of counties for 1850 and 1860 to examine the economic impact of gaining access to a railroad on local economic development in the US. Difference in Difference approach was adopted to compare outcomes from a treated group (counties that gain rail

access in the 1850s) with a control group (those that gain rail access before and after 1850s). Results showed that rail access appears to have increased the percentage participation in the service sector, decreased agricultural yields, and reduced the share of improved acreage in total land area.

Pienaar (2012), competition is a significant factor in attaining the principal objectives that should be achieved by a transport system and further states, “It will provide the discipline needed to develop and enforce the kinds of rational investment policies that will provide effective transport services in the most efficient manner” (2012). The most recent WEF (2013) report showed that Nigeria is ranked 52 out of 144 countries with regards to economic competitiveness. This is a decrease of two places since the 2011/2012 report. It should be noted that other African economies have showed significant development in their economies as well (2013). Arslan and Tathdi (2012) further explain international competitiveness as the ability to sustain activity in the global economy along with a satisfactory level of growth.

However, Ubogu (2011) states that without efficient transport it is hardly possible for an economic transformation and the development of any country to occur because 17 goods should be transported from the origin to the destination at the minimal cost (2011). Transnet (2012) and General Electric Nigeria Technologies (GESAT) have made a deal for GESAT to supply TFR with 143 heavy haul diesel locomotives (ten manufactured in the USA and 133 assembled in Koedoespoort) to haul freight and coal across Nigeria in order for Transnet to meet the Competitive Supplier Development Programme objectives. These locomotives indicate that there are great opportunities for Transnet, Nigeria and GESAT.

Abdulsalami (2014) on the other hand, stated that rail transport system in Nigeria has facilitated the movement of internal and long-distance trade. Shehu (2011), also pointed out that by far, rail transport transformed the growth of the economy, especially in the export of groundnut and other cash crops in the early stage of the country’s development. According to Adenji (1995) quoting from Agbaeze and Onwuka (2014) rail transportation helped to reduce the cost of road maintenance and repairs and at the same increased the lifespan road infrastructure. From this empirical review, it is obvious that rail transport needs to be improved upon in Nigeria and doing this require a comprehensive study of the different aspects of the rail transport system to provide the necessary inputs for policy formulation and implementation in the sub-sector.

Brussels (2014) defines the competitive position of rail transport in the transport system is influenced by the factors such as rail transport costs and quality of rail services. Transport cost affects productivity and efficiency improvements; for example, if passing lowered operating costs to transport users can increase the attractiveness of the transport mode and again be used to enhance the technologies and invest in rolling stock and the quality of rail transport services also affected by various factors such as journey time, reliability, frequency, flexibility and customer information.

According to Stewart (2013) freight railways boosts the economic competitiveness because these are energy efficient; a freight train moves one ton of freight for an average of 484 miles on a single gallon of fuel and that is an estimate of four times as far as the same cargo a freight truck can move. According to the World Economic Forum (WEF) (2013) in their Global Competitiveness Report, infrastructure, innovation and market efficiency are three of the 12 pillars of competitiveness (WEF, 2013). Delgado (2012) indicates that the term “competitiveness” can be defined in different ways.

Some define competitiveness as the ability to achieve outcomes, like a high standard of living and economic growth, while others focus on the ability to achieve economic growth through employment creation and increased exports. Competitiveness may also be seen in the light of government fiscal policies which facilitate the management of short-term fluctuations in economic activity (Delgado, 2012).

**H<sub>01</sub>:** There is no significant relationship between influence efficiency of manufacturing firms in Nigeria.

- H<sub>02</sub>:** There is no significant relationship between influence effectiveness of manufacturing firms in Nigeria.
- H<sub>03</sub>:** There is no significant relationship between influence productivity of manufacturing firms in Nigeria.

**METHODOLOGY**

This study adopted a cross-sectional survey research design and studied a total population of 5 selected manufacturing firms operating in Rivers State. Specifically, Delta Steel Company, Dangote Cement Company, Flour Mills Company of Nigeria, Unilever Nigeria PLC and PZ Cussons PLC were the focal firms investigated. The study administered 20 copies of structured questionnaires to employees from each of the selected firms making it a total of 100 respondents. Data generated were analyzed and presented using both descriptive and inferential statistical techniques. The hypotheses were tested using the Spearman’s Rank Order Correlation Statistics and the tests carried out at a 95% confidence interval and a 0.05 level of significance.

Data for the study was gathered through primary and secondary data sources.

**Table 1: Reliability Coefficients of variables**

S/No	Dimensions/Measures of the study variable	Number of items	Number of cases	Cronbach’s Alpha
1.	Railway Transportation	7	74	0.781
2.	Effectiveness	4	74	0.777
3.	Efficiency	4	74	0.710
4.	Productivity	3	74	0.709

Source: SPSS Output, 2019.

**Testing of Research Hypotheses**

**Table 1: Correlations Matrix on The Relationship Between Rail Transport Operations and Organizational Performance**

		Rail transport operations	Effectiveness	Efficiency	Productivity
Spearman's rho	Correlation Coefficient	1.000	.733**	.713**	.683**
	Rail Transport Operation		.000	.000	.000
	Sig. (2-tailed)				
	N	74	74	74	74

	Correlation Coefficient	.733**	1.000	.533**	.334**
Effectiveness	Sig. (2-tailed)	.000	.	.000	.004
	N	74	74	74	74
	Correlation Coefficient	.713**	.533**	1.000	.642**
Efficiency	Sig. (2-tailed)	.000	.000	.	.000
	N	74	74	74	74
	Correlation Coefficient	.683**	.334**	.642**	1.000
Productivity	Sig. (2-tailed)	.000	.004	.000	.
	N	74	74	74	74

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

*Source: SPSS output version 23.0*

**Ho<sub>1</sub>:** *There is no significant relationship between rail transport operations and efficiency of manufacturing firms in Nigeria.*

The correlation coefficient (r) shows that there is a significant and positive relationship between effective rail transport operation and efficiency of manufacturing firms in Nigeria. The *rho* value 0.733 indicates this relationship and it is significant at  $p\ 0.000 < 0.05$ . The correlation coefficient represents a high correlation indicating a strong relationship. Therefore, based on empirical findings the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between effective rail transport operation and efficiency of manufacturing firms in Nigeria.

**Ho<sub>2</sub>:** *There is no significant relationship between rail transport operations and effectiveness of manufacturing firms in Nigeria.*

The correlation coefficient (r) shows that there is a significant and positive relationship between effective rail transport operations and effectiveness. The *rho* value 0.7123 indicates this relationship and it is significant at  $p\ 0.000 < 0.05$ . The correlation coefficient represents a high correlation indicating a strong relationship. Therefore, based on empirical findings the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, is a significant relationship between effective rail transport operations and effectiveness of manufacturing firms in Nigeria.

**Ho<sub>3</sub>:** *There is no significant relationship between rail transport operations and productivity of manufacturing firms in Nigeria.*

The correlation coefficient (r) shows that there is a significant and positive relationship between effective rail transport operations and productivity. The *rho* value 0.683 indicates this relationship and it is

significant at  $p < 0.000 < 0.05$ . The correlation coefficient represents a high correlation indicating a strong relationship. Therefore, based on empirical findings the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between effective rail transport operations and productivity of manufacturing firms in Nigeria.

## **DISCUSSION OF FINDINGS**

Findings of the study revealed that a significant relationship between exists between rail transport operations and organizational performance measures of manufacturing firms in Nigeria. The finding corroborated with the empirical findings Abdulsalami (2014) who found that rail transport system in Nigeria has facilitated the movement of internal and long-distance trade. The study also agrees with Shehu (2011) who found that rail transport significantly impact economy growth and development. The study findings are in tandem with the findings of Agbaeze and Onwuka (2014) as the found that rail transportation helps to reduce the cost of road maintenance and repairs and at the same increased the lifespan road infrastructure. Similarly, the study findings are in consonance with the findings of Stewart (2013) who revealed that freight railways boosts the economic competitiveness because these are energy efficient.

## **CONCLUSION**

From the theoretical and empirical literature, this study concludes that Rail transport operation significantly affects the performance of the organization of manufacturing firms in Nigeria. Furthermore, the study in line with our research objectives found that rail transport operations significantly influences efficiency of manufacturing firms in Nigeria, rail transport operations significantly influences effectiveness of manufacturing firms in Nigeria, rail transport operations significantly influences productivity of manufacturing firms in Nigeria.

## **RECOMMENDATIONS**

Based on the findings of the study, this paper recommends that the government of the country should invest in Railway transport as it will go a very long way to positively affect the economic situation of the country, railway transport has over-time before now proven to affect the economic situation of the country, therefore, non-governmental organizations should invest in it, management of manufacturing firms should make use of railway transport operation so as the save cost and increase cost.

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