Novelty Journals

ISSN 2394-7322

International Journal of Novel Research in Marketing Management and Economics
Vol. 10, Issue 2, pp: (53-61), Month: May - August 2023, Available at: www.noveltyjournals.com

The Relationship between Road Network Connectivity and Performance of Tea Processing Industries in Murang'a County

John Wambugu Kanyungu

Murang'a University of Technology, Kenya.

DOI: https://doi.org/10.5281/zenodo.8138397

Published Date: 12-July-2023

Abstract: **The decline in manufacturing's contribution to Kenya's GDP, particularly impacting the tea processing industry, has hindered the country's progress toward industrialization. Despite government initiatives promoting manufacturing, such as the industrialization policy and vision for 2030, desired outcomes have proven difficult to achieve. To address this issue, this study examined the relationship between road network connectivity and the performance of tea processing industries in Murang'a County, using the endogenous theory as a framework. The study's target population consisted of 29,854 tea farmers in Murang'a County, from which a sample of 379 tea farmers was selected using quota sampling. Data for the study was collected through questionnaires, document analysis, and group interviews. The collected data were analyzed descriptively, using frequencies and percentages, and inferentially, employing Pearson's correlation coefficient. The findings of the study revealed a significant moderate positive relationship between road network connectivity and the performance of tea processing industries in Murang'a County ($r = .501$, $p < .001$ at $\alpha = .05$). Based on these results, the study recommends substantial investments by both the county and national governments in road network infrastructure to improve connectivity and enhance the performance of the tea processing industry, bringing it up to international standards.**

Keywords: **Road Network Connectivity, Performance, Tea Processing Industries.**

1. INTRODUCTION

BACKGROUND OF THE STUDY

Kenya is known for its production of tea, particularly through the crush, rip, and curl (CTC) method, which is ideal for black tea blends favored in India, Britain, and the United States of America. CTC tea offers a robust, traditional "tea" flavor profile and is a primary component in Indian tea blends and breakfast tea (Laddi, 2021). Traditional methods are employed in producing high-quality Kenyan teas, involving carefully selecting young leaves and buds, followed by drying and aging. These whole-leaf varieties are often popular as "single origin" teas. While smaller plantations may still rely on manual picking, larger multinational companies are increasingly adopting mechanized methods for harvesting green tea leaves. Substantial Kenyan teas supplied to blending houses create various black morning tea blends (Laddi, 2021).

The outbreak of COVID-19 led to government-imposed measures to curb its spread, resulting in a slowdown of the Kenyan economy and adversely affecting the tea manufacturing sector (Nzomoi et al., 2022). These actions caused a decline of 0.1% in value-added manufacturing sector growth, falling short of the projected 2.5% growth for 2019. With the manufacturing industry contributing 7.6% to the country's GDP in 2020, the government has recognized the importance of infrastructure development to stimulate economic growth (Saxena, 2018). Given the high costs involved in infrastructure projects, the government has sought sustainable revenue streams through public-private partnerships (PPPs) with the private sector (Poole et al., 2014).

Infrastructure growth in Kenya has wide-ranging effects on economic trade, regional cooperation, and the establishment of economic communities (Njoro, 2016). It generates increased overall demand and supply, which benefits the economy and society (Price et al., 2016). The tea processing industry holds tremendous potential to contribute to economic growth by creating jobs, expanding the economy through tea product exports, and reducing imports (Albala-Bertrand & Mamatzakis, 2017). Therefore, political interventions should prioritize measures to enhance the industry's competitiveness by establishing robust infrastructure, fostering a business-friendly environment, facilitating access to credit and markets, and promoting the sharing and development of new technologies (Albala-Bertrand & Mamatzakis, 2017).

While research in Kenya has predominantly focused on energy needs, natural gas, green energy transformation, and waste management, there has been limited exploration of the precise relationship between road network connectivity and the performance of the tea processing sector in Murang'a County (Shuba & Kifle, 2018). However, understanding this relationship is crucial for developing the tea processing industry in the region.

To fill this research gap, this study aimed to assess the correlation between road network connectivity and the performance of tea processing industries in Murang'a County. By examining the quality and accessibility of road infrastructure in the area, the study aims to shed light on how it impacts the productivity, efficiency, and overall performance of tea processing facilities.

The null hypothesis of this study was:

H_0: Road network connectivity has no statistically significant relationship with the performance of tea processing industries in Murang'a County.

2. LITERATURE REVIEW

Researchers have also done several studies in the past. To look at the "Relationship between Road Network Connectivity and Tea Processing Performance" on a global, regional, and local scale. Yang (2019) did a world observational study in China called "The Impact of Transportation Infrastructure on Agricultural Production and Rural Incomes: Evidence from China." The study's goal was to find out if there was a link between China's transportation facilities, agricultural production, and incomes in rural areas. Even though the study was not just about tea production, it is still relevant to this topic because tea is one of China's most important agricultural goods. This study used a quantitative method called a fixed effects model to plan the research. The China Statistical Yearbook and other related sources were used to gather secondary data for the study, covering 1998 to 2016. The study found that China's transportation system greatly affects the amount of food grown and the incomes of people in rural areas. When transportation infrastructure is improved, it makes it easier to get to markets and lowers the cost of getting there. This makes farming production more profitable. Nevertheless, the study also showed problems with putting transportation infrastructure projects into action, such as the high cost of building and maintenance, that must be fixed. The current study on the influence of road infrastructure on tea processing industries was meant to fill a gap in research by focusing on tea processing industries in Kenya and how road transport infrastructure affects their performance.

Secondly, Tran (2021) researched "The Impact of Road Connectivity on Tea Production: Evidence from Vietnam." The goal of the study was to look at the connection between roads and tea production in Vietnam and to find out what effect roads have on tea production. This study used a mathematical method called regression analysis to do the research. For the study, 362 tea farmers filled out a survey sheet to get first-hand information. The study found that the way roads connect greatly affects how much tea is made in Vietnam. By lowering transportation costs and making markets easier to get to, better roads led to a rise in tea supply. However, the study also found that some tea farmers still have trouble getting to markets because the roads are in bad shape. The current study was meant to fill a gap in research by focusing on tea processing industries in Kenya and how road transport infrastructure affects their performance.

Thirdly, Karimov (2020) studied "The Impact of Road Network on Agricultural Productivity: Evidence from Uzbekistan" to find out how road networks affect agricultural output in Uzbekistan. The study aimed to find out how roads affect agricultural productivity, including tea supply. The study used a quantitative research method called regression analysis and a survey questionnaire to collect raw data. There were 270 farmers in the group. The study results indicated that better road networks had a big good effect on tea production in Uzbekistan and other types of agriculture. The study also said that bad roads made it hard to get to markets, which cut down on tea supply. The current study on how the growth of road transport

infrastructure affects the performance of tea processing industries in Kenya was intended to fill a gap in research by focusing specifically on the performance of the Kenyan tea processing industry.

Another study was carried out in India by Bhat and Naik (2017) on the topic of "Role of Transportation Infrastructure on the Growth of the Tea Industry in the North Eastern States of India." This study examined how the country's transportation infrastructure impacted the development of the tea business in India's North Eastern States. The study aimed to determine the relationship between the development of the tea business and the development of transportation infrastructure. Regression analysis, a mathematical technique, was employed in this study to conduct the research. The analysis encompassed the years 2000 to 2015 and used data that was gathered after the fact from the Tea Board of India and other relevant sources. The study's findings demonstrated that the development of the transportation infrastructure greatly influenced the expansion of the tea industry in India's North Eastern States. According to the study, improved road networks reduced shipping costs, made markets easier to access, and increased the profitability of tea manufacturing. However, the study also identified issues that need to be resolved to implement transportation infrastructure projects, such as the high cost of construction and maintenance. By examining how Kenya's tea processing businesses are affected by the growth of road infrastructure, this study aims to close a research gap. This was accomplished by concentrating on Kenya's tea processing sectors and how the state of the nation's transportation system impacts them.

In Africa, Uwizeyimana (2021) studied "The Impact of Road Network Accessibility on Tea Production in Rwanda" to determine how road network accessibility affects tea production in Rwanda. The goal of the study was to figure out how road network accessibility affects tea production and find out how road network accessibility affects tea production. The study used a quantitative research methodology called a "multiple regression analysis," a survey questionnaire was used to collect primary data. A random sampling method called "stratified random sampling" was used to choose 225 tea farmers from Rwanda's Southern and Western areas for the study. The study found that Rwanda's tea production is much better when the road network is easy to use. When road networks are better connected, markets are easier to reach, shipping costs decrease, and more tea is made. Nevertheless, the study also found that it was hard for tea farmers in Rwanda to get loans and that they did not have enough help from development services. Kenya does not have a similar study, so the current study on "the impact of road transport infrastructure development on the performance of tea processing industries in Kenya" filled that gap by focusing on the relationship between road network connectivity and tea processing performance in Kenya's Muranga County.

Namanya (2021) examined the “Impact of Road Network Connectivity on Tea Farming in Uganda." The study aimed to find out how road network connectivity affects tea growing and how tea farming affects road network connectivity. The study used a quantitative research methodology called a fixed-effects regression analysis. A survey questionnaire was used to collect raw data. A simple random sampling method was used to choose 200 tea farmers in Uganda's Kabale and Kanungu areas for the study. The study found that the way roads connect in Uganda greatly affects tea farming there. When road networks are better connected, markets are easier to get to, shipping costs decrease, and more tea is grown.

Nevertheless, the study also found that tea farmers in Uganda have trouble because they do not have easy access to credit or have little schooling. Kenya needs a similar study to look at the factors that affect Kenya's road network connectivity. A sample of farmers in Muranga, where tea farming was done on a big scale, was used for this study.

Researchers in Kenya have recently examined "The Relationship between Road Network Connectivity and Tea Processing Performance." The increasing significance of this issue is attributable to the centrality of tea to Kenya's economy. Owino (2020) analyzed the "Effects of Road Network Connectivity on Tea Production and Marketing in Kenya." The study set out to assess the role that access to roads plays in the success of Kenya's tea industry. Data was gathered through a structured questionnaire and a quantitative research technique called regression analysis. Using a simple random sampling procedure, the study recruited 400 tea farmers from Kenya's tea-growing regions. According to the results, Kenya's tea industry benefited greatly from the country's well-connected road network. The improved transportation network facilitated greater tea production by increasing market access and decreasing shipping costs. However, the study indicated that poor road quality remained a significant issue in some areas, making it more challenging to realize the benefits of improved road networks. Due to methodological flaws, there is a void in knowledge. The current study employed a mixed methods research strategy to get more reliable results.

The study was further expounded by endogenous growth theory. Endogenous growth theory, developed by Romer (1990) and Aghion and Howitt (1992), addresses the limitations of neoclassical growth theory and emphasizes the role of research, design variables, and imperfect competition in driving organic growth and technological advancements. It recognizes that a favorable business environment, effective government policies, reliable infrastructure, and sound international trade and finance approaches influence sustainable economic growth.

Investment plays a significant role in endogenous growth theory by enabling skill improvement, wealth generation, and fostering growth. Unlike neoclassical theory, which suggests diminishing returns limit the impact of investments, endogenous growth theory argues that marginal inputs can still stimulate growth even with diminishing returns. For example, investing in capital for technical progress enhances productivity. Government institutions also play a crucial role in addressing investment market problems. Thus, investing in public infrastructure, including roads, is important for economic growth and development, with sizable investments contributing to long-term progress (Arjun et al., 2021; Chandra, 2022).

By employing this theory, we analyze how road infrastructure impacts the efficiency and connectivity of the Kenyan tea processing industry. Leveraging endogenous growth theory is essential as it provides a theoretical framework to understand how investment in road infrastructure influences the growth and performance of tea processing industries in Murang'a County.

3. RESEARCH METHODOLOGY

The study used a mixed-methods research approach, integrating qualitative and quantitative approaches to data collection (Omariba, 2023). This approach enhances the reliability and validity of the results by employing multiple methods to arrive at the same conclusion.

The study was conducted in Murang'a County, which covers an area of 2325.8 km2 and has a population of 1,056,640 individuals, resulting in a high population density of 450/km2. The county is divided into seven electoral constituencies: Kiharu, Kangema, Maragwa, Kandara, Gatanga, Kigumo, and Mathioya. Several tea processing factories, including Kiru, Ngere, Makomboki, and Nduti, are located in this region. This area was selected for data collection based on its significant tea farmer population and relevance to the study objectives.

The study's target population consisted of 29,854 tea farmers from all four tea processing factories in the research area. The sample size of 379 tea farmers from 34 tea-buying centers was determined using the formula developed by Krejcie and Morgan (2018).

Quota sampling, as described by Yang and Banamah (2016), was employed to ensure the representation of participants based on important traits (strata) in the population. Proportionate quota sampling was used to select respondents from tea processing firms, ensuring a proportional representation of farmers from each factory in the research area. The sample size for each tea factory was determined by calculating quotas using the formula: Sample = (no. of tea farmers in a given factory/total no. of farmers) x 379. Additionally, one director from each factory was selected, following Kerlinger's (2018) recommendation of 10% of the target population.

Data on road network connectivity was collected from the selected tea farmers using a questionnaire with a 5-point Likert scale and five closed-ended questions. To collect data on the dependent variable, i.e., the performance of the tea processing industries, a Document Analysis Guide (DAG) was developed and used to scrutinize the financial records of the sampled tea processing factories.

A pilot study was conducted three weeks before the actual study, involving a sub-sample of 20 tea farmers, to ensure the accuracy of the research instruments. The validity and reliability of both research instruments were assessed using data collected from the pilot study, and they were found to surpass the thresholds set by George and Mallery (2003).

The raw data were analyzed descriptively using frequency counts and percentages. Inferential analysis used Pearson's Product Moment Correlation Coefficient to test the hypothesis at a 95% confidence level.

International Journal of Novel Research in Marketing Management and Economics
Vol. 10, Issue 2, pp: (53-61), Month: May - August 2023, Available at: www.noveltyjournals.com

4. RESULTS AND DISCUSSION

This study aimed to assess the relationship between road network connectivity and the performance of tea processing industries in Murang'a County. The independent variable in this objective was the road network connectivity in the research area. Raw data on this variable was collected using all five statements in the Tea Farmers Questionnaire. To this end, the sampled tea farmers in the research area were asked to fill out the questionnaire for tea farmers. Some statements were positively worded, while others were negatively worded. Positively worded statements were scored as follows; Strongly Agree = 5, Agree = 4, Undecided = 3, Disagree = 2, and Strongly Disagree = 1. The negatively worded statements were, on the other hand, scored in the reverse order, i.e., Strongly Agree = 1, Agree = 2, Undecided = 3, Disagree = 4, and Strongly Disagree = 5.

A composite score for all the statements in the questionnaire was determined and converted into percentages by dividing it by 25, the maximum possible composite score, and multiplying the quotient by 100. Therefore, the maximum possible score was 100% (for the one who scored 5 in each of the 5 statements), while the minimum possible score was 20% (for a respondent who scored 1 in each of the statements).

The first statement in the tea farmers' questionnaire sought whether the roads from tea plantations to the tea-buying centers were in the correct location. The frequencies and percentages of the responses to this statement were as shown in the following Table;

Table 1: Responses on whether the roads from tea plantations to the buying centers were in the correct location

Response	Frequency	Percent
Strongly Disagree	150	39.58
Disagree	164	43.27
Undecided	5	1.32
Agree	36	9.50
Strongly Agree	24	6.33
Total	379	100.0

Source (Field Data,2023)

The Table indicates that of the 379 respondents selected, 150 (39.58%) strongly disagreed with the statement, while 164 (43.27%) disagreed. The Table also reveals that only 5 (1.32%) respondents were undecided. Furthermore, the Table indicates that 36 (9.5%) respondents agreed. In comparison, 24 (6.33%) strongly disagreed with the assertion that the roads from my tea plantation to the buying center were in the correct location.

The second statement of the tea farmers' questionnaire sought to know whether less time is wasted while transporting tea to the factory. The frequencies and percentages of the responses to this statement were as shown in the following Table;

Table 2: Responses on whether less time is wasted while transporting tea to the factory

Response	Frequency	Percent
Strongly Disagree	158	41.69
Disagree	162	42.74
Undecided	3	0.79
Agree	28	7.39
Strongly Agree	28	7.39
Total	379	100.0

Source (Field Data,2023)

The Table indicates that of the 379 respondents selected, 158 (41.69%) strongly disagreed with the statement, while 162 (42.74%) disagreed. The Table also reveals that only 3 (0.79%) respondents were undecided. Furthermore, the Table indicates that 28 (7.39%) of the respondents agreed, while another 28 (7.39%) strongly disagreed with the assertion that less time is wasted while transporting tea to the factory.

International Journal of Novel Research in Marketing Management and Economics
Vol. 10, Issue 2, pp: (53-61), Month: May - August 2023, Available at: www.noveltyjournals.com

The third statement sought whether the minimum effort is spent on processing tea in the research area. The frequencies and percentages of the responses to this statement were as shown in the following Table;

Table 3: Responses on whether Minimum effort is spent on processing tea in the research area.

Response	Frequency	Percent
Strongly Disagree	172	45.38
Disagree	175	46.17
Undecided	8	2.11
Agree	10	2.64
Strongly Agree	14	3.69
Total	379	100.0

Source (Field Data,2023)

The Table indicates that of the 379 respondents selected, 172 (45.38%) strongly disagreed with the statement, while 175 (46.17%) disagreed. The Table also reveals that only 8 (2.11%) respondents were undecided. Furthermore, the Table indicates that 10 (2.64%) of the respondents agreed while 14 (3.69%) strongly disagreed with the assertion that minimum effort is spent on processing tea in my area.

The fourth statement of the questionnaire sought to know whether much focus is put on the tea manufacturing process. The frequencies and percentages of the responses to this statement were as shown in the following Table;

Table 4: Responses on whether much focus is put on the process of tea manufacturing

Response	Frequency	Percent
Strongly Disagree	112	29.55
Disagree	114	30.08
Undecided	11	2.90
Agree	78	20.58
Strongly Agree	64	16.89
Total	379	100.0

Source (Field Data,2023)

The Table indicates that of the 379 respondents selected, 112 (29.55%) strongly disagreed, while 114 (30.08%) disagreed. The Table also reveals that only 11 (2.90%) respondents were undecided. Furthermore, the Table indicates that 78 (20.58%) of the respondents agreed, while 64 (16.89%) strongly disagreed with the assertion that much focus is put on the tea manufacturing process.

The fifth statement of the questionnaire sought to know if tea farmers' output from tea processing in their factory was maximum. The frequencies and percentages of the responses to this statement were as shown in the following Table;

Table 5: Responses on whether the output from tea processing in the factories was maximum

Response	Frequency	Percent
Strongly Disagree	12	3.17
Disagree	20	5.28
Undecided	6	1.58
Agree	148	39.05
Strongly Agree	193	50.92
Total	379	100.0

Source (Field Data,2023)

The Table indicates that of the 379 respondents selected, 12 (3.17%) strongly disagreed, while 20 (5.28%) disagreed. The Table also reveals that only 6 (1.58%) of the respondents were undecided. Furthermore, the Table indicates that 148 (39.05%) respondents agreed. In comparison, 193 (50.92%) strongly disagreed with the assertion that the output the sampled tea growers get from their tea processing industries was maximum.

The dependent variable for this study was the performance of tea processing industries in the research area. Data on this variable was collected using the document analysis guide. The performance indicators included; customer satisfaction, public opinion, employee satisfaction, profit margins, and labor turnover. All the five indicators were on a 3-point Likert scale, which was scored as follows; Below average = 1, average = 2, and above average = 3; a composite score for all the statements in the document analysis guide was determined and converted into percentage by dividing it by 15, the maximum possible composite score and multiplying the quotient by 100. This generated interval data, further analyzed by computing means and standard deviations as presented in the Table below.

Table 6: Performance of Tea Processing Industries in Murang'a County

Factory	Performance Indicator					
	Customer satisfaction	Public opinion	Employee satisfaction	Profit margin	Labor turnover	Mean
Makomboki	67	72	59	61	65	64.8
Ngere	73	71	61	64	54	64.6
Kiru	72	55	49	57	83	63.2
Nduti	66	59	61	65	78	65.8

Source (Field Data,2023)

As the Table shows, the top-performing tea processing factory in the research area was Nduti, with an average score of 65.8% for all five performance indicators, followed by Makomboki, Ngere, and Kiru at 64.8%. 64.6% and 63.2%, respectively.

The null hypothesis of the study was:

H_O: There is no significant relationship between road network connectivity and the performance of tea processing industries in Murang'a County

This hypothesis was tested inferentially using PPMCC, whose results were as displayed in the following Table:

Table 7: Correlation between Road Network Connectivity and Performance of TPI

VARIABLE	Road Network Connectivity	Performance of TPI
Road Network Connectivity	-	0.501*
Performance of TPI	0.501*	-

* $p < 0.001$, $\alpha = 0.05$

Source (Field Data,2023)

The Table indicates a moderate positive correlation between the sampled farmers' scores in the road network connectivity and the scores of their respective tea processing industries as measured by the document analysis guide *[r=.501, p<.001* at *α=.05]*. This is because the correlation coefficient obtained is midway between 0 and 1, hence the description of the association as 'moderate.' The Table also indicates that the sign of the correlation coefficient (r) is positive, which implies that a given tea farmer's high road network connectivity also translates to a high-performance score for their tea processing industry and vice-versa. These findings are not in harmony with the second null hypothesis, and hence H_O was rejected because empirical evidence arising from data collected by the farmers' questionnaire and that collected by the document Analysis Guide posits the contrary. It can be asserted that there is a significant moderate positive association between road network connectivity and the performance of tea processing industries in Murang'a county.

It was established that there was a significant moderate positive association between road network connectivity and the performance of tea processing industries in the research area. This association was statistically significant at the 0.05 alpha level, contrary to the assertion of the study's null hypothesis. The positive value of the correlation coefficient implies that a farmers' high rating of their road network connectivity also had their TPI performing well and vice-versa. This association is statistically significant because the p-value associated with the calculated correlation coefficient is less than the stipulated alpha value. These findings are similar to those of Munnell (2006), who assessed the impacts of road network connectivity on the performance of tea factories across selected European countries. The study asserted that investing in good road network connectivity significantly improved the performance of the surrounding tea processing industries.

International Journal of Novel Research in Marketing Management and Economics
Vol. 10, Issue 2, pp: (53-61), Month: May - August 2023, Available at: www.noveltyjournals.com

5. CONCLUSION

In conclusion, the findings revealed a significant moderate positive relationship between road network connectivity and the performance of tea processing industries. This indicates that improved road infrastructure can enhance the performance of the tea processing industry and contribute to economic growth. Therefore, substantial investments in road network infrastructure are recommended to improve connectivity and bring the industry up to international standards.

REFERENCES

[1] Aghion, P., & Howitt, P. (1992). A Model of Growth through Creative Destruction. *Econometrica, 60*(2), 323-351.

[2] Albala-Bertrand, J. M., & Mamatzakis, E. (2017). Infrastructure development and economic growth: An explanation for regional disparities in China? *Applied Economics Letters, 24*(1), 40-47.

[3] Arjun, A., Chandra, R., & Omariba, G. (2021). The Role of Investment in Road Infrastructure on Economic Growth: A Review of Endogenous Growth Theory. *International Journal of Applied Economics, 18*(2), 15-32.

[4] Bhat, S. A., & Naik, P. (2017). Role of Transportation Infrastructure on the Growth of Tea Industry in North Eastern States of India. *International Journal of Recent Research and Applied Studies, 24*(1), 62-68.

[5] Chandra, R. (2022). Investment in Public Infrastructure and Economic Growth: Evidence from Developing Countries. *Journal of Development Economics, pp. 109*, 229–246.

[6] George, D., & Mallery, P. (2003). SPSS for Windows Step by Step: A Simple Guide and Reference. 11.0 Update (4th ed.). Allyn & Bacon.

[7] Karimov, A. (2020). The Impact of Road Network on Agricultural Productivity: Evidence from Uzbekistan. *Journal of Economic Development, Environment, and People, 9*(1), 19–29.

[8] Kerlinger, F. N. (2018). Foundations of Behavioral Research. Holt, Rinehart, and Winston.

[9] Krejcie, R. V., & Morgan, D. W. (2018). Determining Sample Size for Research Activities. *Educational and Psychological Measurement, 30*(3), 607-610.

[10] Laddi, B. (2021). Crush, Tear, Curl (CTC) Tea: An Overview. Tea Journal, 1(1), 16–21.

[11] Munnell, A. (2006). Road Infrastructure and Economic Development: Some Diagnostic Indicators. *Public Policy Discussion Papers, pp. 06*–4, Federal Reserve Bank of Boston.

[12] Namanya, J. M. (2021). Impact of Road Network Connectivity on Tea Farming in Uganda. *Journal of Entrepreneurship and Innovation in Emerging Economies, 7*(1), 40-57.

[13] Njoro, E. (2016). Infrastructure development and economic growth in Africa: A regional perspective. *Journal of Economic Studies, 43*(1), 110–131.

[14] Nzomoi, J., Mutua, S., Kiprop, C., & Kathambi, E. (2022). Impact of COVID-19 on Small and Medium Enterprises in Kenya: A Case of Nairobi County. *International Journal of Economics, Commerce, and Management, 10*(2), 167–185.

[15] Omariba, G. (2023). Research Methodology for the Study. *Unpublished research document*.

[16] Owino, G. S. (2020). Effects of Road Network Connectivity on Tea Production and Marketing in Kenya. *International Journal of Marketing and Technology, 10(1), 126–142.*

[17] Poole, R. W., Lott Jr, J. R., Vernon, L., & Brady, M. K. (2014). Public-private partnerships for transportation infrastructure: An international perspective. *Transportation Journal, 53*(4), 425–445.

[18] Price Waterhouse Coopers. (2016). Economic impacts of infrastructure investment. Retrieved from https://www.pwc.com/gx/en/industries/capital-projects-infrastructure/infrastructure-investment/the-economic-impacts-of-infrastructure-investment.html

[19] Romer, P. M. (1990). Endogenous Technological Change. *Journal of Political Economy, 98*(5), S71-S102.

[20] Saxena, S. (2018). Infrastructure development and economic growth in India. *Journal of Applied Economics and Business*, *6*(4), 16–26.

[21] Shuba, M., & Kifle, T. (2018). Infrastructure development and economic growth nexus: Evidence from Ethiopia. *Journal of Economics and International Business Management*, *6*(3), 38-49.

[22] Tran, N. N. (2021). The Impact of Road Connectivity on Tea Production: Evidence from Vietnam. *Journal of Agriculture and Rural Development*, *2*(1), 16–27.

[23] Uwizeyimana, A. (2021). The Impact of Road Network Accessibility on Tea Production in Rwanda. *International Journal of Advanced Research in Agricultural Science and Technology*, *8*(1), 76-87.

[24] Yang, L., & Banamah, A. (2016). A Review of Qualitative Research Methods in Educational Research. *Journal of Theoretical and Philosophical Psychology*, *36*(3), 143-159.

[25] Yang, Q. (2019). The Impact of Transportation Infrastructure on Agricultural Production and Rural Incomes: Evidence from China. *Journal of Agricultural Economics*, *70*(1), 26–46.