Globalization on The Railway Transport Sector in Africa

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ABSTRACT

This research examined the impact and challenges of globalization on railway transport sector in Africa. The study employed two railway companies as sample, state-owned railway company and private owned company. Using questionnaire as research instruments, data were collected and analyzed with simple percentages and non-parametric Kruskal-Wallis statistical tools. The major findings of the study were that: (a) the problem of competition and poor technology are the greatest challenges; (b) Railway companies with fewer globalization challenges perform significantly much better than those with more challenges; (c) Managers with positive attitude toward globalization perform significantly better than those with negative attitude and; (d) Railway state-owned receives government's support but not enough to warrant its competitiveness. The study concluded that for railway sector to continue surviving in this globalization era, governments must immediately step up and render support to railway transport sector as opposed to only supporting road sector.

SARI PATI

Penelitian ini mengkaji dampak dan tantangan globalisasi pada sektor transportasi kereta api di Afrika. Penelitian ini menggunakan dua perusahaan kereta api sebagai sampel, yakni perusahaan kereta api milik negara dan milik swasta. Menggunakan kuesioner sebagai instrumen penelitian, data dikumpulkan dan dianalisis dengan persentase sederhana dan alat statistik Kruskal-Wallis non parametrik. Temuan utama dari penelitian ini adalah: (a) masalah persaingan dan teknologi yang buruk merupakan tantangan terbesar transportasi kereta api di Afrika; (b) Perusahaan perkeretaapian dengan tantangan globalisasi yang lebih sedikit memiliki kinerja yang jauh lebih baik secara signifikan daripada perusahaan dengan lebih banyak tantangan; (c) Manajer dengan sikap positif terhadap globalisasi tampil lebih baik secara signifikan dibandingkan dengan sikap negatif dan; (d) Perkeretaapian milik negara menerima dukungan pemerintah tetapi tidak cukup untuk menjamin daya saingnya. Kajian ini menyimpulkan bahwa agar sektor perkeretaapian dapat terus bertahan di era globalisasi, pemerintah harus segera meningkatkan dan memberikan dukungan kepada sektor transportasi perkeretaapian, bukan hanya mendukung sektor jalan raya.

INTRODUCTION

The interconnectedness among countries through various relationships, from expansion of cultural influences across borders to the enlargement of business and economic relations throughout the world is called globalization. Economists have agreed that the benefits of interactions among countries outweigh the criticisms that globalization is facing today (Salvatore, 2012). The benefits of trade have made many African countries to lift trade barriers that they imposed on imports. There has been an over whelming increase in intra African trade of 15.4% (UNCTAD, 2019) in recent years. In 2018, 44 African countries signed a Continental Free Trade Area framework agreement that will assist the participating countries to harmonize and coordinate trade regimes as well as eliminate challenges associated with overlapping and multiple trade agreements. The agreement will also lead to strengthen the competitiveness of the local industries, realization of economies of scale for local (domestic) producers, better allocation of resources and attraction of foreign direct investments. Other regional economic blocs like the Southern African Development Community among others have signed free trade agreements in order to further ensure efficient production; liberalise intra-regional trade in both goods and services; and enhance diversification, economic development and industrialisation of the region (SADC, 2012).

Globalization through trade has led to unprecedented road infrastructure development that African governments are implementing in order to interlink capital cities and towns of different countries for trading. This has affected the state railway industries negatively because they are now rarely funded by their respective governments and at the same time the road transport has attracted some customers that used to do business with the railway companies (IELTS, 2020). Is globalization leading to the closure or diminishing of the railway sector in Africa?

Statement of the Problem

Railway transport plays a critical role in regional and international trade. For instance, Tanzania Zambia Railway Authority (TAZARA) which is owned by the Zambian and Tanzanian governments, usually transport imported and exported goods to and from Tanzania and Zambia. Most exported and imported goods further proceed to other countries such as Congo DRC, Malawi and Zimbabwe because TAZARA railway line inter links with other railway networks like the Zambian Railway Limited and Tanzanian Railway Corporation.

Railway transport records some distinguished advantages over other means of transport modes. Railway transport carries heavy axle loads. One single train is capable of transporting 1,200 metric tons of goods that would require 40 trucks of 30 tons each. Rail transport is safer and its carbon emission is relatively lower to other modes of transports. Although the railway transport records some advantages over other modes of transports, the sector especially state-owned railways in Africa are likely to collapse if no immediate action is undertaken by the governments.

Even when some studies on impact of globalization on SMEs, culture and manufacturing sectors have been conducted, based on best knowledge of the researcher, no study has had been conducted in the railway sector, specifically in the African context. This is consistent with Janelle and Beuthe (1997) who contend that" transportation is possibly the least researched element in the complex of factors that foster a changing world economy" (p.1).

In order to bridge the gap in literature and understand the impact that globalization has brought toward the railway sector, it became important to conduct a research focusing on the impact globalization on the railway transport sector in Africa.

Research Questions

1. What major globalizations challenges is the railway transport sector facing in in 21st century?

2. Is there significant difference in performance between railway companies facing more globalization challenges and those facing lesser globalization challenges?

3. Is there significant difference in performance between managers with a positive attitude toward globalization and those with negative attitude toward globalization?

Research Objectives

Ascending from the research questions, the research's aim was to attain the following objectives:

1. To ascertain major globalizations challenges the railway transport sector is facing in the twenty first century.

2. Relating globalization challenges and performance

3. To relate attitude toward globalization with performance.

Literature Review

Globalization describes the process in which national and regional economies have become integrated and inter-dependent through global network trade, communication, immigration, and transportation (Samad, 2007). Globalization is vital because it increases efficiency in the performance of activities in all sectors, including the transport sector. Due to globalization, African railways are now able to share infrastructures thereby increasing their efficiency in operations. For instance, today Tanzania Zambia Railway Authority is able to transport freight traffic for their customers on the Zambia Railway Limited rail network using the access fee operation and vice versa. Despite the fact that globalization has many advantages, it has also come with some challenges that have also really affected the railway sector.

The high connectivity brought by globalization has resulted in intense competition (Van der Meulen and Möller, 2006). Governments are constructing road infrastructures like never before, hence creating an intense competition with the road transport. The railway sector is also competing among itself especially with the coming of private railway operators. There is even a rise in private participation in the access partner operating agreements (Van der Meulen and Möller, 2006). In the near future, there will be very few state-owned railways that will continue to operate in freight traffic and passenger services due to increased private railway operators. Some African railway companies have also started engaging private operators while others are planning to do so (Tazara Site, 2021 and Lusaka Times, 2020). The increase in competition, in railway transport definitely disadvantages the state-owned railways when it comes to setting competitive prices as most state-owned railways have broaden workforce and have to ensure that the price set on the commodity help to attain breakeven point. For instance, Tanzania Zambia Railway Authority have had been failing to pay its employees (Sichali, 2020).

According to Globalization Partners (2021), costly investments are preventing multinational companies from investing in Africa due to lack of some basic structures. For instance, there are some areas along the Tanzania Zambia Railway rail line that have no water, power grid and network. The permanent way structure and most rolling stock have also outlived their lifespan dating back to four decades ago when the railway was first officially opened.

The study by Mwika, et al. (2018) on impact of globalization on SMEs in emerging economies, contradicted with the notion that globalization has a significant positive impact in developing countries in view of SMEs (Mwika, et al., 2018).

On the other hand the study by Van der Meulen and Möller (2006) on railway globalization revealed that for the railway sector to avoid oblivion and survive globalization, there is need to exploit competitive strength freely. The study further revealed the need for government's intervention for purposes of supporting the railway sector.

Oparanma et al. (2009) conducted a study on impact of globalization on manufacturing sector in Nigeria. The findings of the research study showed that the greatest challenge in manufacturing sector of Nigeria is lack of operational funds to sustain the business. Most equipment is absolute and fails to meet the changing test of customers. The findings further revealed that there is no significant difference between performance of Nigerian firms that are facing serious globalization challenges and those facing lesser globalization challenges. The study also reviewed that firms where managers have positive attitude toward globalization perform significantly much better than those with negative attitude.

A study Pesala (2008) on impact of globalization on manufacturing industries in India shows that the performance of India in globalization is very much positive due to the economic reforms but when considered on a global trend, the growth is comparatively lower with respect to other growing economies of the world like Korea, China, etc. The researcher asserts that the service sector is way ahead of manufacturing sector and there is need to improve productivity and profits.

METHODS

Two railway companies were selected which are Tanzania Zambia Railway Authority and one of the private company which is operating under open access agreement. TAZARA is two states (Zambia and Tanzania) owned on 50-50 basis and has been operational since 1975 whereas a private railway company operates as one of the access operating partner on TAZARA railway line using access operation agreement.

Through a questionnaire which was randomly administered to 60 respondents who are the employees of two companies working in different departments, data were collected. The questionnaire was utilised in this research study because it is the cheapest and fasted way of obtaining data from employees. Of the 60 questionnaires distributed, 54 were completed and returned and data were analyzed using quantitative approach.

RESULTS AND DISCUSSION

Data were presented and analyzed using tables and simple percentages to present the data and a non-parametric-Krustal-Wallis statistical instrument was used to analyse the research hypotheses. Kruskal-Wallis test does not assume that data come from a distribution that can completely be described by two parameters, standard deviation and mean. Krustal-Wallis is used to determine whether there are significant statistically differences between two or more groups of variable that is independent on ordinal or continuous dependent variable.

The results for the Krustal-Wallis were generated using jamovi software which is R based, open source and alternative to SPSS.

The Reliability and Validity

Reliability test was conducted to help determine internal consistency of the measures used. The table below shows all variables were having Alpha values of 0.7 and above which is recommended by Hair et al. (2006).

The variables in this research study were validated through factor analysis. Suitability of the data was assessed before performing the analysis through

Table 1. Reliability scores for variables

Variables	No. of Items	Alpha Value
Globalization Challenges	5	0.862
Corporate Performance	5	0.708
Attitude	3	0.753

Source: Author (2022)

two tests; the Bartlett's test of sphericity and KMO measure of sampling adequacy. The KMO need to be more than 0.5 and the test of Bartletts is to be significant. The tables below show that the data was suitable for the analysis.

Table 2. Bartlett's Test of Sphericity

χ^2	Df	P
86.4	3	<.001

Source: Jamovi computation

Table 3.KMO Measure of Sampling Adequacy

	MSA
Overall	0.624
Global Challenges	0.576
Attitude	0.651
Performance	0.670

Source: Jamovi computation

Figure 1 shows that globalization challenges are being faced by the state railway company more than the private railway company.

According to Table 4, the greatest globalization challenge the railway sector is facing is competition and technology which accounted for 22% each. The second challenge is lack of skills and networking which accounted for 20%. The third challenge is the challenge of costs which accounted for 19%. The last challenge is the challenge of lacking investments which accounted for 18%.

According to table 5 above, the highest impact of globalization on achievements in railway sector is wagon turn around which accounted for 20.98%. The second highest impact of globalization on achievements recorded from the table above is customer satisfaction that accounted for 20.55% and the third highest impact of globalization on
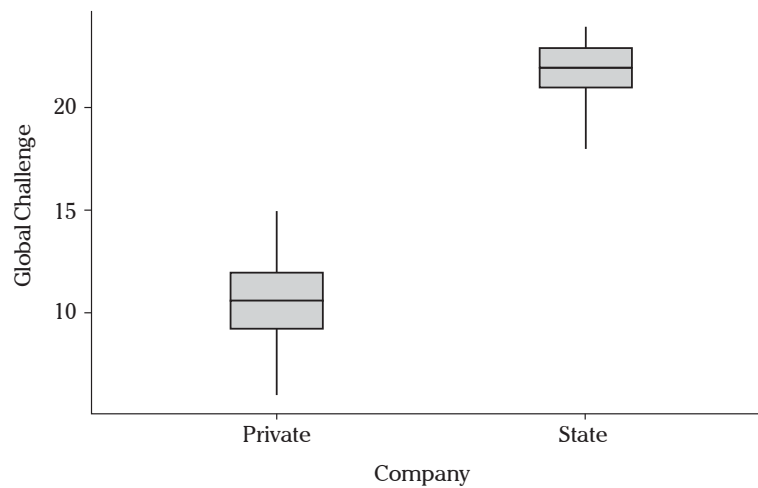

Figure 1. The extend of globalization challenges faced by State and private railway companies
Source: Jamovi output

Table 4. Globalization challenges

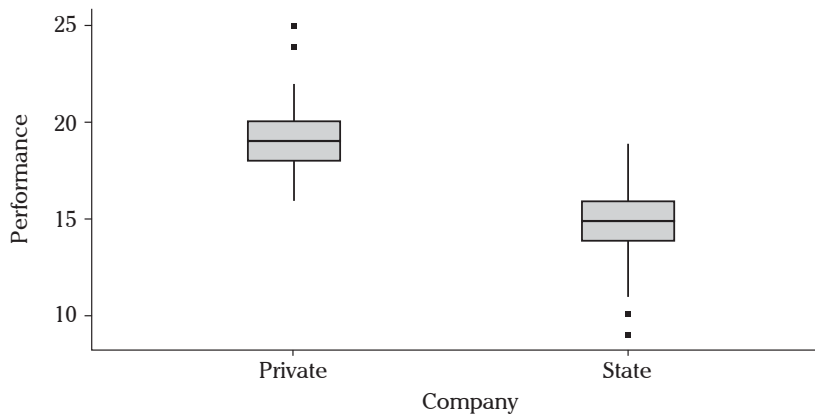|	Very Low	Low	No Opinion	High	Very High	Total	Percentage (%)
Competition	4	20	42	52	65	183	21.71
Technology	7	20	27	48	80	182	21.59
High Costs	11	16	51	40	40	158	18.74
Investments	19	18	6	40	70	153	18.15
Skills and Networking	14	12	27	44	70	167	19.81
Total	55	86	153	224	325	843	100.00

Source: Jamovi computation

Figure 2. Performance of railway sector in globalization
Source: Jamovi output

Table 5. Achievements of objectives in Globalization

	Very Low	Low	No Opinion	High	Very High	Total	Percentage (%)
Profitability	0	16	36	68	85	205	19.51
Sales	0	16	36	68	85	205	19.51
Customer Satisfaction	0	6	36	84	90	216	20.55
Transit Time	2	4	54	60	85	205	19.51
Wagon Turn Around	0	4	45	56	115	220	20.93
Total	2	46	207	336	460	1051	100.00

Source: Jamovi computation

achievements recorded profitability, sales and transit time with all accounting for 19.51%.

Hypothesis Test

To answer the 2nd and 3rd research questions of this study, the following hypotheses were tested:

HO_1: There is no significant difference in performance between railway companies facing more globalization challenges and those facing fewer challenges.

HA_1: There is significant difference in performance between railway companies facing more globalization challenges and those facing fewer challenges

HO_2: There is no significant difference in performance between managers with positive attitude toward globalization and those with negative attitude toward globalization.

HA_2: There is significant difference in performance between managers with positive attitude toward globalization and those with negative attitude toward globalization.

Based on the above hypothesis test using Kruskal Wallis on the second research question, we see the p-value is less than .05, hence we conclude that there is significant difference in performance between railway companies facing more globalization challenges and those facing less challenges.

Table 6. One-Way ANOVA (Non-parametric) Kruskal-Wallis

	χ^2	Df	p	ε^2
Performance	28.6	1	< .001	0.540

Dwass-Steel-Critchlow-Fligner pairwise comparisons

Pairwise comparisons – Performance

		W	P
Private	State	-7.57	< .001

Table 7. One-Way ANOVA (Non-parametric) Kruskal-Wallis

	χ^2	Df	p	ε^2
Performance	35.0	1	< .001	0.661

Dwass-Steel-Critchlow-Fligner pairwise comparisons

Pairwise comparisons – Performance

		W	P
Private	State	-8.37	< .001

Source: Jamovi computation

Kruskal Wallis on the third research question, show that our p-value is less than .05, therefore we conclude that there is significant difference in performance between managers with positive attitude toward globalization and those with negative attitude toward globalization.

The data presentation and analysis highlighted in the tables and graphs above, have shown that the greatest globalization challenge encountered by railway transport sector in Africa is that of competition followed by technology upgrade. Competition arises from the road transport which has seen the construction and rehabilitation of roads that interlinks cities and countries in recent years in both Zambia and Tanzania. The challenge of technology is related to technology upgrade and modernization of rollingstock. The above findings are consistent with Bullock (2009) research study that contends that the liberation of sub-Saharan economies have led to improvements in road infrastructure, which has led to much stronger competition in the transport sector. The authors further contend that the railway infrastructure is relatively poor and has not seen any modifications or upgrade since they were constructed three decades ago.

The next challenge is lack of skills and networking. The skills which employees are equipped with in are not up to date. Things have changed and employees need to adapt to the new dynamic environment. The next challenges that followed are high cost and lack of investments respectively. Using old rolling stocks is costly, ineffective and becomes a challenge when setting up a price relative to the road transporters.

Recapitalization is necessary especially to TAZARA because all rolling stocks and infrastructure are very old and dilapidated thereby lacking both technical and economic efficiency. With poor status of rolling stock and infrastructure, no one can expect the railway company to compete and survive in today's globalization age.

The findings also show that the state-owned railway company faces more challenges compared to the private company. This can be attributed to the fact that TAZARA has been in operations for a long time without recapitalization, while a private company is new and well equipped with latest technological advanced rollingstock and equipment.

Findings of this study show that the highest impact of globalization on achievements in railway sector is wagon turn around. Wagon turn around is the number of days wagon takes to reach the destination and back to the station of departure. With reliable rollingstock, technical and economic efficiency would result in the higher rates/percentages of rolling stock utilization, reliability and availability.

Table 8. Comments of Respondents

	Company	
Comments	Private	State
Government to recapitalize the company	0	2
Government to issue a Statutory instrument to support the railway sector	14	10
Railway company to advertise more	4	4
Foreign Investors to invest in Railway sector	6	2
More training for employees	5	6

Source: Jamovi computation

The wagon turn around would also be recorded in a short period of time. The findings show that customer satisfaction is next highest impact of globalization in railway sector. If the customer's consignment is delivered in time, a customer would definitely be satisfied. The third highest impact of globalization on achievements is profitability, sales and transit time respectively.

The hypothesis tested in this research study with respect to the second research question proved that there is significant difference in performance between railway companies facing more globalization challenges and those facing lesser challenges. This empirical evidence is inconsistent with the findings of Oparanma et al. (2009) that showed that there is no significant gap between performance of Nigerian firms that are facing serious globalization challenges and those facing lesser globalization challenges.

The hypothesis tested with respect to question three of this research study proved that there is significant difference in performance between managers with positive attitude toward globalization and those with negative attitude toward globalization. The finding is consistent with Oparanma et al. (2009) research study that support the same argument that firms where managers are positively focused on globalization matters performs significantly better than those with negative attitude.

The study also shows that the impact of globalization on achievement in Africa is higher in private railways companies compared to state owned railways in Africa.

It is also evident from the findings on comments from employees that the railways companies' greatest desire is to see government intervention through issuing of statutory instruments that would support the railway transport sector. In Zambia, there is an IS that mandates a transporter to move the 30% of the bulk cargo by rail. This SI was issued to ensure that lives that could be lost in road accidents are preserved and at the same time reduce on maintenance costs of road rehabilitations. The employees' desire is also to see that employees are equipped with latest technological skills that are prevailing in the modern globalized world.

MANAGERIAL IMPLICATION
The study help managers in state owned railway companies to mitigate and adapt to globalization challenges in order to improve performances of their companies. On the other hand, decision makers in government will be obliged to come up with policies and measures that support the railway sector as opposed to mainly concetarting on other sectors.

CONCLUSION
The findings of this study helped to conclude that time has come when African railways must show greater response and commitment to globalization issues; governments must not only focus on road sector when funding and supporting but also the railway sector to ensure the survival and prevent the railway sector from becoming obsolete.

Recommendations
The impact of trade liberalization on railway transport sector in Africa has been overwhelming and disastrous. Railway companies especially state-owned are not prepared for the challenges of globalization. It is very clear that the governments have to be helpful otherwise the railway sector will collapse. The recommendations align with the comments and concerns raised by employees in this study.

Governments need to issue statutory instruments that would support the railway sector. The very statutory instruments if well implemented would minimize traffic of road transport thereby; preserving roads from damages and saving costs; saving lives from road traffic accidents; and keep an atmosphere with little carbon emission.

Governments need to recapitalize the railway sector for it to become more effective and efficiency like when first constructed decades ago. There is need to upgrade the operations manual procedures, employees' skills, renovate the railway infrastructure and procure new rollingstock. Ignoring the railway sector in the national budgets and concentrating on the road sector alone is the same as killing the railway sector.

The employees of railway sector need also to have interest in networking and liaising with other railway companies in other countries like Australia, India, China, Europe and America in older to understand and upgrade themselves with the new dynamics globalization has brought in the railway industry.

Contribution of the Study

The findings of this study have made several contributions to the literature of impact of globalization in railway sector. It one of the first ever research done in Africa and has greatly added to the limited existing literature in globalization on railway transport sector.

The Limitation of the Study

The limitation of this study was lack of prior research studies on this research topic in Africa. There was very limited literature available related to this research study. The Most available literature used was from other sectors like culture, SMEs and manufacturing sectors. The other limitation was limited time to administer and receive the research questionnaires.

Future Research

Studies need to be conducted in other railway companies in Africa that can incorporate even qualitative research approach. ∎

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