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The Effects of Transport Infrastructure Development on the Socioeconomic Wellbeing of Baro Residents: A Study of Baro Inland Port in Niger State

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Abstract

The development of Baro inland port is heavily reliant on the availability of robust transport infrastructure and accessibility, which is crucial for enhancing the socioeconomic wellbeing of Baro residents. This study investigates the effects of transport infrastructure development on the socioeconomic wellbeing of Baro residents. Primary data were collected through a questionnaire survey, with 394 questionnaires administered randomly to Baro residents. A total of 350 completed questionnaires were returned and analyzed using descriptive statistics (simple percentage) and chi-squared analysis. The findings reveal that transport infrastructure development has a significant positive impact on socioeconomic wellbeing, leading to improved access to education, healthcare, and employment opportunities. To build on this, prioritization of access road and rail network construction and rehabilitation is recommended to facilitate efficient passenger and goods movement. Furthermore, the involvement of Public-Private Partnerships (PPP) is suggested by this study to address the challenges facing Baro inland port and enhance the flow of passengers and goods.

Keywords: Baro, Development, Inland port, Infrastructure, Socioeconomic

JEL Classification: L92, H54

1. Introduction

The maritime industry has been a vital catalyst for the economic growth, socio-economic progress, and transformative development of nations. Its significance is underscored by its role as a critical lifeline and gateway to economic prosperity. A nation's socio-economic development is deeply rooted in its ability to engage in external trade with other countries, and ports serve as the cornerstone of this endeavor. Historically, Baro Inland Port played a significant role in the transportation of cargo to the northern regions during the colonial era, but it has since been abandoned and fallen into disuse. Unfortunately, Nigeria's inland water transport sector has suffered from neglect by both the government and private sector (Obeta, 2014). An inland waterway refers to any navigable body of water, such as a river, stream, lake, or reservoir that is situated within a country's borders and utilized for transportation and commercial purposes (University of Illinois, 2021). The economic benefits of a port have far-reaching and multifaceted impacts, as highlighted in various studies (Wilmsmeier et al., 2006; Wilmsmeier & Sanchez, 2017). Ports have a multifaceted impact, generating

employment opportunities and stimulating economic growth through both direct and indirect means. Baro port, in particular, has the potential to emerge as a pivotal trade and commerce hub in the region, thereby contributing substantially to poverty reduction in the area (Ibrahim, 2022). The economic advantages of port infrastructure development are often highlighted by port authorities to secure funding for expansion projects, underscoring the critical role of ports in driving economic progress. The effects of ports are evaluated based on four key indicators: output, employment, income, and value added. Direct impacts refer to the economic benefits arising from the construction and operation of the port itself. Indirect impacts, on the other hand, encompass the ripple effects on suppliers of goods and services, as noted by Santos et al. (2016) and Jouili & Allouche (2016). Moreover, the development of transport infrastructure is widely acknowledged as a vital factor in enhancing socioeconomic wellbeing, particularly in rural areas such as Baro, Niger State, where it can have a profound impact on the local economy and quality of life. The development of transport infrastructure can significantly enhance the quality of life for residents, providing access to essential services, economic opportunities, and social amenities (Adebayo, 2020). The Baro Inland Port in Niger State has the potential to drive economic growth and reduce poverty in the region, but its development relies on adequate transport infrastructure, including roads, railways, and inland waterways (Adebayo, 2020). Despite its potential, the port has remained inactive since its commissioning in 2019, raising concerns among stakeholders about the impact on the socioeconomic wellbeing of residents in Baro and surrounding areas (Daily Trust, 2024; Leadership News, 2023).

The World Bank (2020) highlights that developing transport infrastructure can have far-reaching benefits, including reduced transportation costs, enhanced market access, and improved connectivity for workers, leading to boosted economic activity and reduced poverty. Additionally, it can also enhance access to healthcare and education facilities, resulting in improved health and education outcomes (World Bank, 2020). Historically, Baro, a key terminal on the River Niger, played a significant role as a feeder port to international ports during the 1960s and 1970s, underscoring its potential for revitalization and economic growth. Despite its potential, the Baro inland port remains non-operational due to various factors, which include the lack of dredging and physical constraints that hinder navigability (Olusiyi, 2013). Consequently, the transport infrastructure has deteriorated, rendering the river port in a state of disrepair and unable to serve the local community and the nation effectively, thereby undermining its economic potential. Recently, the Federal Government of Nigeria has taken steps to revitalize the long-abandoned Baro Port and restore the railway line connecting it, aiming to facilitate cargo transportation to and from the port via rail, thereby enhancing landward accessibility (Olusiyi, 2013). According to Olusiyi (2013), transport infrastructure serves as the backbone of a nation's economy, providing the essential foundation for sustained growth and improvement in citizens' quality of life, by enabling the efficient movement of goods and services. Transport infrastructure is a vital component of modern society, playing a crucial role in promoting economic growth and social wellbeing by facilitating personal mobility, access to essential services, goods movement, and economic activities. The transport infrastructure network encompasses a wide range of facilities, including ports, airports, roads, rail tracks, pipelines, warehouses, terminals, and associated facilities, as well as

public and private transport services. The physical components of this network include bridges, tunnels, pavements, culverts, wharfs, aprons, and other critical structures that support the efficient movement of people and goods. As emphasized by Beer et al. (2015), transport networks, particularly road networks, are essential for the prosperity of regional economies and communities. Transportation plays a critical role in facilitating economic activities, social wellbeing, and population cohesion. By providing efficient and affordable transportation options, transportation infrastructure can stimulate economic growth, reduce living costs, enhance market accessibility, and foster competitiveness among local businesses. Moreover, improved transport infrastructure enables entrepreneurs to seamlessly transport goods and services to and from markets, further boosting economic vitality.

2. Literature Review

Concept of Transportation

Transportation is a fundamental component of modern life, and its definition can vary depending on the context and perspective. At its core, transportation refers to the systems and infrastructure that enable the movement of people and goods from one place to another, by land, air, or water (Chen et al., 2018). As societies and economies have grown in complexity, the need for transportation has increased, driving the development of new transportation services and technologies. The demand for transportation is deeply rooted in the need for spatial interaction and accessibility, which is essential for various activities, including social, economic, political, educational, and recreational pursuits. In essence, transportation is a critical enabler of modern life, and its supply must adapt to meet the growing demand for mobility and connectivity. As early as 1922, Lord Lugard recognized the significance of transportation in Africa, identifying it as a key challenge for the continent. This work focuses on the fundamental concepts of transport, maritime and inland waterways development, and operations. Transport plays a crucial role in connecting points of production and consumption, enabling spatial interaction and economic activity. It comprises various modes and links that arise from the need for spatial interaction and movement.

Concept of Transport Infrastructure

Infrastructure is the foundation of a thriving economy, enabling efficient production, distribution, and connectivity. It encompasses physical systems and facilities like roads, railways, airports, ports, and transit systems (National Academies of Sciences, Engineering, and Medicine, 2019). Transport infrastructure is particularly vital, as it facilitates movement and economic activity. Effective planning and design can maximize its benefits, considering local community needs (Garrison, 2018). Transport infrastructure is essential for modern societies, promoting economic growth, social wellbeing, personal mobility, access to services, and goods movement, while fostering economic activity and social interaction. Upgrading transportation facilities can lead to reduced transportation costs. Transportation infrastructure encompasses not only physical structures like roads, railways, airports, and ports, but also the systems, policies, and regulations that govern the movement of people and goods. This comprehensive definition highlights the importance of a well-planned and integrated transportation infrastructure, which extends beyond physical construction to

include the operational and regulatory frameworks that facilitate efficient and safe transportation.

Empirical Review

Numerous recent studies have consistently demonstrated a positive correlation between transport infrastructure development and economic growth (Maparu & Mazumder, 2017; Meersman & Nazemzadeh, 2017; Saidi et al., 2018; Wang et al., 2020). However, some studies have yielded contradictory findings, such as Yu et al. (2012), who discovered that improvements in transportation infrastructure had no significant impact on promoting economic growth in low-income regions, and in some cases, even had negative effects. The inconsistent findings may be due to the crowding-out effect of public investment, where public spending replaces private investment rather than complementing it. On the other hand, transport infrastructure development has been widely acknowledged to have a positive impact on socioeconomic wellbeing, leading to benefits such as increased employment opportunities, income generation, and improved access to healthcare services (Oluranti, 2011; Taruwere, 2012; Umaru, 2013). These benefits contributed in enhancing quality of life and economic prosperity. Recent studies have consistently demonstrated the positive impact of transport infrastructure development on socioeconomic wellbeing in various cities. Adewumi et al. (2022) found a significant correlation between transport infrastructure development and socioeconomic wellbeing in Lagos, Nigeria, using regression analysis. Mahmud et al. (2022) discovered reduced travel times and improved market access in Dhaka, Bangladesh, through a survey questionnaire. Mhlanga et al. (2022) found improved access to social services and reduced poverty in Johannesburg, South Africa, using a case study approach. Nguyen et al. (2022) revealed improved access to education and healthcare services in Hanoi, Vietnam, through descriptive analysis. Oyekunle et al. (2022) found increased access to employment opportunities and improved living standards in Abuja, Nigeria, using a descriptive survey. These studies demonstrate the positive impact of transport infrastructure development on socioeconomic wellbeing in various contexts.

Additional research has highlighted the benefits of transport infrastructure development in various areas. Wang et al. (2020) quantitatively demonstrated that transportation infrastructure development leads to improved air quality and reduced pollution. Alomari et al. (2019) found that transport infrastructure development enhances road safety and reduces accidents through a cross-sectional study. Bello et al. (2020) used a mixed-methods approach to discover that transportation infrastructure development improves access to education facilities in rural areas. Kumar et al. (2019) conducted a longitudinal study showing that transport infrastructure development leads to increased economic activity and improved living standards. These studies provide further evidence of the positive impacts of transport infrastructure development on various aspects of society and the economy. Further research has reinforced the benefits of transport infrastructure development. Li et al. (2020) utilized spatial analysis to demonstrate improved access to social services and amenities. Martins et al. (2019) conducted a cost-benefit analysis, revealing reduced transportation costs and increased market access. Nnamdi et al. (2020) employed a quasi-experimental design, showing improved socioeconomic wellbeing and reduced poverty. Sharma et al. (2019) analyzed panel data, their finding revealed that transport infrastructure development

leads to increased economic growth and reduced poverty in India. These studies provide additional evidence of the positive impacts of transport infrastructure development on socioeconomic wellbeing, economic growth, and access to services and markets. These studies collectively highlight the crucial role of transport infrastructure development in driving socioeconomic progress, economic growth, and access to essential services, while yielding environmental and social benefits, such as improved air quality, enhanced road safety, reduced poverty, and lower transportation costs. The evidence underscores the importance of investing in transport infrastructure to foster inclusive and sustainable development. Despite existing research on the impact of transport infrastructure development on socioeconomic wellbeing and economic growth, there is a notable gap in research focused on rural communities in Nigeria, specifically in Baro town. While previous studies have employed various methods like regression analysis, surveys, and case studies, there is a need to apply statistical techniques like chi-square analysis to identify significant differences in transport infrastructure development and socioeconomic outcomes. This study aims to address this knowledge gap by investigating the relationship between transport infrastructure development and socioeconomic wellbeing in Baro town, Niger state, utilizing chi-square analysis to identify significant differences and contributing to the existing body of knowledge.

3. Methodology

This chapter outlines the methodology used in this project, including the research design, data collection sources, study population, sample size, and procedures employed. The study area is Baro, with a population of 26,821 (National Population Commission, 2016). A total of 394 respondents were selected from the study population, comprising residents of the Baro community. The sample size was determined using the Taro Yamane formula, which ensures a representative and reliable sample for the study. The total sample size used was 394 respondents. The research data was gathered through the distribution and collection of questionnaires. The collected data was then analyzed using the Chi-Square statistical technique, which helped to identify significant relationships and patterns between variables.

4. Results

Looking at the difference in socioeconomic wellbeing between rural communities with developed transport infrastructure, the result in Table 1 shows that 0.6% of the responses which represent 2 respondents are of the opinion that, there is no significant difference in socioeconomic wellbeing between rural communities with developed transport infrastructure and those without in Nigeria. 0.9% of the responses which represent 3 respondents agree that, there is significant difference. While, 98.5% of the responses which represent 345 respondents strongly agree that there is significant difference in socioeconomic wellbeing between rural communities with developed transport infrastructure and those without in Nigeria. Also, on the relationship between transport infrastructure development and access to education, healthcare, and employment opportunities in rural Nigeria, the result shows that 90.3% representing 316 respondents strongly agree that there is relationship between transport infrastructure development and access to education, healthcare, and employment opportunities in rural Nigeria. 4% of responses representing 14 respondents strongly disagree. 4% representing 14 respondents

Agree. While, 1.7% representing 6 respondents disagree respectively. Given the specific transport infrastructure needs and priorities of rural communities in Baro town, the result indicates that 338 respondents representing 96.6% indicate the needs for the construction and rehabilitation of major roads linking Baro to other urban cities. 8 respondents representing 2.3% show the needs for public transportation systems. While 4 respondents representing 1.1% indicate the needs for pedestrian/cyclist infrastructure.

Table 1: Responses on Transport Infrastructure

Transport Infrastructure	Responses	Number of respondents	Percentage
Is there a significant difference in socioeconomic wellbeing between rural communities with developed transport infrastructure and those without in Nigeria?	Strongly Agree	345	98.5
	Agree	3	0.9
	Disagree	2	0.6
What is the relationship between transport infrastructure development and access to education, healthcare, and employment opportunities in rural Nigeria?	Strongly agree	316	90.3
	Agree	14	4
	Strongly disagree	14	4
	Disagree	6	1.7
What are the specific transport infrastructure needs and priorities of rural communities in Baro town?	Pedestrian/cyclist infrastructure	4	1.1
	Public transportation systems	8	2.3
	Road construction/rehabilitation	338	96.6
Total		350	100

Source: (Field survey, 2023)

Hypothesis Testing using Chi-Square Analysis

The hypothesis was evaluated through a goodness-of-fit analysis using chi-square at a significance level of 0.05. The chi-square test measures the difference between the observed frequencies and the frequencies that were expected based on the hypothesis being tested.

Table 2: Chi-Square Result

Responses	0	E	(o-e)	(o-e)2	$\frac{(o-e)2}{e}$
Strongly agree	6	88	-82	6724	76.4
Agree	14	88	-74	5476	62.2
Strongly disagree	14	88	-74	5476	62.2
Disagree	316	88	228	51984	590.7
Total	350				791.5

Source: (Field survey, 2023)

The result in Table 2 shows that the calculated chi- square (x^2) value is 791.5, with a degree of freedom = 4 - 1 = 3, level of significance at 0.05, and the tabulated value is 3.18. Given the decision rule, since the calculated chi- square is greater than the table value, 791.5 ≥ 3.18, we therefore rejects the null hypothesis and accept the alternatives which say's there is a significant impact of transport infrastructure development on the socioeconomic wellbeing of Baro residents. The statistical analysis yielded a significant result, with a calculated chi-square value of 791.5, exceeding the critical value of 3.18 at a 0.05 level of significance with 3 degrees of freedom. Consequently, the null hypothesis was rejected, and the

alternative hypothesis was accepted. This indicates that transport infrastructure development will have profound effects on socioeconomic wellbeing in Baro community, with a positive correlation between the two variables. Furthermore, the development of transport infrastructure is crucial for accessing essential services and opportunities, such as education, healthcare, and employment, in Baro town. Specifically, the findings highlight the urgent need for improving road connectivity in Baro town, which is the top priority for rural communities. Overall, the study demonstrates that transport infrastructure development is essential for enhancing socioeconomic wellbeing and facilitating access to vital services and opportunities in Baro, Niger state. These findings have important implications for policy and development initiatives, informing strategies to address the transport infrastructure needs of rural communities in Nigeria.

5. Conclusion and Recommendations

In rural Nigeria, transport infrastructure development is vital for accessing essential services like education, healthcare, and employment. The study found that improving road connectivity is the top priority in Baro town. The development of transport infrastructure has a profound impact on the socioeconomic wellbeing of Baro residents, facilitating the movement of goods, people, and services, attracting new investment, boosting economic activity, and reducing business costs. Moreover, adequate transport infrastructure is crucial for unlocking the potential of Baro inland port, driving its growth and development.

Based on the findings, this study recommends that government provision of adequate transport infrastructure facilities to actualize the operation of the port. Prioritization of access road and rail network construction and rehabilitation to facilitate efficient passenger and goods movement. Public-Private Partnership (PPP) involvement in addressing challenges facing Baro inland port. Strict supervision and monitoring of ongoing projects to ensure timely completion. Regular dredging of the port to facilitate heavy cargo movement. These recommendations aim to enhance the socioeconomic wellbeing of Baro residents by improving transport infrastructure, promoting economic growth, and unlocking the potential of Baro inland port.

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