

Impacts of Standard Gauge Railway Project on Tanzania Economy Amidst and After Completion

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Abstract

Standard Gauge Railway (SGR) project in Tanzania flashed a lot of rumours and suggestions among citizens on opportunities and threats. This paper described the impacts of the SGR project on Tanzania economy during and after project completion. The target population of the study was all articles, and government reports related on SGR projects in Africa. The study was conducted systematically by reviewing articles and government reports on impacts of SGR on economy. The paper found that the SGR project has a lot of positive impacts including stimulation of Industrialization; efficient and fast movement of cargo; source of foreign currency; Development of rural area; business growth; Creating good relationship between neighbour countries; and employment opportunities. Also, the study found that negative impacts include Market disruption; Collapse of towns; and involuntary resettlement. The study concludes that the construction of standard gauge railway is of very importance for Tanzania economy. The study recommends the government start preparing competent staff that will operate and manage SGR. The lesson learned from the study is that there must be collaboration and coordination between the government and private sector at different levels of SGR for immediate and sustainable benefits.

Keywords: Standard Gauge Railway, Development of rural area, Railway Project, Tanzania Economy

Introduction

Railway transportation has played a pivotal role in global connectivity since the 18th century, contributing to the reduction of geographical barriers and facilitating accessibility across cities, nations, and continents (Wang, et al., 2021). Africa's ambitions in the railway sector align with the African Union (AU) 2040 vision, which emphasises comprehensive development within the railway industry. Furthermore, the 2017 global mobility report predicts a remarkable surge in passenger traffic, estimated to reach eighty trillion annually by 2030, signifying a 50% increase in mobility compared to data from 2015 (Simionescu, 2017).

Advancements in technology and innovative practices have driven the evolution of railway transportation, leading to enhanced safety, punctuality, and cost-effectiveness. In the transition from metre-gauge railways to standard gauge railways (SGR) which is a railway with a track gauge of 1,435 mm, Tanzania and other African nations have been actively implementing transformative changes, strategic planning, and proactive measures to establish robust international connections (Wang, et al., 2021). According to World Bank (2013), Standard Gauge Railway refers to a gauge with a physical distance of 1,435 mm (4ft 8 1/2 ins.) between the inside of one rail to the inside of the other. It is commonly used in western and central Europe, Japan, Morocco, United State of America, and Algeria as the high-speed passenger railways (ibid).

There were number of efforts made by the majority of African nations to transition

from metre-gauge railways to standard gauge railways. For instances, the Ethiopian government began freight operations in the early months of 2018 using advanced electric-operated Standard Gauge Railway (The longest transboundary electrified railway in Africa). There were more than thirty trains on the Ethiopia-Djibouti Standard Gauge Railway, each carrying about 1,100 freight wagons adding up to 3,500 tons (Sabrie, 2022). Two hundred trucks would have been on the road in this situation. As a result of this achievement, Ethiopia was able to carry cargo quickly and effectively from the port of Djibouti to its landlocked capital, Addis Ababa. The trains went at speed of up to 100 km/h, which was far faster than the 80 km/h cap on-road truck speeds. This speed up goods transit by 10 hours when compared to the old Meter Gauge Railway and by three to twelve hours when compared to vehicles on the road. The time it takes to move a container from Addis Ababa to Djibouti was decreased from three days to ten hours, and the cost was decreased by a third (Olingo, 2018).

Closer to Tanzania, Kenyan government provides another good example of Standard Gauge Railway (SGR) project implementation. The operations of SGR in Kenya brought number of impacts on Kenya economy including timely delivery where the cargo train takes 8 hours to transport containers from Mombasa to Nairobi port while the passenger train takes 4 hours to transport persons between the two cities (Mboya, 2022). Also, The SGR has driven Kenya's economic growth by creating 46,000 jobs for local residents, (Mboya, 2022). On the other hand, the SGR has negatively affected the Kenyan economy in that it has led to increased external debt, which has continued to

swell to unsustainable levels at 60% of the GDP (Otieno, 2017).

The ongoing Standard Gauge Railway (SGR) project in Tanzania, which originated in 2016, seeks to establish a vital link between Tanzania's strategic regions and neighbouring nations, including Rwanda, Uganda, Burundi, and the Democratic Republic of Congo (DRC). This ambitious project was inaugurated on April 12, 2017, by the late Tanzanian President John Pombe Magufuli. The primary goal of the SGR project is to create a comprehensive transportation network, connecting the port of Dar es Salaam on the Indian Ocean to the port of Mwanza on Lake Victoria's northern shore and to the port of Kigoma on Lake Tanganyika's shore in Tanzania (TRC, 2023). Subsequently, it aims to extend this connectivity to neighbouring countries, fostering regional integration and economic development. This extensive undertaking is divided into six distinct phases, each addressing key rail infrastructure improvements (Wang, et al., 2021; TRC, 2023).

Currently, the primary issue of contention in the world's transportation sector is whether SGR freight transport will exceed road freight transport market share or if it is only a euphoric occurrence (Mboya, 2022). Although the general public believed that railroads would fundamentally change the majority of freight or cargo-moving businesses, the real challenge was how such businesses would respond and function in the face of an alluring railway that offered competing services (Sabrie, 2022). SGR project in Tanzania flashed a lot of rumours and suggestions among citizens especially those dealing with transport industry on opportunities and threats. The raised

rumours and suggestions imply that there is inadequate awareness and knowledge of Tanzanian on the impacts of SGR project on Tanzania economy. It is from these rumours, the researcher developed interest to find out and describe the impacts of SGR project on Tanzania economy amidst and after completion.

Methods

To comprehensively explore and delineate the anticipated positive and negative impacts of the Standard Gauge Railway (SGR) project on the Tanzanian economy and its neighbouring countries, this study undertook an exploratory and descriptive investigation. This examination relied on a systematic literature review encompassing relevant SGR project materials in Africa context. The study followed three key phases during its literature review: data collection, study selection, and information extraction. These stages are expounded upon in the subsequent sections.

Data Collection

A crucial first step in a systematic review involves the formulation of a comprehensive search strategy (Kazungu and Kumburu, 2023; Cocciasecca et al., 2021; Shakeel, Kruyen & van Thiel, 2020; Bouwman and Grimmelikhuijsen, 2016). In this context, the study initiated its quest for pertinent research on the Google Scholar platform, which boasts associations with esteemed journal publishers and hosts metadata or complete articles. To facilitate the search process, a combination of keywords was employed, encompassing "Standard Gauge Railway," "positive impacts of SGR," "negative impacts of SGR," and "Shortcomings and benefits of SGR to the economy." The

results obtained were meticulously documented, including the total number of papers retrieved from the databases. Specifically, data were gathered from three (3) published government reports (CPCS, 2009; TRC, 2019; TRC, 2022), and eleven (11) published articles describing the positive and negative impacts of SGR projects on economy.

Study Selection

In the second phase, the study adhered to a structured protocol for selecting pertinent research materials. This protocol encompassed the following steps: (i) removal of duplicated literature from the chosen database, (ii) preliminary assessment of the titles and abstracts of retrieved articles to gauge their relevance to the overarching research objective, and (iii) exclusion of articles that did not align with the research focus. This process led to the identification of 27 potentially significant articles and government reports, which then underwent a comprehensive full-text examination. Unfortunately, 8 of these articles were inaccessible in their full-text form, leaving 19 documents for in-depth analysis. Subsequently, 5 non-relevant articles were excluded, resulting in the inclusion of a total of 13 articles for the review as shown in Figure 1.

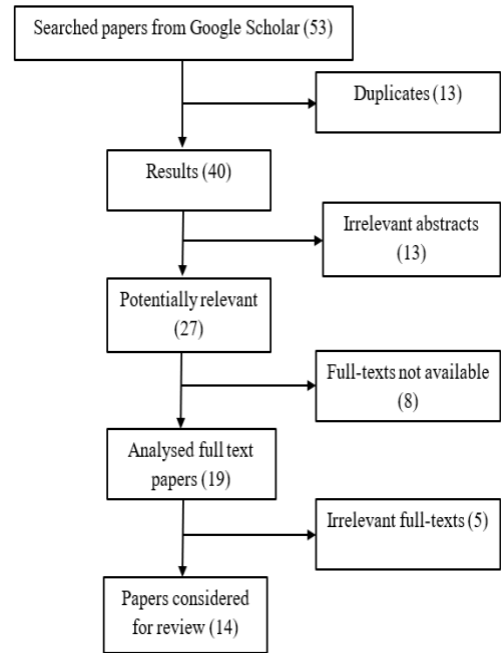


Figure 1: Study selection process

Data Extraction

Basic coding was done (open, axial and selective coding) and thereafter constant comparison analysis was performed for data analysis as put forward by (Onwuegbuzie et al., 2012) and Leech and Onwuegbuzie (2008). Coding was guided by the key themes to ensure consistency but also similarity and differences between the codes were scrutinised and examined to allow grouping and coherence. Following the inclusion of full-text studies in the systematic literature review, a meticulous process of data extraction was executed. This procedure involved the retrieval of information pertinent to the research question and key findings from the selected studies. This extracted data formed the bedrock upon which the analysis and subsequent findings concerning the positive and negative impacts of the Standard Gauge Railway (SGR) on the Tanzanian economy were constructed.

The outcomes of the systematic literature review were categorised into two primary segments: the positive impacts of SGR and the negative impacts of SGR on the Tanzanian economy. It's worth noting that this study's chronological scope was bounded by research publications between 2013 and 2023. However, studies published prior to 2013 that remained relevant were also taken into consideration.

Results and Discussion

The positive impacts of SGR Projects in Tanzania economy

The SGR will stimulate Tanzania Industrialization. A total of 6 out of 14 studies identified that SGR stimulates the industrialisation. For example, the study by Mikomangwa (2019) revealed that SGR has the potential to attract vital labour and capital to strategic regions, leading to increased demand for skilled labour and the necessary funds to improve production. Data shows that Tanzania's industrial sector contributes 25 percent to the country's GDP, and the transport sector has witnessed substantial growth, with a 55 percent increase from 2007 to 2015, reaching USD 2.1 billion. This suggests the possibility of generating substantial income from sectors like agriculture, fisheries, forestry, mining, and construction. These sectors involve a significant workforce and capital, and their effective functioning relies heavily on efficient transportation (Mikomangwa, 2019).

Moreover, TRC (2019) described that the SGR has the potential to open extensive markets through reliable transportation. It can streamline the movement of raw materials and the distribution of finished

goods, removing geographical barriers. Tanzanian businesses could now transport goods across East Africa using the SGR. However, it is worth noting that the SGR could also encourage geographical specialisation, enabling Tanzania regions to make the most of their available resources. This specialisation could lead to economies of scale in agriculture, fisheries, mining, and forestry. Additionally, Mboya (2022) found that SGR transport can lower the unit production costs by ensuring efficient procurement of raw materials and labour and the distribution of finished goods across space and time. This ensures price stability, as goods can be transported from areas with surplus and lower prices to regions in Tanzania where there is scarcity and higher prices. This scenario envisions substantial income generated from industries like textiles, timber, fishing, and agro-processing operating within a reliable transportation network (Mikomangwa, 2019).

To realise the potential for high speeds; Time is still a factor to consider in business operations (CPCS, 2009). According to Kweka (2019), currently, trains in Tanzania take up to 40 hours to reach Kigoma from Dar es Salaam. Thus, the introduction of SGR with an approximated speed of 160 Km per hour is a convincing marker that can improve business reliability, downplaying loss and damage, whereby more cargo and passengers are conveyed more rapidly and efficiently. SGR could reduce costs in many other associating economic sectors (Simionescu, 2017). The physical capacity and demand can utilise the associated costs involved in moving people and cargo over space and time, while autonomously setting up new routes that interact with other economic entities over space and

time. Mentioning the operational advantage as a crucial factor that TRC can capitalise on is not futile, however, this study expects that after completion of the SGR project, there will be an increase in numbers of high speed passenger services. Irandu and Owilla (2020) explained that the speed of SGR in the transportation of goods and services will save on time and the cost of moving goods and services (people). The time saved would mean that people can be a lot more productive elsewhere and even in terms of movement of labour.

SGR will be a good source of foreign currency. According to Mboya (2022), the Kenyan SGR has contributed to an improvement in trade and has attracted foreign investments to the country of Kenya. The implementation of the SGR in Tanzania is expected to link the country with the neighbouring countries of Rwanda and Uganda to Burundi and the Democratic Republic of the Congo. Linking the country's strategic regions and neighbouring countries such as Rwanda, Uganda, Burundi and the Democratic Republic of Congo (DRC) will enable Tanzania to receive the foreign currency. This is through exportation of Tanzania products via SGR mode of transport. Also, Kweka (2019) described that, the SGR is expected to facilitate the movement of the cargo from the Middle East, China, India and other places that will pass into Dar es Salaam Port to the neighbouring countries. The 1435 mm (4 ft 8 1/2 in) railway line is intended to ease the transfer of goods between the port of Dar es Salaam and the cities of Kigali, in Rwanda and subsequently to Bujumbura, in Burundi, and to Goma, in the Democratic Republic of the Congo. From the lake port of Mwanza, surface water ferries are expected to transport goods between Mwanza and Port Bell and Bukasa Inland

Port, in Kampala which is Uganda's capital city (TRC, 2022). Through increased connectivity, the development of network externalities, the attractiveness of foreign direct investment and the facilitation of international trade through mobility nodes, SGR transport will be a key source of foreign currency (Wang, Sekei, Ganiyu & Makwetta, 2021).

Development of rural areas; The SGR project will not only link cities, but also many rural areas will be linked (TRC, 2019). The study done by Cheng and Chen (2022) found that the SGR will stimulate the development of all places with railway stations. As the case with Kenya already indicates, railway stations have essentially attracted residential and commercial development resulting in high-density nodes (Oluochi, 2018). The movement of cargo and people from rural areas will enhance the growth of business and other social and economic activities, eventually the development of rural areas. The SGR transport increases interactions of location, network efficiency, and potential interactions due to changes in the economic power of cities, eventually development of rural areas (Martin et al., 2004). The great linkage between rural and urban areas enhances the movement of goods and services; this attracts many people from places near to railway stations to invest in railway stations (Wang et al., 2021).

Growth of business sector; the growth of business sector in any country is stimulated by the presence of favourable transportation infrastructures systems. The construction of SGR as one among modes of transport will enhance the growth of the business sector by facilitating the movement of cargo from one place to another easily (Mboya, 2022). Also, TRC (2022) noted that the presence of SGR will

stimulate agricultural production by supplying inputs with minimal cost of transportation. In principle, other advantages of the SGR are to reduce transport costs of both passengers and cargo, improve access to markets and increase the linkage between rural and urban areas. For example, several banks opened new branches to provide services to the railway employees, some of whom are starting their own small businesses after the introduction of SGR in Kenya (Wissenbach and Wang, 2017). Also, SGR in Kenya triggered to the establishment of economic clusters and special economic zones in Mombasa and Naivasha (Irindu and Owilla, 2020)

Nonetheless, a study conducted by Mikomangwa, P. (2019) posits that inefficiencies may compromise this impact in certain regions. For instance, in the case of the railway town of Ruvu, situated in proximity to Dar-es-Salaam, the cost of sugar is 12% higher compared to Isaka, which is more distant from Dar-es-Salaam but boasts well-connected road networks. Even when accounting for the fact that the railway is not functioning at full capacity, the presence of inadequate or seasonal road connections to the railway infrastructure results in the suboptimal utilisation of the railway system by local producers and communities residing in its vicinity.

Employment opportunities-studies show that the Construction of the Standard Gauge Railway (SGR) has directly employed 800 people in phase one while above 600 jobs were created in phase two, with more jobs unfolding as the project proceeds (Wang et al., 2021). On the other side, TRC (2019) reported that the construction of SGR created thousands of indirect employment opportunities

including but not limited to retailers for food products, soft drinks, waters, Mama ntilie's business etc. also, SGR employed many youths on part time basis (vibarua). Therefore, many youths in Tanzania benefited with the SGR construction project. Tanzania's Standard Gauge Railway (SGR) is poised to offer benefits that extend beyond enhanced mobility and transportation efficiency. According to Wang et al., (2021), it is anticipated that when the SGR system reaches full operational capacity, it will generate around 600,000 direct employment opportunities. Data provided by the China Road and Bridge Corporation (CRBC) indicates that the SGR contributed to the creation of 72,000 jobs in Kenya, encompassing 39,000 managerial and technical roles (Zhu, Mwangi & Hu, 2022). "Without infrastructure, there will be no investors. Without investors, there will be no jobs for our youth."

Creating good relationships with neighbouring countries-the SGR Project is focused on advancing sustainable transportation throughout the Central Corridor of Tanzania. This involves building a railway line from Dar es Salaam to Mwanza, as well as new railway lines connecting Isaka to Kigali in Rwanda and Musongati in Burundi. These improvements and new constructions will play a pivotal role in opening up the Central Corridor of the East African Community (EAC), which holds significant potential in the fields of agriculture and mining. (TRC, 2019). The SGR project will contribute to the close relationship between Tanzania and neighbouring countries. This is through interaction in business activities movement of goods and people across the borders through SGR. Also, the SGR will enhance the collaboration of the countries

in the peace and security agenda through easy and fast movement of amenities and policemen.

Increased government revenue generation-Transportation of goods is the main objective for the projects and therefore will have a significant impact to the government revenue through taxes due to transportation of goods and containers at Dar es Salaam to Gitega through Uvinza railway station. The significant increase in Government revenue will start to be realised during the operation phase due to transportation of different goods such as minerals like nickel from Musongati and other services. The railway line will also stimulate agriculture, mining and industrial development. However, economic benefits due to the Uvinza Railway station are unclear because it is not one of the stations to be further developed as part of the Uvinza to Kigadye Railway project (TRC, 2023).

The negative impacts of SGR Project in Tanzania economy

The potential fragmentation of wildlife movement-the study found that the SGR will be fenced to ensure the safety of residents, pets, and animals near the high-speed train (TRC, 2019). There are apprehensions that the migration routes of wildlife could be disrupted as a consequence of fence installation. To address this issue, wildlife corridors will be established between the Mikumi National Park–Wami Mbiki Wildlife Area and between the Selous Game Reserve–Wami Mbiki, specifically where the paths of wildlife migration intersect with the routes of the Standard Gauge Railway (SGR) (Wang et al., 2021).

Loss of land and other properties in the proposed railway corridors-the proposed

railway line is expected to traverse in rural and urban areas. They include major Municipal areas, Town, and rural areas with different levels of development and activities. The study noted that the standard railway line requires a 60-metre-wide corridor (TRC, 2019). Thus, some parts of these towns and peoples' properties will be affected. In addition, there would be a need for construction of stations and sources of construction materials all of which will require land (TRC, 2022).

Community Health and Safety-concerns about community health due to the influx of people to the campsite, disposal of waste and dust generated during mobilizations, construction, and operation phase of the SGR project were matters of concern to several stakeholders. This huge concentration of people would result in the community being more exposed to infectious diseases like STDs, HIV/AIDS, COVID 19 and other communicable diseases. Moreover, the project is expected to cause dust and increase accident risks if the vehicles are not well-controlled which may increase injuries and with potentially fatal results. Likewise, construction activities are expected to generate waste, both liquid and solid. Contractors are required to properly manage hazardous waste and avoid throwing which may be the cause of diseases and aesthetic related issues (TRC, 2022).

Market disruption of other modes of transport; The reduced travel time and costs, along with improved safety conditions, make the Standard Gauge Railway (SGR) the preferred choice for both passengers and cargo owners. As a result, a significant portion of them will shift away from using roads for transportation. Unfortunately, these positive aspects of the project are

anticipated to lead to reduced business opportunities and income for truck and bus owners, as well as job losses for drivers, turn boys, and truck loaders (Nyumba, et al., 2019).

Decline of some towns-additionally, the emergence of the SGR as the primary mode of long-distance cargo transport could lead to the decline of certain towns and market centres that heavily rely on trucks for their economic activities. Businesses such as hotels, bars, lodgings, and garages may face the risk of collapsing due to a lack of customers. This collapse could have severe consequences, resulting in the loss of livelihoods for shop owners, mechanics, oil recyclers, and wait-staff. Some may be compelled to relocate or seek new professions, incurring both costs and time investments (Martin et al., 2004).

Conclusion and Recommendations

This study review has highlighted the positive and negative impacts of SGR project on Tanzania economy. The study findings revealed that SGR is expected to have a pivotal role in expanding freight capacity, bolstering passenger transportation capabilities, enhancing the domestic economy, and contributing to the development of infrastructure within the East African Community (EAC). This initiative is set to generate employment opportunities, stimulate the regional economy, and improve the living standards of the people in the area. Furthermore, this review found that SGR is poised to drive the industrialization of Tanzania, with potentially significant transformations in sectors like agriculture, fisheries, forestry, mining, and construction. Therefore, the study concludes that for the long-term

sustainability development of the country and her citizens, the construction of standard gauge railway is very important. On the other hand, the study found that SGR will disturb tourism activities through fragmentation of Wildlife Movement; will cause Loss of land and other properties in the proposed railway corridors; Collapse of some towns; and will lead Market disruption of other modes of transport which will lead loss of jobs for truck drivers, garage service men, and those selling spare parts for trucks.

However, this review failed to describe how one way movement of cargo from port of Dar es Salaam to up country regions may affect the operation of SGR project. The additional research is needed to assess the economic impacts of one way movement of material to up countries while there is low movement of material from up country regions to Dar es Salaam. Furthermore, the study was too qualitative researched articles; the positive and negative impacts cannot be quantified. Therefore, more quantitative research on positive and negative impacts of SGR project on economy is needed. The study recommends to the government to start preparing competent staff who will operate and management SGR. In addition, the study recommends about awareness creation to businessmen, farmers and other stakeholders on the suitability of using SGR in running their daily activities. Also, the study recommends for the successfully completion of SGR project there should be a collaborations between public and private sectors in all level of operations.

The results offer several lessons, the foremost of which is simply that the Standard Gauge Railway is very essential for the development of any country's economy. It enhances the efficient and fast

movement of goods and passengers from one place to another. Also, the study results add to the existing literature on positive and negative impacts of SGR to the economy by providing empirical evidence. The study provides education to the students, transport's stakeholders, and other people about the positive and negative impacts brought by the construction of the SGR project for the development of the country in general.

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