

Impact of the Standard Gauge Railway on the Kenyan Economy

Lilian Mboya-Kwanya (PhD Scholar)

University of South Africa (Unisa)

College of Accounting Sciences

Department of financial Intelligence: The 4th Industrial Revolution and Development Finance

Abstract:

Rationale

The paper focuses on discussing the impact of the Standard Gauge Railway (SGR) project on the Kenyan economy.

Methodology

The study adopted a descriptive design. Data from secondary sources informed a predictive analysis. A review of existing literature on metropolitan rail development was also conducted with case studies from advanced economy Nations and low-income Nations for comparative analysis.

Findings

The country's Gross Domestic product (GDP) grew by 1.5% as an after-effect of the SGR project. The project has driven Kenya's economic growth by creating 46,000 jobs for local residents. The individuals working in SGR are able to get income to support their families an aspect that contributes to the economic growth of the country (Northern Corridor Integration Projects, 2018). The study concluded that SGR transport infrastructure has strengthened the domestic economic environment and enhanced regional integration of the East African community. It has also provided economic, social and strategic unity of the East African member states and played a key role in the integration of the constituent sectors as well as acting as a stabilizing factor of the region's economy.

Implications

The Government of Kenya and related stakeholders can use the findings of this study to leverage on the economic growth and create more revenue.

Originality

This paper is built on existing literature and supports the knowledge base with fundamental principles and perspectives on the Impact of SGR to the Kenyan economy.

Key words: Standard Gauge Railway (SGR), Gross Domestic Product (GDP), East Africa Community (EAC), Advanced economies.

growth of socio-economic activities in a country. A reliable transport system is a good recipe for the economic growth, which is fully reliant on excellent service facilities. The movement of goods and people from one area to another is facilitated by effective transport infrastructure (EAC, 2017). This facilitates both regional and international trade, which is global trade involving the movement of goods and services from one country to another (EAC, 2017). The regional development is determined majorly by the transport infrastructure, which is a pillar to multi-faceted growth and poverty reduction. Economic growth of a nation can be tied to many aspects inclusive of the advancement of infrastructure. When a country has a vast road and rail network, there are aspects of job creation where the population can work and pay their taxes. Industrialization is also made possible by the transport system advancement.

The Kenyan SGR project has its phase 1 completed and the outcomes are evident. The project has overseen numerous benefits to the country's economy. The SGR acts as an integration tool and enables the East African Community (EAC) to better enhance economic growth, transport and globalization efforts. The SGR project brings about strong interdependence among the EAC and hence fosters peace and minimize conflicts.

Uganda being a landlocked country, is fully dependent on road transport from both Kenyan and Tanzanian ports to get their goods. A recent project by the Kenyan government on the Standard Gauge Railway (SGR) has sought to offer long-lasting solution to the country's transportation infrastructure and the regional system at large (EAC, 2017). The project links the Kenyan coast with the Ugandan dry port. This fastened the process of handling and delivering cargo from the port to the neighboring country. The East African member states should focus on developing quality and dependable infrastructure which comprises the region's trans-border transportation system, this is according to a report by Kenyan railways, (Zhao, 2016). Economic development can be gauged from various dimensions in terms of monetary value that a certain project brings on board. The economic value of SGR is known to be job creation, increased industrialization, reduced cost of doing business, urbanization, improved tourism opportunities, improved regional trade, reduction of road

I. INTRODUCTION

The growth of the economy of a country is dependent on the infrastructure that is in place. In the required infrastructure, transport is essential in the development and

maintenance cost, increased debt, market disruption, among other impacts.

The project in a bid to achieve vision 2030, focused on reinforcing the regional framework for infrastructure and economic development. The project incorporated the local private sector in the provision of infrastructure materials and services as well as the help of regional governments. The project aimed at developing and maintaining a relatively safe and efficient regional rail transport network which acts as a benchmark for transport infrastructure in the region. The project provides globally accepted performance standards that target to enhance customer satisfaction (CGTN Africa, 2017). SGR was designed to meet ultra-modern standards with high speeds and capacity for the passenger trains as well as freight transportation. The average speeds for the trains are between 80-120 km/hour for freight transportation while 120-160km/hr. for the passenger trains (CGTN Africa, 2017) thus, a cost-saving endeavor and a major economic transformation for the region. The paper focuses on evaluating the impact of SGR on the growth of the country's economy and presents key facts on the project, evaluates literature review, offers results and discussions on key aspects resulting from the construction of the standard gauge railway.

II. LITERATURE REVIEW

The rail transport has been used in many decades offering long lasting solutions globally connecting countries to countries. It was favorable means as it was the most energy and cost-efficient mode of transportation, which helped in the movement of freight and passengers within a country and regionally. The railway transport is more reliable in transporting a large number of people as well as the high capacity of freight at safe speeds for longer distances. The railway systems are good in decongesting the road network and grants long term benefits (Railway Technology, n.d.).

Railway Transport

In reviewing the history of railway, the traditional north-south divide gave way to gauges in Africa where the Northern Sahara used standard-gauge rail style. The sub-Saharan used different styles, which were specifically the cape gauge and most of these lines were constructed during the colonial times (Railway Technology, n.d.). The rails were constructed to serve the objective of extracting and exporting raw materials, especially from the white settlers' farms to the port. During that time, when these railway lines were constructed, it was unfortunate they did not focus on the African economies. The colonial masters were aiming at their economies back home where they would grow crops in Africa and export it to their motherland (Railway Technology, n.d.).

When most of the countries had taken over self-governance, the railway systems in place favored their economic growth despite the fact that few managed to extend the old railway system to the current ones. Modern Africa has experienced

rapid industrialization as well as urbanization an aspect that has seen the movement of goods from place to place be achieved with improved efficiency. The landlocked countries have an increased need for fast and reliable transportation system, which is a railway system (EAC, 2017). The goods in these countries require an extended railway system that ensures that the resources move with efficiency to boost economic growth.

An SGR is defined as a railway that is built based on uniform distance as well as the rail width has the same distance. The gauge railway is constructed in the expansion of the current rail system to improve connectivity and interoperability within regions (Kenya Vision 2030, 2018). For the countries seeking to expand their rail network, it is clear that the new global standard is being used widely. The existing lines offer a limited option of expansion due to the limitation of available standards that have ceased from production (Kenya Vision 2030, 2018). The fact that there is increasing popularity of Chinese in Africa, it is another factor that has brought forth the existence of the SGR. The East African countries in a bid to expand their networks, the SGR has been the proposed gauge to meet the standards of the region to allow easy connectivity among member states within the region.

Theoretical Framework

The development of a country requires active participation by the government, and in this case, citizens also have a huge role to play as well. The country has to undergo a process that entails various changes in both social and administrative institutions that paves the way to big projects. The main goal of development projects is to improve the quality of life of the citizens, growth of Gross National Product and promotion of sustainable development. In his study, (Ogoko 2016) reflects development as an endeavor with many sides, implying that individual skills and capacity, as well as the stability in a country, creates room for development. The development economics deals with various aspects of the development process in the low income and developing countries like in Africa, Asia, among others (Kenya Vision 2030, 2018). These countries have development deficits, and people have low living standards. Development of infrastructure, in this case, entails promoting economic development as well as the economic growth and structural change. In focusing on the impact if SGR on the economic growth of the country, various theories and growth models are discussed. The theories guide in understanding the economic value of the SGR project in Kenya (Kenya Vision 2030, 2018). Two major schools of thought are reflected in this study, and they include Linear stages of growth model and structural change model.

Linear Stages of Growth Model

The linear stages of growth are attributed to Walt Whitman, who developed it in 1960, where he suggested that the developed countries undergo five stages of growth. He argued

that these stages followed a logical sequence; each stage could only be reached through the completion of the previous stage. If an economy saves, it will grow, and if it grows, it must develop. Aggregate savings are largely determined by national income, so if income is low, savings will not be accumulated. He added that the developed countries go through several development phases. (Ogoko, 2016). The stages of development are used to explain the railway development project in the East African community. The SGR development in Kenya has undergone various stages until its phase 1 completion. The project now fits enough to compete with international front while harmonizing the country, creating a gateway to true independence from foreign trade ties with the West (Ogoko, 2016). Walt stages of linear growth include; traditional society, preconditions for takeoff, takeoff, drive to maturity and age of high mass consumption.

Before the SGR, the country relied on an old rail system that was built by the British and relied heavily on manual transport. The old system was slow and unreliable, with a lot of risks that restrained its efficiency (Thuita, 2019). The increased levels of production attributed to a demand for a more effective rail network which improves the transportation of persons and goods from the port to inland areas. The takeoff stage in SGR project is evident to be driven by the SDGs where the technological and infrastructural changes have been the priority for the governments (Ogoko, 2016). The SGR came as a result of a self-sustained change in agriculture as well as the industries in the country which have paved the way to attaining regional economic growth. Improving the infrastructural technology in the country propels the growth of the economy.

Walt's work, like many other accounts of growth, points to the significance of the accumulation of savings through different economic models like the SGR to achieve take-off – in this case as a necessary condition for the movement from traditional to developed societies.

Structural Change Theory

William Arthur Lewis presented structural change theory in 1955 were suggested the need for countries to transform their structures to create diversification from agriculture, which had low productivity (Economics Online, n.d.). He suggested a focus on the industrial activities would be of great change as it has high productivity of labor. He further explained the link between new technologies and economic development where he argued that underdeveloped economies consisted of two sectors which included a traditional overpopulated sector with surplus labor and a high productivity modern sector (Economics Online, n.d.). The labor transfer from the traditional sector to the highly productive modern sector is supported by the structural model of growth. The adoption of SGR is a shift from traditional means of transportation to a highly effective modern transportation system, which is labor-

intensive and aims to grow the country's economy by contributing significantly to the national GDP.

SGR and Economy Growth

The railway construction is a project that is quite significant in contributing to economic growth in the country (Thuita, 2019). The railway project provides an alternative to the transportation system that allows transporting a large capacity of cargo and persons over a long distance within a short period. Railway construction is known to boost sustainable development across the economies. The SGR fits well as one of the African Union Flagship projects which are focused on impacting the socio-economic development of the continent (Thuita, 2019). The high-speed train network in Kenya has both positive and negative impact on the Kenyan economy. The project, since its phase 1 completion has enhanced transport operations in the country and beyond in a bid to promote the development and economic growth.

The SGR project has reduced rail transport costs from \$0.20 to \$0.08 per ton per kilometer. This cost saving is generated by use of block trains with economies of large scale compared to narrow gauge and road transport (Ndegwa, 2019). The SGR trains can attain a speed of up to 120Km/hour which greatly reduce the time required to move between the Kenyan towns. According to The International Railway Journal, the new line has cut travel time from Mombasa to Nairobi to four hours for passengers, eight hours for freight trains significantly reducing travel time between the two cities from the current 15 hours to four and making a considerable impact on transport activities (Ndegwa, 2019). The project contributes an annual GDP growth of at least 1.5% while also creating jobs directly from the construction and maintenance of the SGR-Line and from the transport of passengers and goods. The project has also created at least 10,000 jobs locally through in indirect sectors like large quantities of local inputs such as steel, cement, aggregates, electricity generation and electricity transmission pylons and cables, roofing materials, glass are required from local industries (Ndegwa, 2019). Other than the jobs relate to the construction, the areas around the SGR stations along the route, or towns where they stop, have seen increased economic activities which include markets, hotels, transport, and trade.

Kenya's industries have benefited from the demand for inputs that the project requires. The opportunities are immense, especially for individuals and SMEs. Demand for steel, cement, aggregates, electricity pylons and cables; roofing materials, glass have surged. Also, business people have confidence that goods they fabricate and farm produce they add value and reaches their target markets on time, leading to the birth of processing industries ("Impact and Benefits of the Standard Gauge Railway in Kenya - Kenya News", 2019). There has been inevitable emergence of trading centers along the SGR route and especially in the immediate neighborhoods

of termini influence a new socio-economic dynamic whose value manifests in unforeseen opportunities.

The SGR has provided ground for burgeoning upstream business. This has resulted to investments such as hotels, accounting, real estate, roads, engineering, consulting, etc. Kenya is the most powerful exporter and importer in the East African region, thus provides a much needed regional business environment that factors growth of opportunities for trade (Ndegwa, 2019). Kenya has developed financial systems, open and robust markets, and already significantly ahead beside a massive economic growth buoyed by prospects of low power costs, commodities, and crude sales in the short and long-term (Ndegwa, 2019). The SGR has been seen as a value addition and a direct economic driver. A vibrant local tourism culture has benefited many entrepreneurs. Similarly, the SGR has significantly influenced land use and spurred development in the areas around where it has traversed. Whenever human settlement hurdles people into a common area, traders instinctively troop in.

Benefits of rail systems in the advanced economies

Building high-speed rail has created hundreds of thousands of jobs. Every \$1 billion in investment creates 24,000 jobs (Todd, 2012). Every \$1 invested creates \$4 in economic benefits. Upgrading passenger operations on newly revitalized tracks, bridges and rights of way is spurring business (Todd, 2012). Rail tends to attract more discretionary riders than buses. Greater comfort, including larger seats with more legroom, more space per passenger, and smoother and quieter ride. More voter support for rail than for bus improvements. Greater maximum capacity. Rail requires less space and is more cost effective on high volume routes. Greater travel speed and reliability, where rail transit is grade separated. More positive land use impacts. Rail tends to be a catalyst for more accessible development patterns. Increased property values near transit stations. Less air and noise pollution, particularly if electric powered. Rails stations tend to be more pleasant than bus stations, so rail is more appropriate where many transit vehicles. (Todd, 2012)

Japan bullet train

Commonly known as the origin of high-speed rail, it opened its first service in 1964 between Tokyo and Osaka and in just three years, more than 100 million passengers had used the trains on Japan's first high-speed rail line. Its popularity led to two more lines opening over the following decade and, by 1976, more than a billion passengers had used HSR in the country, spurring economic growth by 21% within the period (ITF 2014).

High-speed rail in China

China's first railway line, the Qinhuangdao-Shenyang passenger railway, was opened in 2003 and by the year 2008, as part of the infrastructure development plan that

accompanied the country hosting the Olympic Games, high-speed trains between Beijing and Tainjin were introduced and set the world record for average journey speed at 313km/h (194mph) over the 967km (601-mile) trip. This was another global record. Due to the rail high speed, goods and services are able to be transported and reach their destination in time thus spurring economic activities country (ITF 2014).

High-speed rail in France

The first French HSR line opened in 1981 spanning 2,465km (1,532 miles) has reduced operating costs, accidents, highway congestion, and greenhouse gas emissions as some air and auto travelers switch to rail (ITF 2014).

III. METHODS

Research methodology, in this case, involved a structured process of conducting research which included collection, analysis as well as interpretation of information and data. The study focused on the relevant data to explore the impact of SGR on the Kenyan economy. The paper used non-spatial data, which is printed on reports, journals, tables and other statistical figures available to show the impact on the economy of the country. Secondary data was sourced from publications by different authors which included government archives, scholarly journals, among other sources. Qualitative methods of data analysis and content analysis were used to draw conclusions from the study.

IV. RESULTS AND FINDINGS

The study revealed that the SGR driving spirit was founded upon the idea of integrating East African member states and fostering economic development, to include stimulating mineral exports from the hinterlands of the EAC, DRC and neighboring countries. Without the SGR in place, both the Mombasa and Dar el Salaam ports would remain a non-investment as they are the key port gateway to East Africa. Thus far, the Mombasa-Nairobi section of the SGR has been completed and is fully operational. The Mombasa-Nairobi rail offers effective transportation of cargo from Mombasa to Nairobi. The cargo train takes 8 hours to transport containers to Nairobi port while the passenger train takes 4 hours to transport persons between the two cities. The timely delivery of cargo makes it an effective means of transportation, which in turn reduces the risks involved in road transport. This way, the country generates income from the timely and effective transportation of cargo. Additionally, the short time the train takes in transporting passengers between the cities makes it an effective way of minimizing the time taken to travel. This increases the productivity of persons due to timely travels.

The country's GDP grew by 1.5% as an after-effect of the project (Northern Corridor Integration Projects, 2018). The project has driven Kenya's economic growth by creating 46,000 jobs for local residents, (Gediminas, 2021). The individuals working in SGR are able to get income to support

their families an aspect that contributes to the economic growth of the country (Northern Corridor Integration Projects, 2018). Additionally, SGR has created immense opportunities for the construction which is related to industries which have risen due to demand for materials like cement, steel, among other materials. This has seen an increase in markets due to the new network of trading routes leading to emergence of trading centers at all its 33 stations as well as reinvigoration of economic activities in already existent towns. The project has also led to reduced cost of doing business where the economies of scale have seen 216 20ft long containers transported in a single trip (Northern Corridor Integration Projects, 2018). This indicates if the road was to be used, more trucks and fuel are required which are costly.

On the other hand, the project 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 debt has led the IMF to place the country on a debt-distress watch list. The SGR has been funded by debt at a cost of 1.023 trillion, which has led to a ballooned debt and negative effects. Additionally, the project has contributed to market disruption due to reduced travel time and costs as it has become the preferred mode of transport (Otieno, 2017). Also, the project has posed a danger to the environment as it has contributed to pollution from dust, emissions, waste materials as well as noise and habitat disruption where it passes through Nairobi National park.

V. DISCUSSION/CONCLUSION

The SGR has not only unleashed numerous benefits for the country's economy but also to the East African region at large. The SGR has improved tourism and manufacturing sector, thus enhancing the economic growth. According to China's Xinhua News Agency, construction of the Mombasa-Nairobi SGR has driven Kenya's economic growth by 1.5 per cent, and created 46,000 jobs for local residents. The Madaraka Express passenger train makes two trips on a daily basis between Mombasa and Nairobi attaining 95% occupancy thus reduces the time spent on the road to travel between the two cities (Oruko, 2018). The SGR train has revolutionized the movement of people, goods and services in the country since its operations commenced in 2017. This achievement has been attained by lowering the cost of transport, thereby making the SGR more affordable, convenient and reliable for Kenyans to travel for business and for leisure. An analysis of the SGR over the past one year since its inception indicates that the SGR continues to provide globally competitive quality services encompassing safety, reliability, efficiency and cost-effectiveness (Oruko, 2018). Characteristic of all infrastructures, the SGR was designed with an end goal of stimulating development in East Africa. To attain this much-desired development in Kenya, calls for an integrated economy. East African countries need to continually adapt and integrate the latest technology in service

delivery in order to improve their human debt indices (Otieno, 2017).

The East African region is a wide market. Both the landlocked countries such as Rwanda, Burundi and Uganda and the countries with access to the Indian Ocean ports need each other. The SGR as a tool can be used to foster both economic and social harmony among the East African countries with Kenya being one of the major beneficiaries (Obala, 2017). When completed, the SGR in Tanzania can be used to link Rwanda and Burundi to the seaport in Dar es Salaam while the SGR in Kenya can link Uganda to the Mombasa port. With this kind of balance and the wide regional market, the seeming competition and rivalry between Kenya and Tanzania to serve the other East African landlocked countries is replaced by unity and leads to the holistic development of East African regional bloc to heights of competing in world markets (Zhao, 2016).

Cost-effectiveness and operational efficiency are going to be crucial in ensuring the Standard Gauge Railway (SGR) achieve its great promise of being a game-changer in the economy. The first dynamic that the SGR delivers is definitely the time factor (Zhao, 2016). Transport of goods, particularly perishable goods, such as agricultural products at competitive rates across long distances, gives SGR an upper hand where faster access to markets matter. Passengers now move faster between destinations, and has more time to do business and engage in social and Nation building activities.

According to KRC, more and more passengers have a preference for the SGR over road transport when travelling between the towns where the SGR cuts through. For one, the SGR fares are competitive, and the SGR comes with travel in style comfort. Since the inception of the SGR in Kenya, there has been a recorded increase in capacity from 5 million passengers to 15 million passengers initially then to 60 million passengers per year in Phase 1 (Oruko, 2018). Transporters are taking advantage of technology in cost reduction. With the SGR, it cost less to move a ton of cargo not to mention the substantial savings that are made, such as a reduction in fuel consumption. In SGR, fuel efficiency ranges between 35 and 50 per cent. Maintenance costs are brought down because of the nature of infrastructure (Kenya Ports Authority Handbook, 2017). The expected substitution of road transport with SGR, usage of tires by trucks and vehicles has gone down. Tire replacement is one of the major costs in transport, and this reduction in replacement cost results in substantial savings to the larger economy.

According to the Kenya Ports Authority, cargo throughput at the Mombasa Port surges every year. For instance, according to the Kenya Port's Handbook 2017 – 2018, cargo throughput surged by 2.4% of the million tons handled by the port in 2016 only; with imports making the bulk of the cargo handled at the port (Otieno, 2018). This rates at about 23.12 million tons when compared to imports that stood at 3.66 million tons.

Meanwhile, cargo movement to and from countries outside Kenya shot up by 7.7 million tons from 1.1% in the year 2015 (Kenya Railways Corporation, 2017). Uganda remains the largest market directly benefiting from the Mombasa port, followed by South Sudan. Other markets are Burundi, Democratic Republic of Congo, Tanzania and Somali (Kenya Ports Authority Handbook, 2017). By the end of the year in 2017, the Mombasa Port recorded a total container population of 14,411 Twenty Feet Equivalent Units (TEUs) (Kenya Ports Authority, 2017). These statistics indicate that there are many containers lodged at the ports awaiting transit either to the inland depots or other destinations within the country and across borders. These containers that weigh millions of tons have to get a supplementary transportation channel as the road network alone is not sufficient and fast enough to handle such an enormous amount of cargo. This is where the standard gauge railway comes in as a revolutionary rejoinder and this not only to supplement the many lorries on the roads that add to tear and wear on the road and environmental pollution; but a firm guarantee that the cargo arrives at its scheduled destination in half the time that the lorries would normally spend on the road (Kenya Railways Corporation, 2017).

The development of reliable, efficient, and sustainable transport infrastructure systems is of particular importance for the East African region. This augments the description of the special situation of both Least Developed Countries (LDCs) and Landlocked Developing Countries (LLDCs). The levels of investment required for the development of large-scale regional infrastructure projects are often beyond the individual capacity of LDCs and LLDCs; this calls for regional cooperation and international financial support (Northern Corridor Integration Projects, 2018). To get this support from the international community would call for the improvement of international support measures considering that the cost of addressing Africa's infrastructure needs is estimated at around US\$100 billion a year.

The new railway in Kenya has so far supplemented road transport, and will in future increase the efficiency of the Northern Corridor by providing a gateway that will link Kenya's Maritime Port of Mombasa to the landlocked economies of Uganda, Rwanda, Burundi and South Sudan. The SGR has gone a milestone in significantly reducing the cost of road maintenance (Northern Corridor Integration Projects, 2018). By reducing many trucks from the roads, road tear and wear significantly reduces, and consequently, this lowers the cost of doing business in the region. The SGR has contributed to an improvement in trade and has attracted foreign investments. The implementation of the SGR is expected to transform Uganda, Rwanda, Burundi and the larger East African region for the better (Northern Corridor Integration Projects, 2018). Kenya being a prime example, has shown how the SGR has satisfied the growing demand for port services brought about by growing regional economies. There is a second commercial port underway at Lamu under

the LAPSET project (Northern Corridor Integration Projects, 2018).

The Mombasa and Lamu Port are the beginning of a second transport and economic corridor for Kenya and the region. The SGR appears to be gradually solving the problems that are currently facing the transport of cargo from Mombasa to various destinations. The decongestion of the port is one of the policies of the SGR project, which directly leads to economic growth. In Kenya, the Government is coming up with a policy to have cargo above 15 million tons transported using the trains to avoid damage to the roads (Northern Corridor Integration Projects, 2018). The project reduces the cost of transporting the cargo that has been previously very expensive using the roads.

There is no one single project that is perfect. This study found out that SGR, like any other project, has its downsides. There are fraudsters using fake SGR accounts to dupe the public about opportunities in the project sourcing bids (Thuita, 2019). There has been substantial displacement of populations, others from their ancestral lands, schools, factories.

The construction and development of the standard Gauge transport infrastructure in the East African region is a major element of the regional economy modernization and aims at a further national economic growth and improving the social sphere. The integrative role of transport infrastructure strengthens the domestic economic environment on the basis of the regional integration of the East African community. The SGR provides economic and strategic unity of the East African member states and plays a major role in the integration of the constituent sectors and is a stabilizing factor of the region's economy.

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