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DESENVOLVIMENTO DAS INFRA-ESTRUTURAS DE TRANSPORTE RODOVIÁRIO E CRESCIMENTO ECONÓMICO NA CIDADE DE MAPUTO, MOÇAMBIQUE (2020-2024)

Road transport infrastructural development and economic growth in the city of Maputo, Mozambique (2020-2024)

Desarrollo de las infraestructuras de transporte por carretera y crecimiento económico en la ciudad de Maputo, Mozambique (2020-2024)

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RESUMO

A qualidade das infra-estruturas de transporte rodoviário é essencial para promover o crescimento económico de uma nação. Este estudo valida esta afirmação. Os objectivos primários desta pesquisa são investigar o desenvolvimento da infraestrutura de transportes rodoviários em Maputo, Moçambique, avaliar o crescimento económico da cidade, e analisar a correlação entre o crescimento económico e o desenvolvimento da infraestrutura de transportes rodoviários em Maputo cidade, Moçambique. Os dados foram recolhidos através de questionários distribuídos aos membros das associações e cooperativas filiadas na Federação Moçambicana dos Transportes Rodoviários (FEMATRO). Embora a cidade de Maputo tenha várias pontes, portagens, semáforos e estradas que facilitam a circulação eficiente de bens e pessoas, persistem vários desafios relativamente à sua manutenção e melhoria. A situação foi agravada pelas manifestações pós-eleitorais de 2024, que levaram à danificação de algumas infra-estruturas rodoviárias, dificultando assim a mobilidade de bens e pessoas. Não obstante, as infra-estruturas de transporte rodoviário continuam a ser um ativo vital para a promoção do crescimento económico em Maputo cidade e em todo o território moçambicano.

Palavras-chave: Crescimento económico, Infra-estruturas de transporte rodoviário e Mobilidade.

ABSTRACT

The quality of road transport infrastructure is essential for fostering economic growth within a nation. This study validates that assertion. The primary objectives of this research are to investigate the development of road transport infrastructure in Maputo, Mozambique, evaluate the economic growth of the city, and analyze the correlation between economic growth and road transport infrastructure development in the city of

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Maputo, Mozambique. Data was gathered through questionnaires distributed to members of associations and cooperatives affiliated with the Mozambique Road Transport Federation (FEMATRO). While the city of Maputo has various bridges, tollgates, traffic lights, and roads that facilitate the efficient movement of goods and people, several challenges persist regarding their maintenance and improvement. The situation was exacerbated by the post-election demonstrations in 2024, which led to the damage of some road transport infrastructure, thereby hindering the mobility of goods and individuals. Nevertheless, road transport infrastructure continues to be a vital asset for promoting economic growth in the city of Maputo and throughout Mozambique.
Keywords: Economic growth, Mobility and Road transport infrastructure.

RESUMEN

La calidad de las infraestructuras de transporte por carretera es esencial para promover el crecimiento económico de una nación. Este estudio valida esta afirmación. Los objetivos principales de esta investigación son investigar el desarrollo de la infraestructura de transporte por carretera en Maputo (Mozambique), evaluar el crecimiento económico de la ciudad y analizar la correlación entre el crecimiento económico y el desarrollo de la infraestructura de transporte por carretera en la ciudad de Maputo (Mozambique). Los datos se recogieron mediante cuestionarios distribuidos a los miembros de las asociaciones y cooperativas afiliadas a la Federación Mozambiqueña de Transporte por Carretera (FEMATRO). A pesar de que la ciudad de Maputo cuenta con varios puentes, peajes, semáforos y carreteras que facilitan la circulación eficaz de mercancías y personas, siguen existiendo varios problemas relacionados con su mantenimiento y mejora. La situación se vio agravada por las manifestaciones postelectorales de 2024, que provocaron daños en algunas infraestructuras viarias, dificultando así la movilidad de mercancías y personas. No obstante, las infraestructuras de transporte por carretera siguen siendo un activo vital para promover el crecimiento económico en la ciudad de Maputo y en todo el territorio mozambiqueño.
Palabras clave: Crecimiento económico, Infraestructuras de transporte por carretera y Movilidad.

Contribution of the author (Weknow Magwenzi): Idea conception, research and literature reviewing, data collection, data analysis and article compilation.

INTRODUCTION

Quality transport infrastructure enhances economic growth at global level, as it facilitates the movements of goods and people from one place to another, thereby promoting trade. With globalization and digitalization, modern and advanced transport infrastructure is a prerequisite for economic growth. Maputo as the administrative and economic capital of Mozambique plays a pivotal role in the economic growth of the country through administrative and economic activities in this city. The city is considered as a province, known as Maputo city province, attributed to its huge population of 1,193,253. The growing population of Maputo city province needs quality and standardized transport infrastructure to sustain its economic activities and administrative activities of the Government. The transport infrastructure include roads, ports, railway lines and airports, which are needed in the movement of people and commodities from one area to another for both domestic and industrial purposes. Having quality and standardized transport infrastructure, it means people and commodities are to be moved easily within the city of Maputo contributing to the growth of the Gross Domestic Product

(GDP), which is the major indicator of economic growth in the country.

As Maputo province borders with both South Africa and Eswatini to the South-West, transportation of people and commodities into Maputo city is a necessity since Mozambique depends more on importation. The majority of agricultural produces, which sustain the Maputo city population, are imported from these two countries, and effective transport system is needed in facilitating this trade. At the some time, Mozambique exports industrial raw materials to these countries and beyond through the city of Maputo. In this case, the transport system in the city of Maputo with specific reference to road transport, plays a pivotal role in making trade viable. This is made possible by the presence of the Maputo and Matola ports, National 1(N1) and Witbank roads and Ressano Gracia-Maputo and Chicualacuala-Maputo railway lines. They make the major part of the transport infrastructure in Maputo and Maputo city provinces. For the economic growth of Maputo city, they play a pivotal role as they connect Maputo city with all the regions of Mozambique and the outside world.

Based on the research on economic growth and road transport infrastructure carried out in India by Pradhan and Bagchi (2013), whose results demonstrate the two-way causal relationship between economic growth and road transportation, the researcher found it worth to carry the same research in the city of Maputo, Mozambique. Thus, the aim is to find out whether economic growth and road transport infrastructural development in the city of Maputo have the same relationship as in India. Therefore, the specific objectives of this study are to explore transport infrastructural development in the city of Maputo, Mozambique, assess economic growth in the city of Maputo, Mozambique and examine the relationship between economic growth and road transport infrastructural development in the city of Maputo, Mozambique.

THEORATICAL REVIEW

Infrastructure development

Several research studies confirm the importance of infrastructure service provision to economic development (Treasury, 2013). Infrastructure refers to all basic inputs into and requirements for the proper functioning of the economy (Jerome, 2011). Infrastructure development contributes to economic growth, as alluded to by the United Nations (UN) (United Nations, 2011). Economic growth is the increase of the economy of a country over a specific period. This implies a bidirectional relationship between infrastructure and GDP. Transport infrastructure plays an important part in the process of infrastructure development. It follows that the two concepts, in combination, can play a pivotal role in the development of the economy.

The UN (2011) indicates that infrastructure refers to all basic inputs into and requirements for the proper functioning of the economy. With specific reference to economics, infrastructure could be conceived as a capital good in the sense its origin lies in investment expenditure and is characterised by its long duration, technical indivisibility and high capital-output ratio (Torrisi, 2009). The latter definition refers to state-owned entities,

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which use the benefactor role to provide services to a country's citizens. The former definition of infrastructure as advocated by many scholars emphasises infrastructure as a part of the capital stock used to facilitate economic production, or as production inputs such as electricity, roads, bridges, tunnels, and harbours (Estache & Garsous, 2012; Torrisi, 2009; United Nations, 2011).

Torrisi (2009) categorised economic infrastructure into three groups. The first group relates to utilities such as power, piped gas, telecommunications, water and sanitation, sewerage and solid waste disposal. The second relates to public works such as roads and water catchments in dams, irrigation and drainage; while the third relates to transport sub-sectors such as railways, waterways and seaports, airports, and urban transport systems. Fedderke and Garlicky (2008) retorted that in economic terms, infrastructure could be considered as stock or variable. They further elaborated that being considered a stock means static, while, as a variable, it focuses on net infrastructure creation or loss over a given period. In general, infrastructure may include electricity, gas, telecom, transport, water supply, sanitation, and sewerage (Estache & Garsous, 2012).

Other studies have broadly divided infrastructure into two categories: economic and social (Torrisi, 2009). However, this research focuses on infrastructure from the economic point of view, which may include transport, communications, power generation, water supply, and sanitation facilities. The particularity of this research is that it looks at transport infrastructure including transit, highways, airports, railways, ports or waterways, tunnels, bridges, harbours, canals, subways, and tramways, as well as intermodal links.

Transport Planning

Transport planning is about making people, goods, services and opportunities more accessible to one another. To fulfil this role, governments take decisions, which affect the economic, social and environmental aspects of a country. Poor planning impacts negatively on a transport system's efficiency and obstructs its normal course (Litman, 2014). Transport systems are a key enabler of economic activities to thrive, but also facilitate the movement of people, goods and services, while creating opportunities to make this variable more accessible to one another. Moreover, transport systems play a vital role in the development of a country's economy by determining overall productivity, quality of life of citizens, access to goods and services, and the pattern of distribution of economic activity (Ansaloni, & Rubin, 2016). Transportation systems are partnerships between governments and users: government's planning decisions determine the transport options available, from which users choose the combination that best meets their needs (Litman, 2014). It is the regard that studies present a transport-planning framework. For Litman (2014) transportation planning framework defines the basic planning structure processes to include perspective, scope, impacts considered, analysis method, etc.

Connectivity

Connectivity, in the context of transportation planning, refers to the ease, time or cost of travelling between different transportation route systems or modal systems. Transport

planning plays a pivotal role in planning how to connect goods, services and people from one point to another. Connectivity includes both physical connectivity and the associated soft. The physical aspect of connectivity relates to transport infrastructure (road, rail and ports) and energy infrastructure, while associated soft infrastructure includes the critical area of infrastructure financing. As previously indicated, this research focuses on the physical aspect of road transport infrastructure.

Increase investment in cross-border infrastructure is the primary strategy to improve connectivity between neighbouring countries and to promote trade and investment growth (Holzner, 2016). A transport infrastructure system connects a country to the outside world, facilitates the movement of goods and services, and stimulates economic growth. It ensures expansion and cohesion between trade partners in any region (Holzner, 2016). Furthermore, transport's connection and interaction functions create many improvement opportunities, such as one road, one blet (Barisitz, & Radzyner, 2017).

Connectivity goes along with market access, which is defined as a surrounding area or region comprising the market. Therefore, connecting market access and connectivity leads to terminal linkages. Thus, both concepts can improve productivity and intermodal transportation connectivity improvements, which tend to extend the range of workers, materials and customers that, are accessible to a business.

Economic growth theories

The economic growth theories can be grouped into three main models. The models are the neo-classical economic growth models, endogenous economic growth and role of ideas model and the evolutionary models of economic growth. The role of capital accumulation is emphasised more in the neo-classical economic growth models. For example, in the "Slow-Swan model", capital and labour produce the output. The basic model of economic growth originated from Robert Solow, a Nobel Prize winner. Economists define economic growth as an increase in the amount of goods and services that an economy produces. In simplest terms, it can be referred to as an increase in the productive capacity of an economy compared from one period to another. In this model, mainstream economics usually think of capital, labour and land as the primary factors of production (Stern & Cleveland, 2004). For example, Fedderke and Garlick (2008), perceive the economic growth model principally in terms of factors of production such as capital stock, to include roads, bridges, factories, land, infrastructure, etc. In addition, land use changes dynamic population in the process of production for its transformation. The theory of growth and a focus on the primary inputs – particularly capital and land – appear more important.

Accordingly, economic growth is compatible with labour added to technical progress. In the long-run, labour productivity and output per individual grow at a different rate as compared with technical progress. In this case, technical progress is some how separated from these models, leaving the economic growth unexplained. However, this model explains well the cross-country differences in income levels. Under the neo-

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classical economic growth models, there is also the canonical models, which provides the methodology for the measuring of the rate of technical progress, which is called the total factor productivity growth. It is defined as the difference between output growth and the growth rates of capital and labour inputs. The main challenge of this total factor productivity growth is contradictory estimates.

The endogenous economic growth and role of ideas model emphasises that, output and productivity growth cannot rely on exogenous technical progress. It adds the importance of research and a development as a factor, which affects the stock of knowledge in the firm. Thus, firm production is affected by capital services, labour, research and development and, technology. Research and development, brings in the idea of innovation, which is a driving force for economic growth in a country in the long-run.

Finally, the evolutionary models of economic growth puts into consideration three aspects that are ignored in the neo- classical and endogenous economic growth models (Lucas, 1998). These aspects are on technology, firm capability and institutional framework. Technological advancement ought to be conceptualised as a process with uncertainty, path dependency and long-lasting adjustment. Furthermore, firms should not only invest in human capital, research, and development but also in firm strategic capabilities. Furthermore, institutional framework is important consider in explaining differences in cross-country economic growth.

This study is based on the evolutionary models of economic growth, because technology, firm capability and institutional framework are of paramount in importance in the road transport industry. These three aspects, which are part of the evolutionary models of economic growth, can transform the quality of road transport infrastructure once put into consideration. Modern and quality road infrastructure influenced by technology, firm capacity and institutional framework, enhances economic growth mainly through trade. Movement of goods and people in the context of trade is facilitated, thereby increasing the country's Gross Domestic Product (GDP).

Mozambican economy

The Mozambican economy has grown substantially since 1990, with real GDP doubling since 2005 (to $14.3 billion in 2015) (World Development Indicators (WDI) data). Annual GDP growth rates have generally remained in the range of 6-7% over the past decade and averaged 7.4% between 2005 and 2015. There was a decline in the economic growth of Mozambique in the early 2020s as it reached 4.1% in 2022. The rise was evident in 2023, as it reached 6% and it is estimated to rise to 8.3% in 2024 (World Bank, 2023). The Mozambican reasonably strong economic growth in recent years is attributed to access to vast arable land, considerable and diverse mineral reserves, an extensive coastline and proximity to a sizable regional market. This is supporting different productive activities and provide opportunities for diverse and interlinked investments that support industrialisation.

The condition of Mozambican roads

Mozambique's road infrastructure is pivotal for its economic growth and regional integration. While advancements have been

made, several challenges affect the quality and sustainability of the road network. According to Fauvet (2023), Mozambique's classified road network extends over 30,000 kilometers, with only 27% paved. Approximately 69% of these roads are in "reasonable" condition, but the remaining 31% are categorized as "bad," "very bad," or "impassable." This disparity significantly hampers transportation efficiency and economic activities.

The nation's susceptibility to climate-induced disasters poses significant threats to its road infrastructure. For instance, the 2023-2024 rainy season affected around 240,000 people, destroying over 1,800 homes. Such events often lead to road degradation, necessitating substantial maintenance investments. In Maputo, the National Roads Administration (ANE) estimated a need for 180 million meticais (€2.6 million) for road maintenance during the 2024-2025 rainy season (Club of Mozambique, 2024).

To address infrastructure challenges, Mozambique has secured substantial investments. In August 2022, the World Bank approved a $400 million grant for the Safer Roads for Economic Integration Project. This initiative aims to rehabilitate 508 km of priority road sections, enhance road safety, and bolster climate resilience. The selected corridors span provinces like Cabo Delgado, Sofala, and Zambezia, emphasizing the project's nationwide significance.

Additionally, the government plans to invest 20 billion meticais (approximately $313 million) in 2023 for the rehabilitation of rural roads and the construction of bridges. This investment aims to improve accessibility, particularly in the Zambezia and Nampula provinces, and to repair damage caused by tropical storms (allAfrica.com, 2023).

The National Road Administration (ANE) has identified excessive vehicle loads as a primary factor accelerating road degradation. To combat this, ANE is expanding the installation of weighbridges and advocating for legal measures to penalize overloading. Such actions are essential for preserving road quality and extending infrastructure lifespan.

Recognizing the impact of climate change on road infrastructure in Mozambique, initiatives are underway to develop adaptive capacity and integrate climate considerations into road planning and design (Nordic Development Fund, 2013). These efforts aim to enhance the sustainability of road assets amidst increasing climatic risks.

Efforts to improve road safety include assessments of road designs and infrastructure. For example, partnerships have led to the evaluation of 136 km of roads in Mozambique, influencing infrastructure investments worth approximately $585 million (iRAP, 2024). Such assessments aim to enhance safety and reduce road-related fatalities and injuries.

METHODOLOGY

Questionnaires were used to gather data on road infrastructure and economic growth in the city of Maputo from the members of associations and cooperatives like ASOCTRA AND ATROMAP affiliated with tthe Mozambique Road Transport Federation (FEMATRO). FEMATRO is an advocacy group, which works to raise awareness of the importance of and funding for road transportation, making them the most suitable respondents to this subject matter. Regional

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and provincial road associations across the country are incorporated into FEMATRO in order to give the government a unified voice from the commercial sector regarding freight rates, freight security, fuel costs, road infrastructure, road safety, freight security, driver interests, law enforcement, and labor relations. A total of 50 individuals answered the questionnaires physically and also virtually. The collected data was qualitatively analyzed making it a qualitative research.

RESULTS AND DISCUSSIONS

The questionnaire findings as supported by 85% of the respondents showed that there are some road transport infrastructural developments in the city of Maputo. The developments include new bridge, road, traffic lights and tollgate construction and, rehabilitation of roads, bridges, traffic lights and tollgates. These include the Maputo-Katembe bridge, Greater Maputo road, traffic lights along Maputo city major roads and tollgates along the Greater Maputo road.

According to 90% of the respondents, Maputo as the capital city of Mozambique is the epicentre in the economic functioning of the country. Many local and multinational companies operating in the country have their offices in the city of Maputo. It means that, even if they have branches and operations in the provinces, the administration work is done in the city of Maputo. There is no way, according to the participants in the questionnaire answering, the city economy can not grow when it is the economic epicentre of the Mozambique whose economy is growing. The economic growth in Mozambique is presently at 8.3%. Headquarters of banks and the Mozambican Government are in Maputo city. For any major financial transaction, business people have to do it in the city of Maputo, though e-banking is also possible. Furthermore, major Memorandum of Understanding (MoU) and bilateral agreements, which are business related with foreign or local entities, are signed in Maputo city where the Government (ministries, parliament, judiciary and executive) is located.

The road transport infrastructural development, through roads, bridges, traffic lights and tollgates are facilitating the growth in the economy of Maputo city as per the response of 80% of the respondents. This is because the road infrastructure enables trade and commerce to effectively take place, as goods and services are made available in the city for sale. In addition, people mobility is made possible, including business owners and their management. The movement of people enhances business, there by promoting economic growth. Business people's movement through road transport enables them to attend business meetings, which result in business deals, thereby contributing to economic growth. In order for the road transport industry to be functional, the infrastructure needs to be constructed and rehabilitated properly. In road construction and rehabilitation, people are employed. To run the road transport business and operations, people are also employed. Employed people earn a living and contribute to the national treasury through tax payment. This also applies to the companies involved in the road transport. For this to take place, the road transport infrastructure has to be developed, thereby promoting economic growth, which is the situation in the city of Maputo.

CONCLUSION

In conclusion, road transport infrastructural development influences economic growth in the city of Maputo, Mozambique. The relationship between these two variables is positive. As road transport infrastructural development improves, so is economic growth. Through promotion of commerce and trade, mobility of people and employment creation, road transport infrastructural development influences economic growth in the city of Maputo. Although there are other factors influencing economic growth in the city of Maputo like literacy rate, energy supply and Government policies, road transport infrastructural development is one of them. The presence of road transport infrastructural development in form of tollgate, road, traffic light and bridge construction and rehabilitation, easy movement of goods and people is enhanced, thereby promoting sustainable trade and commerce. Sustainable trade and commerce contribute to economic growth in the city of Maputo and Mozambique at large as evidenced by improving Gross Domestic Product (GDP), Gross National Income (GNI) and GNI per capita. To some extent, the road transport infrastructural development in the city of Maputo also has some challenges attributed to poor construction and maintenance, and vandalism. Road transport infrastructure vandalism became more evident in the last quarter of 2024 due to post-election demonstrations. With these challenges accidents, police delays and traffic congestion are common in the city of Maputo. If this situation is left uncontrolled, the existing economic growth can be negatively affected.

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