



Improved urban road network and small and medium enterprises' financial performance: Evidence from Tanzania

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ABSTRACT

This study assessed the impact of improved urban road network on financial performance of Small and Medium Enterprises focusing in Dodoma, Tanzania. The study employed a cross sectional research design where by a sample of 89 SMEs from the selected three wards in Dodoma city was used to draw the conclusion. Qualitative data collected through questionnaires were analyzed using content analysis while quantitative data analyzed using descriptive statistics and multiple regression analysis. The key findings from the study include: i) accessible roads to customers toward SME were having positive influence to SMEs performance ii) market accessibility by customers and consumers was the key factor in improving SMEs financial performance in Dodoma city and lastly, an effective time management and improved transportation of goods and services were positive related to the amount of sales revenue generated by SMEs. The conclusion is drawn to improve the urban road networks as among of the key factors in improving the performance of SMEs in Dodoma city by increasing sales and profit. It is therefore recommended that, the government and other stakeholders in the construction sector should continue to improve urban road networks and start offering basic business and financial management skills which would enable SMEs owners to make informed investment decisions as well as enhance their entrepreneurial skills which will facilitate in recognizing and exploiting the available business opportunities.

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Introduction

Small and Medium Enterprises (SMEs) in most of developed and developing countries are considered as key economic growth deriving agents, contributing significantly to employment creation and poverty eradication to majority of poor people (Al Khasawneh et al., 2021). It is estimated that, SMEs in developing countries contributes for about 40% on the country's Gross Domestic Product (GDP) (She et al., 2020; Yahaya & Nadarajah, 2023). This will imply that, improving of SMEs performance both in term of innovative strategies, accessibility to markets and sales will enhance the government efforts in improving the income and welfare of their poor citizen.

Similarly, effective transportation system is highly linked to the well improved urban road network which in turns can contribute a significant impact on the sustainability of economic growth and development in any country. This is due to fact that, improved road network provides linkages between different parts of the country and cities in which goods and services are moved too (World Bank, 2017). It also links different work places, deliver products to market, underpins logistics and supply chain, and support local, national and international trade. To improve the SME performance in any country, improvement of road networks paly a great role. Therefore, improved urban road network facilitates to improved transportation system which is not only contributing to national GDP growth but also serves as catalyst for economic development of a country as well as urban areas.

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Moreover, the report by Lu et al. (2009) argued that, there is a close relationship between transportation and country's economic productivity. Similarly, Marović et al. (2018) argued that, the development of urban road infrastructure systems is an integral part of modern city expansion processes including SMEs performance. Similarly, Khanani et al. (2020) asserts that, improvement in urban road network fuel the SMEs performances as well as employment opportunities through accessibility of facilities and services. The report by World Bank (2020) found that, improved urban road networks are essential for market accessibility and sales volume improvements to small and medium enterprises (SMEs).

Infrastructure on the other hand, defined and explain as a set of interconnected elements that issue or provide a framework that support the entire structure for development, and it is an essential term for judging a region's or country progress that is around the circle of development (Abdullahi et al., 2015). The term refers to technical structures that guide and support the society, in terms of water supply, electricity grids, bridges, roads, telecommunications, sewers, and also infrastructure is explain as the physical components of interrelated systems that provide products and services essential to sustain, enable, or enhance societal living conditions (Ekeocha et.al. 2021; Fulmer, 2009).

The nature of geographical location, its size, scattered settlement pattern, diversity and dispersion give roads in Tanzania a special role in the integration of the national economy activities (Starkey & Hine, 2020). Therefore, road transport is the major mode of transportation carrying over 90% of the passengers and over 75% of the freight traffic in Tanzania (URT, 2016). In particular, roads serve not only major transport demand from sea port to inland on trunk roads but also provide door-to-door services more effectively than any other modes of transport in rural areas where the people need freedom to move (World Bank, 2019).

In urban areas, the quality of road infrastructure directly influences the citizens' quality of livelihoods (Hanak et al., 2014). The quality of life as expressed in term of health, safety, economic opportunities, and conditions for work and leisure (Hanak et al., 2014; Marović, 2013). On the other hand, results from previous studies reveal that, the poor road network as well as infrastructure in urban areas were negatively impacted the profitability and performance of SMEs as they impose high cost on the distribution of finished goods (Marović, 2018; Obokoh & Goldman, 2016).

The report of UNCTAD (2015) accorded that, Small and Medium Enterprises (SMEs) dominate the economic life of most people in the Least developing Countries (LDCs) (Gollin, 2008). SMEs are regarded as the driving force of economic growth and poverty alleviation. Mnenwa and Maliti (2008) mentioned small businesses mainly performed by SMEs stand as the number one source of income to low-income countries like Tanzania. According to Tanzania National Baseline Survey for Small, Micro and Medium Enterprises (2012), there are more than 3 million small businesses in Tanzania engaging in trade and service sectors, most of which are informal. It employs about 5,206,168 people; of those, 3,447,469 are owners/spouses; 964,246 are paid workers; 718,663 are relatives and friends; and 79,390 are apprentices. Thus, small businesses are important in the livelihood and economic growth of LDCs' economy (Kumburu et al., 2019).

In order to improve their performances, SMEs need improved road network especially for urban roads which could facilitate their operations and accessibility of goods and services from their customers timely (World Bank, 2017). According to TARURA report (2021) shows that, currently there is an improved urban road network in Dodoma city which covers about 1187.03kms in total. Out of these, about 158.30Kms are tarmac road equivalent to 13.34% while 320.72Kms are improved rough road (gravel roads) representing 27 percent. However, the remaining portion which covers the distance of 708.01 kilometers signifying 59.65% is a rough road (Clay road) (TARURA, 2021). Therefore, there is potentiality of assessing the impact of improved urban road network on SMEs performances in the Cities like Dodoma as their limited studies in this regard.

Despite the role played by small businesses in economic development in Tanzania, yet most of them are constrained with some challenges (including high operation costs sourced from unimproved infrastructures), which hinder their performance (Mashenene & Kumburu, 2020). According to the report of Dodoma city (2020) indicated that, the number of registered SMEs in the city is estimated at 22,334 enterprises, but about 52 % of the registered SMEs collapsed in their life within three years. The possible explanation of this is not well established, either it could be the high cost of operations resulted from poor infrastructure in the city or others. The dearth of information regarding the reasons justify the need of the current study.

Previous studies by Mashenene and Rumanyika (2014); World Bank (2020) and Mashenene & Kumburu (2020), SMEs in Tanzania are confronted with a number of constraints which hamper SMEs their potential growth. Among the constraints mentioned by the study include poor infrastructures. However, the study did not discuss which type of infrastructures limit the performance of small businesses. Therefore, this study filled the knowledge gap by assessing effects of improved urban road network on performance of small and medium enterprises in Dodoma city. Furthermore, the study intended to uncover the puzzle statement of on the actual reasons for 52% failure of SMEs in the country as reported by Dodoma city report of 2020.

This paper is organized in the following manners: it starts with the introduction part; a second part is a literature review with theoretical and empirical studies that shed a light on linkage between theory and practice. The third part constitutes information on research and methodology. After analysis and findings of the study, authors provide discussions and implications. Finally, the paper concludes with key points and recommendations, future research directions and limitations.

Literature Review

Theoretical Frameworks and Conceptual review

The study was guided by the theory of Resource-based which was developed by Wernerfelt in year 1984. This theory basically argues that internal resources controlled by a firm tend to be potential source of sustained competitive advantage given the fact that such resources are high value, rare, difficult to imitate and non-substitutable. Firms such as SMEs are composed of potential resources such as capabilities, assets, techniques, attributes, and orientations that can be utilised to create a sustainable competitive advantage (Arsawan et al., 2022; Hossain et al., 2021). According to Yahaya & Nadarajah (2023) and Daft (2007), firm's assets can be strategically applied to maintain its competitive edge and create a sustainable business performance,

In that matter, this implies firms with more source will have more competitive advantage and thus can penetrate easily into the market and sales more goods and services. Also, the firm with high resource base it will be difficult to be either imitated or purchased by competitors (Cardeal and Antonio, 2012).

Thereby, with reference to this study the resources for the SMEs doing their business in urban areas like those in Dodoma City depend much on freedom for mobility in business matters which is much influenced by improved urban road network, ability to control business fund, access to business information as well as government and stakeholders supports on competitive business operations which influences business performance. This means that, the performance of SMEs in urban areas have a greater chance to perform better since their performance is secured by such different resources as mentioned. The Resource-Based Theory (RBT) has been useful in many previous studies measuring SMEs performance including the recent studies of Kumburu et al. (2019), Mashenene and Kumburu (2020) and Yahaya & Nadarajah (2023).

Empirical literature review and Hypothesis Development

Small and Medium Enterprises in Tanzania, plays a significant role in the provision of employment, innovation, payment of tax, reduction of poverty and improving the living standards of people (URT, 2016). Khanani et al. (2020) asserts that improved urban road network helps much on accessibility to facilities and services. In the urban areas, the road improvements fuel the SMEs performances as well as employment opportunities. Improved road infrastructures have mutual benefit to SMEs since supports movement of people from one location to another as well as reduce the costs for transportation of goods and services.

Findings from previous studies claimed that, improved road infrastructures have benefit to SMEs since they support the movement of people from one location to another in turns result into reduction on the costs of transporting goods and services. These studies included that of Ambikile (2023) who found the positive association between improved infrastructures and SMEs financial performance. Similarly, the study of Pereira and Pereira (2020) in Portugal found a positive and significant impact of infrastructure development on both traded and non-traded industries. Wang et al. (2020b) on the other hand noted that, improved efficiency of urban infrastructures improved business and economic growth in Chinese cities. Lin and Chen (2020) used a panel Tobit model in their analysis and results indicated that, land transport infrastructure, technological progress and industrial structure have positive and significant influence on China's manufacturing industry. Findings from these studies justify that, SMEs performance are highly linked to the improved urban infrastructures as they facilitated the access to markets and reduce the transport costs. Also, access to market will imply to more customers and increase sales revenue and profits.

Study by CIVITAS (2017) reveals that, improved urban road network contributes to more accessible, inclusive and likeable cities by improving air quality, optimising road space use and revitalising city centers. Improved cities put in place innovative measures to enhance public transport use as well as support transportation of goods and services. Improved urban road network is a key element of sustainable mobility in cities, and its quality should be maintained in order to keep existing users and attract new ones. Ways of increasing performance of SMEs in urban areas includes; attractiveness of public transport includes improving operational efficiency, harmonizing tariffs and timetables, and improving accessibility and interchange facilities.

Results from the study by Ahmad (2020) found that, SMEs have significantly contributed to the global economy, including employment creation, poverty reduction, income creation, support for major industries, innovation, entrepreneurship promotion, and rapid industrialization. In the United States and the United Kingdom, SMEs account for approximately 44% and 48% of the annual GDP of each nation, respectively, and supply 62% and 61% of total employment, respectively (Department for Business Innovation and Skills UK, 2021; Rowinski, 2022). On the other hand, study by Obokoh and Goldman (2016) entails that, shortage in infrastructure negatively impacts the profitability and performance of SMEs. The study explained that poor urban road network lead to high cost to be incurred by SMEs in the distribution of finished goods and services. In this regard, the government should embark on road rehabilitation to ease the transportation of goods and services.

A study by Kimani (2012) demonstrated that, upgrading of urban road network helps to improve transport safety, reduces transport costs, helps on accessibility of product market information, increase flow of customers into business; improve marketing, improved sales volume in businesses. Moreover, the study found that improved urban road network allows my business access products market information that influence the profit margins of businesses. The study further concluded that upgrading urban road network helps much to improve transport safety reducing cost of raw materials, increasing flow of goods from markets, increasing flow of customer into the businesses and increased safety of goods and customers.

Moreover, findings from the study by Horvat et al. (2020) also noted a positive influence of investments in infrastructure project on economic and human development in East African countries. On the other hand, Dumas and Jativa (2019) demonstrated that, there is good progress of urban road network in Tanzania which contributes much on the increased performances of SMEs. Improved urban road network has helped much on reduction in life satisfaction and decrease in the price of the main products. The authors added that the situation is consistent with predictions obtained from trade models whereby transactions are carried out with lower costs, actually face competition from lower price goods.

However, some previous studies reported mixed results on the relationship between the improved infrastructures and business performances in Africa and East Africa, for example, findings from the study by Horvat et al. (2020) indicated that, investment in infrastructure project influenced positively development of economic and human capital in East African countries. Similar to these, Yahaya & Nadarajah (2023) asserted that, development of road infrastructure was the key factor among others for SMEs performance in Africa. This in contrary to that of Ekeocha et al. (2021) who found insignificant statistical influence of developed transport infrastructure on the economic and business performance in Africa. Though, they also found that, ICT development impacted positively and significantly the GDP per capita growth in Africa. In the same line, study by Luz et al. (2016) found a neutral spillover effects of transport infrastructure on the performance of businesses in some African countries. All these contradicting findings justify the need and important of reviewing the relationship between the road networks and the SMEs performance in the developing countries like Tanzania. The findings from this study will allow for more comprehensive understanding on the influence of improved infrastructures on SMEs performance in Africa and Tanzania in particular. Also, will lead to developing a comprehensive framework on the relationship between infrastructure and SMEs based on Resource Base View and Institutional Theory.

Research and Methodology

Research design and Sampling Procedure

The cross-sectional research design was used as the study intended to collect data on improved road network and performances of SMEs in one point of time from the area of study. The stratified sampling technique was employed in the selection of 89 SMEs from the list of 812 in the three wards (Ipagala, Madukani and Kikuyu) in the city of Dodoma. The SMEs were divided into three categories of Micro, Small and Medium within the three wards. Then, from each group the proportion random sampling was employed to select the sample size. The choice of the stratification is based on the heterogeneity of the SMEs in the city which needed to be homogeneity within the population. The distribution of the sample from the three wards is presented in Table 1.

Table 1: Proportional sample size determination

Wards	Number of SMEs	Computation	Sample size
Uhuru	341	341/812 × 89	37
Ipagala	280	280/812 × 89	31
Kikuyu	191	191/812 × 89	21
Total	812	89	

Data Analysis Method

Content analysis was used in analyzing qualitative data collected from FGD and interview. In qualitative data analysis researcher identified different themes guided by theories and literatures, transcribed to get the meaningful statement for better interpretation. On the other hand, the Multiple regression model was employed in analyzing the significant relationship between improve road networks and SMEs performance. The Multiple regression model was used because the dependent variables (Financial Performance) was captured and treated as continues variables measured in quantity of revenue generated. The regression model was presented by the following equation:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon_i$$

Where;

Y = Trends of sales revenue (TZS) β_0 = Constant term

β = Beta coefficient

X_1 = Accessible roads to customers

X_2 = Market accessibility

X₃ = Time management

X₄ = Improved transportation of goods and services

The limitation in this study was based on the fact that, it only involves one city of Dodoma in the country but there many. Also, its conclusions are based only on the primary data which are single timed surveyed information which could not display the long-term impact of the improved infrastructures.

Findings and Discussion

Descriptive Statistics Results

The study explored the descriptive features of SMEs in the city of Dodoma which included the volume of sales and the monthly average of revenue obtained the SMES.

Current Level of SMEs' Sales Volume

Findings in Figure 1 indicate that, majority (89%) of respondents reported that, their current level of sales was increased following the improvement in urban road network in Dodoma. But only four percent reported the decrease in their sales and 7% remained unchanged. The results indicate that, improvement in urban road networks is associated with the increase in sales revenue among SMEs. The discussed variables in the question were timely budget, participation of specific department and size of budget allocation. Findings indicated that independent variables that were included in the mode 1 such as timely budget, specific department and budget allocation collectively had a significant influence on implementation performance of the annual procurement.

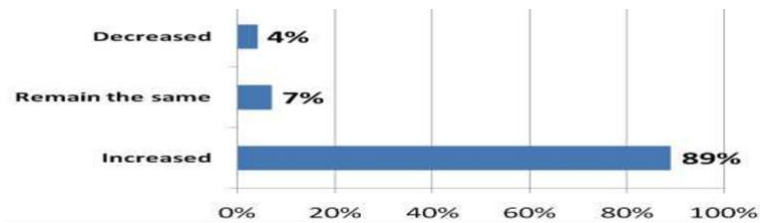


Figure 1: Current level of SMEs Sales; Source: Field Data (2022)

Average monthly sales revenue by SMEs

Furthermore, the findings as shown in Table 2 revealed that, the mean monthly sales of SME were increased from TZS 325,000/= per month before improved road network to TZS 705,000 per month after improved road network. This could be attributed by increase in roads and market accessibility to customers, time management and improved transportation of goods and services in the study area. The results were in harmony to that of Horvat et al. (2020) who not improvement in business performance in East African community following the improvement in transport infrastructures. Similar results were obtained by Dumas and Jativa (2019) that, improvement of urban road network in Tanzania contributed much on the increased performances of SMEs.

Table 2: Average monthly sales revenue

Responses	Average sales volume (TZS)
Before improved road network	325,000/=
After improved road network	705,000/=

Source: Field Data (2022)

Similarly, the findings were confirmed during interview by one Key Informants who added that:

“...The sales volume of SME would be increased in locations where there are improvements made to urban roads, as this would make it easier for customers to access and purchase their products or services. This would likely benefit all businesses within the location, as increased sales would lead to increased profits....”

These findings were supported by Mugo, et al. (2019) who found that, infrastructure has a significant positive effect on the growth of SMEs. Akinson (2018) emphasized that basic infrastructure such roads, and transportation is the least requirement for SMEs to flourish. Thus, infrastructural facilities provided by government can promote the growth of SMEs by facilitating the acquisition of all the necessary inputs that assist and promote investment and growth of the SMEs.

Inferential Statistics Results

The multiple regression analysis was used to test whether there existed significant relationship between independent variables (accessible roads to customers, market accessibility, time management and improved transportation of goods and services) and dependent variable (Sales volume) as revealed in the descriptive analysis is viable.

Before the analysis, data were subjected to rigorous tests on the multiple regression assumptions which included multicollinearity problem, normality, homoscedasticity and autocorrelation. Results from the test indicated that, there was no multicollinearity problem neither autocorrelation as the value of VIF was 2.5 below the recommended value of 10. This suggests that there is no multi-collinearity problem among the independent variables of the model and thus fits for regression analysis. Similarly, the value of Durbin-Watson statistic was 2.18, indicating that the residuals are independent.

Results as presented in Table 3 revealed that, the value of R-square was 0.64 implying that the independent variables in the I model were explained by 64% of the variance in the dependent variable. The higher value of R² justify the model fitness in measuring the relationship between the dependent and independent variables.

Table 3: Effect of improved Road Networks on SMEs Performance

Variable	Coefficients	Unstandardized Coefficients	Standardized Coefficients	t- value	Sig
(Constant)	1.231	0.548		1.026	0.134
Accessible roads to Customers (km)	0.164	0.134	0.158	1.555	0.008
Market accessibility	0.145	0.160	0.118	0.840	0.014
Time management (hrs)	0.207	0.101	0.133	1.420	0.010
Improved transportation	0.110	0.226	0.138	1.703	0.023
R =	0.637				
F =	84.2				
Durbin-Watson =	2.18				

Dependent Variable: Sales Volume (TAZ)

Source: Field data (2022).

Moreover, accessible roads to customers indicated to have a positive and significant related to sales revenue (Beta coefficient = 0.164, p-value= 0.008). This implies that, a unit change in improvement of accessible roads to customers could increase performance of SMEs in Dodoma city in terms of sales revenue by 16.4%. So, by improving the road networks will imply higher level customer access to market and thus contribute more to sales by SMEs. The increased sales by SMEs will also imply that, their gross profit could increase and gives more profit margins. These results are also in line with results from previous studies such as Ambikile (2023) who found the positive association between improved infrastructures and SMEs financial performance. Similar to Wang et al. (2020b) who noted that, improved efficiency of urban infrastructures improved business and economic growth in Chinese cities. Furthermore, the findings were supported by Akinyele et al. (2016) who found that, accessible roads to customers and SME performance is important not only for the businesses themselves, but also for the wider economy as a whole. This also indicate that, a well-maintained and accessible road network is essential for the efficient operation of businesses as it help to reduce the cost of moving goods and services from one point to another and allowing businesses to reach new customers more easily.

Findings in Table 3 further revealed that, market accessibility was found to have a positive and significant related to sales revenue with coefficient of 0.145 and p-value= 0.014. This implies that, a unit improvement on market accessibility through improved urban road network could increase the performance of SMEs in Dodoma city in terms of sales revenue by 15%). Moreover, improving road infrastructure and constructing new ones enhances market accessibility and fast delivery of materials, goods, and services from firms to customers. The findings were supported by that of the World Bank (2020) that, improved urban road networks are essential for market accessibility and sales volume to SMEs. Khanani et al. (2020) also reported that, improved urban road network helps much on accessibility to facilities and services. Also, results from the discussion with Key Informants during interview added that, improved urban road networks can help to improve market access and sales volume for SMEs, also help to reduce transportation costs, making it easier for businesses to get their products and services to market. In addition, can help to reduce traffic congestion and pollution in cities, which can benefit businesses and residents alike. The study further found that, SMEs located in cities with good urban road networks are more likely to export their products and services than those located in cities with poor road networks.

Similarly, time management was found to be positively and significant related with sales revenue (Beta coefficient = 0.207, p-value= 0.010). This implies that, any unit increase of time management due to improved urban road network could increase performance of small and medium enterprises in Dodoma city in terms of sales revenue by 20.7%. Findings are in line with those of Akinyele et al., (2016) who found that, SMEs could potentially enjoy an increase in performance if there is an improved urban road network that allows for better time management. This could lead to increased productivity and efficiency as a result of decreased congestion and increase in mobility for both customers and goods.

Improved transportation of goods and services shows a positive and significant related with sales revenue (Beta coefficient = 0.110, p-value= 0.023). This implies that, for any unit improvement in transportation of goods and services could increase the performance of Small and Medium Enterprises in Dodoma city in terms of sales revenue by 11% due to improved urban road network. The increase is expected to improve the volume of sales and the economy of Dodoma city. Similarly, the findings were supported by responses from interview with the third Key Informant who add the following:

“...For small and medium enterprises, an improved urban road network in Dodoma city could provide a more efficient way to transport goods and resources. This would lead to increased production and improved business performance...”

The results are contrary to that of Jamal et al. (2024) who found negative relationship between infrastructure and SMEs performance in Pakistan. Moreover, the findings were supported by Obokoh & Goldman, (2016) who found that, the transportation of goods and services is essential for the performance of Small and Medium Enterprises. Therefore, an improved urban road network could increase the efficiency of transportation, leading to increased performance of small and medium enterprises in terms of sales volume. But

Conclusions

The study assessed the impact of improved road networks on SMEs performance in Dodoma city. Based on the findings from this study, it can be concluded that, accessible roads and market with a well management of time among SMEs owners were the key factors for increases in sales volume in Dodoma city. These findings further indicate that there is need for policymakers and leaders in Tanzania and Africa in general to put more coordinated efforts in improving the transport infrastructure sector as a means of boosting SMEs performance. Similarly, the government of Tanzania through its responsible road agencies (TANROD and TARURA) should continue to improve urban road networks so as to increase the accessibility and sales volume by SMEs in the City. Moreover, the central government should develop supportive policies, laws, and regulations that address the SME's challenges specifically for street vending activities who need much improved urban road networks. This is important given that, the results of this study showed that the transportation infrastructure play a great role in improving the financial performance of SMEs.

This study presented findings on the influence of improved road networks on SMEs financial performance and conclude the positive influence of road network improvement, but it was only focused on a single city of Dodoma. Therefore, a more inclusive study in future is needed which will widen the results and thus come with the more comprehensive results originated from many cities and sectors in the country. Also, the conclusion of this study was based on the cross-sectional data, so the future research based on the longitudinal data is recommended. This will help entrepreneurs, policymaker and other stakeholder to come with the well formulated strategies to tackle the challenges faced by SMEs from the increased transaction costs.

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