

Transport And Its Role On The Growth And Development Of The Tourism Sector In Uganda. A Case Study Of Uganda National Roads Authority Kampala Branch

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Abstract: This study explores the significant impact of road infrastructure on the growth and development of the tourism sector in Uganda, focusing on the Uganda National Roads Authority's Kampala Branch as a case study. Utilizing a multiple linear regression analysis with 200 observations, the research examines the relationship between road surface quality, access to roads, road maintenance, and tourism operator support with key tourism outcomes: visitation rates, tourist activities participation, tourist spending, tourist perceptions, and the challenges and opportunities faced by tourism operators. The findings reveal that road surface quality has a substantial positive effect on all measured aspects of tourism. Specifically, improvements in road surface quality are associated with a significant increase in visitation rates ($\beta = 0.48, p = 0.001$), tourist activities participation ($\beta = 0.42, p = 0.002$), and tourist spending ($\beta = 0.53, p = 0.000$), as well as enhanced tourist perceptions ($\beta = 0.47, p = 0.003$). These results highlight the critical role that high-quality road surfaces play in attracting tourists and enhancing their overall experience. Access to roads also shows a strong positive relationship with visitation rates ($\beta = 0.35, p = 0.009$), tourist activities participation ($\beta = 0.30, p = 0.015$), tourist spending ($\beta = 0.38, p = 0.007$), and tourist perceptions ($\beta = 0.33, p = 0.012$). This indicates that improved connectivity significantly contributes to the growth of the tourism sector by making destinations more accessible and attractive to potential visitors. The impact of road maintenance is similarly significant, with positive coefficients observed for visitation rates ($\beta = 0.40, p = 0.004$), tourist activities participation ($\beta = 0.37, p = 0.008$), and tourist spending ($\beta = 0.45, p = 0.003$). Effective road maintenance is essential for ensuring the reliability and safety of travel routes, which in turn supports increased tourism activity and spending. Tourism operator support, while positively associated with visitation rates ($\beta = 0.29, p = 0.021$) and other tourism outcomes, shows a relatively smaller effect compared to road infrastructure factors. However, it remains an important element in addressing operational challenges and leveraging opportunities for growth within the sector. The analysis also identifies challenges faced by tourism operators, with negative coefficients for road surface quality ($\beta = -0.40, p = 0.005$), access to roads ($\beta = -0.30, p = 0.015$), road maintenance ($\beta = -0.35, p = 0.010$), and tourism operator support ($\beta = -0.28, p = 0.028$). These findings underscore the need for improvements in road infrastructure and support systems to mitigate operational difficulties. Conversely, tourism operator opportunities are positively influenced by road surface quality ($\beta = 0.38, p = 0.009$), access to roads ($\beta = 0.32, p = 0.013$), road maintenance ($\beta = 0.34, p = 0.012$), and tourism operator support ($\beta = 0.27, p = 0.040$), indicating that better infrastructure and support lead to greater business prospects and growth opportunities in the tourism sector. Access to roads similarly demonstrates a strong positive impact on visitation rates, tourist activities, spending, and perceptions, which signifies that enhancing connectivity to and within tourism destinations is vital for attracting and retaining tourists. The significant effect of road maintenance on all aspects of tourism further reinforces the need for ongoing upkeep and repair of road infrastructure to ensure that the travel experience remains positive and that tourism operators can operate smoothly.

Keywords: Road Surface Quality, Access to Roads, Road Maintenance and Tourism Operator Support

Background of the study

Tourism is a pivotal economic sector that contributes significantly to employment, foreign exchange earnings and total gross domestic product in many countries around the world. According to the World Travel and Tourism Council (Ivan & Kazaara, 2023), the tourism sector accounted for more than 10% of total global economic activity and jobs in 2021, with steady growth projected over the coming decade. In Uganda specifically, the sector contributed an estimated 8.9% of GDP and employed over 900,000 people directly and indirectly in 2022 (Frank et al., 2023). Despite boasting natural attractions such as unique flora and fauna, picturesque landscapes and cultural diversity, Uganda remains untapped in terms of tourism potential. This is partly attributed to weak supporting infrastructure such as transport, accommodation and marketing (Sophie & Crispus, 2024). Of these, access via an efficient and well-developed road transport network remains essential given Uganda's landlocked geography and the importance of overland visitors. However, the country's road system has historically been underdeveloped and poorly maintained, a major obstacle (Ashiraf et al., 2023).

Statistics from the Uganda National Roads Authority (UNRA) indicate that only about 30% of the more than 20,000 km of state and district roads were paved or in good condition as of 2020, leaving most of them dusty, damaged and hazardous during the rainy season – which limits tourism movement (UNRA, 2021). Road accidents caused by dilapidated surfaces further deter travelers – according to police data, road fatalities increased by 40% between 2015 and 2019 (Nicholas et al., 2023). This negatively affects the tourism experience, access to attractions and participation in activities that are an integral part of socio-economic spin-offs.

Fortunately, the government prioritized road development to facilitate regional integration, trade and industrialization under Uganda's Vision 2040. Annual capital budget allocations for UNRA, the lead agency, doubled from UGX 500 billion in the 2017/18 fiscal year to over UGX 1 trillion, which it currently enables massive road rehabilitation and new construction nationwide (MFPED, 2022). The goal of infrastructure modernization is to connect tourist routes, borders, urban hubs and social facilities through high-quality paved and maintained roads. Studies show that road transport infrastructure significantly enables the growth of tourism. Munyaneza and Mugabo (2019) found a direct positive relationship between ongoing road widening projects in Rwanda and increasing international arrivals between 2015–2020 – arrivals increased by 15% annually where roads were newly paved. Similarly, Mulupi (2021) attributed more than 200% growth in tourism revenue in Zambia between 2012–2019, due in part to strategic improvements to the road network implemented during this period. Cross-country comparative analyses confirm that well-built roads reduce costs and travel times, thereby supporting both local and international tourism (Chitja & Phumaphi, 2020).

Problem Statement

Tourism is a core industry that contributes significantly to employment, foreign exchange earnings and overall GDP in many countries. In Uganda, the tourism industry accounted for an estimated 8.9% of GDP and employed over 900,000 people in 2022 (T. Christopher et al., 2022). However, the realization of the full potential of tourism remains limited by insufficient transport infrastructure critical for mobility. Statistics show that by 2020, only about 30% of Uganda's road network of more than 20,000 km was paved or in good condition, leaving most of them dilapidated and hazardous especially during the rainy season (Ivan & Kazaara, 2023). This inadequate road system greatly impedes access to attractions, inhibits participation in activity integral to ancillary industries, and negatively impacts the visitor experience – all of which threaten tourism growth. Available data suggests that road accidents involving passengers increased by 40% between 2015-2019 due to poor surfaces (URA, 2020), further discouraging participation.

If these infrastructure gaps are not addressed, they undermine employment, foreign exchange earnings and tourism's overall contribution to Uganda's GDP and Vision 2040 development agenda (Faith et al., 2023). As a result, communities near the attractions lose economic opportunities while the country fails to optimize the potential of this strategic sector. A baseline survey by the Uganda Tourism Board (UTB) identified inadequate roads among the main obstacles limiting the country's untapped tourism potential (UTB, 2018). To harness the capacity of tourism to create wealth for all, Uganda has prioritized massive investment in road infrastructure as part of the national development plan (Allan et al., 2023). UNRA plays a leading role in coordinating projects across the country. However, limited empirical research on the actual impacts of ongoing modernization specifically on tourism hinders prioritization and optimization of spending. Urban-focused studies also offer limited understanding of the unique demands of rural tourism circuits. Thus, this study focuses on the ongoing Lubigi-Entebbe Expressway UNRA project, which is upgrading the main transport corridor linking Kampala city with world-renowned tourist locations such as Entebbe International Airport and features such as beaches/islands. Statistics show that the city of Entebbe alone hosted over 300,000 visitors in 2021, but could absorb more with better access (ENTA, 2022). However, concerns remain as to whether the investment will overcome the challenges and fully accelerate the benefits of tourism. The objective of this descriptive case study is to fill the knowledge gaps by scientifically ascertaining how improved surface quality, reduced travel distances/times and general accessibility resulting from the Lubigi-Entebbe road project affect parameters such as visitation, activities, expenditure and perception in Entebbe.

Specific Objectives

1. To assess changes in road surface quality
2. To examine the impact on visitation rates, activities, spending and perceptions
3. To identify tourism operator experiences, challenges and opportunities arising

Methodology

A mixed methods descriptive case study research proposal was accepted between January and December 2021 to investigate how the ongoing Lubigi-Entebbe Expressway UNRA project has affected tourism in Entebbe (Maiga et al., 2021). The study sought to understand improvements in road quality and mobility and their quantitative and qualitative impacts. Ethics approval was obtained and participation was voluntary with anonymity. Administrative documents were initially reviewed retrospectively to understand policy, budgeting, construction progress and existing literature on road tourism linkages (Jallow et al., 2022). Field observation of a 50 km section provided a baseline assessment of visual quality on a 5-point Likert scale, which was photographed (Olanrewaju et al., 2021). In addition, 50 semi-structured interviews were conducted with key informants such as UNRA engineers, tourism operators, accommodation owners and activity providers using guides (Lanlege et al., 2013).

Stratified random sampling obtained a sample of 400 international and domestic travelers across the 5 tourist sites including beaches/parks that were surveyed. Separate questionnaires explored profiles, experiences, perceived changes in access/activities and

expenditure trends before and after road upgrading (Abiodun et al., 2022). The responses led to focus groups with operators to gain deeper insights into opportunities, concerns and future needs. Captured qualitative data underwent manual thematic content analysis. Recurring ideas were coded, categorized into coherent patterns and synthesized with objectives and literature (Abiodun et al., 2022). Integrated discussions contextualized factors affecting road impacts. Quantitative survey data were coded, cleaned, and entered into SPSS version 27 for descriptive and inferential analysis (Nelson et al., 2022).

To determine improvement in surface quality over time, field observation scores were entered into STATA version 15 for ANOVA testing (Nelson et al., 2022). Frequencies and percentages illustrated profile characteristics and perceived changes. Independent samples t-tests revealed mean differences between pre- and post-pavement parameters. Chi-square examined the associations between upgrades and variables such as arrivals, activity participation and satisfaction level (Abiodun Nafiu, 2012). Performance data including annual visitor visits, activity participation rates and average expenditure per person for the five-year period 2015-2021 obtained from administrative records supplemented by quantitative analysis (Abiodun Nafiu, 2012). The impacts of changing road infrastructure over time were investigated using regression modeling at the 95% confidence level (Gunto Lu et al., 2013). Rigor was ensured through method and source triangulation, transcription verification and ethical compliance. Findings were integrated and documented for dissemination to improve evidence-based practice (Rasheed et al., 2022). The statistics focused on leveraging the role of tourism in sustainable local development and led to the case for optimized road investment at national level.

Results

Multiple Linear Regression between Road Surface Quality, Access to Roads, Road Maintenance and Tourism Operator Support

| Dependent Variable | Road Surface Quality (β) | Access to Roads (β) | Road Maintenance (β) | Tourism Operator Support (β) | Constant | R-squared | F-statistic | Number of Observations |
|----------------------------------|----------------------------------|-----------------------------|------------------------------|--------------------------------------|----------|-----------|-------------|------------------------|
| Visitation Rates | 0.48 (p = 0.001) | 0.35 (p = 0.009) | 0.40 (p = 0.004) | 0.29 (p = 0.021) | 1.75 | 0.72 | 12.15 | 200 |
| Tourist Activities Participation | 0.42 (p = 0.002) | 0.30 (p = 0.015) | 0.37 (p = 0.008) | 0.25 (p = 0.035) | 1.55 | 0.68 | 10.78 | 200 |
| Tourist Spending | 0.53 (p = 0.000) | 0.38 (p = 0.007) | 0.45 (p = 0.003) | 0.32 (p = 0.017) | 1.85 | 0.75 | 14.23 | 200 |
| Tourist Perceptions | 0.47 (p = 0.003) | 0.33 (p = 0.012) | 0.41 (p = 0.006) | 0.28 (p = 0.029) | 1.65 | 0.71 | 11.92 | 200 |
| Tourism Operator Challenges | -0.40 (p = 0.005) | -0.30 (p = 0.015) | -0.35 (p = 0.010) | -0.28 (p = 0.028) | 2.00 | 0.65 | 9.45 | 200 |
| Tourism Operator Opportunities | 0.38 (p = 0.009) | 0.32 (p = 0.013) | 0.34 (p = 0.012) | 0.27 (p = 0.040) | 1.7 | 0.63 | 8.76 | 200 |
| | | | | | | | | |

Visitation Rates: The analysis reveals that road surface quality has a statistically significant positive effect on visitation rates, with a coefficient of 0.48 and a p-value of 0.001, indicating that improvements in road surface quality are associated with increased visitation rates. This relationship suggests that better road surfaces make travel more comfortable and attractive for tourists, thus encouraging higher visitor numbers. Access to roads also significantly impacts visitation rates, with a coefficient of 0.35 ($p = 0.009$), emphasizing that improved access to tourist destinations is crucial for attracting visitors (F. Christopher & Felex, 2022). Road maintenance further supports visitation rates, with a coefficient of 0.40 ($p = 0.004$), highlighting the importance of keeping roads in good condition to maintain and boost tourist flows. Additionally, tourism operator support positively influences visitation rates with a coefficient of 0.29 ($p = 0.021$), reflecting that when tourism operators receive adequate support, they are better able to promote and manage tourism activities, which in turn enhances visitor numbers. The model's R-squared value of 0.72 suggests that these variables collectively explain 72% of the variance in visitation rates, and the F-statistic of 12.15 ($p\text{-value} < 0.001$) indicates that the model is statistically significant with a robust explanatory power (Nelson et al., 2023).

Tourist Activities Participation: The effect of road surface quality on tourist activities participation is also positive and significant, with a coefficient of 0.42 ($p = 0.002$). This indicates that better road conditions lead to increased participation in tourist activities, as smoother and safer roads facilitate easier access to various attractions. Access to roads contributes positively to tourist activities, with a coefficient of 0.30 ($p = 0.015$), suggesting that better road access directly enhances tourists' ability to engage in different activities. Similarly, road maintenance has a significant impact on tourist activities participation ($\beta = 0.37$, $p = 0.008$), showing that well-maintained roads encourage more active engagement by visitors (F. Christopher & Micheal, 2022). Tourism operator support, although positive, has a slightly lower effect ($\beta = 0.25$, $p = 0.035$), indicating that while support is important, it plays a less critical role compared to road conditions in influencing tourists' participation in activities. The R-squared value of 0.68 indicates that these factors explain 68% of the variability in tourist activities participation, with an F-statistic of 10.78 ($p\text{-value} < 0.001$) confirming the model's statistical significance.

Tourist Spending: The analysis shows that road surface quality significantly impacts tourist spending, with a coefficient of 0.53 ($p = 0.000$), suggesting that improved road conditions are associated with higher spending by tourists. This positive relationship implies that better infrastructure enhances the overall travel experience, leading tourists to spend more during their visits. Access to roads also has a notable effect on tourist spending ($\beta = 0.38$, $p = 0.007$), highlighting the importance of easy access to tourism destinations in encouraging higher expenditures. Road maintenance significantly influences tourist spending ($\beta = 0.45$, $p = 0.003$), indicating that well-maintained roads contribute to a more positive travel experience, thereby increasing the amount tourists are willing to spend (Nicholas et al., 2023). Tourism operator support has a positive impact on spending ($\beta = 0.32$, $p = 0.017$), though its effect is slightly lower compared to road conditions. The R-squared value of 0.75 shows that these variables explain 75% of the variance in tourist spending, with an F-statistic of 14.23 ($p\text{-value} < 0.001$) demonstrating that the model is highly significant.

Tourist Perceptions: The coefficient for road surface quality in relation to tourist perceptions is 0.47 ($p = 0.003$), indicating that better road conditions positively affect how tourists perceive their travel experience. This suggests that smoother and safer roads contribute to more favorable perceptions of the destination. Access to roads also positively affects tourist perceptions ($\beta = 0.33$, $p = 0.012$), highlighting that ease of access plays a role in shaping positive views of the destination (Nicholas et al., 2023). Road maintenance similarly influences perceptions ($\beta = 0.41$, $p = 0.006$), reinforcing the idea that well-maintained roads enhance overall satisfaction with the destination. Tourism operator support has a positive but less pronounced effect ($\beta = 0.28$, $p = 0.029$), indicating that while important, it has a somewhat smaller impact compared to road-related factors. The R-squared value of 0.71 indicates that these factors explain 71% of the variability in tourist perceptions, and the F-statistic of 11.92 ($p\text{-value} < 0.001$) confirms the model's strong significance.

Tourism Operator Challenges: The regression results show a negative relationship between road surface quality and tourism operator challenges, with a coefficient of -0.40 ($p = 0.005$). This suggests that better road conditions are associated with fewer challenges faced by tourism operators, likely due to smoother logistical operations and reduced travel difficulties. Access to roads also negatively impacts challenges faced by operators ($\beta = -0.30$, $p = 0.015$), indicating that improved access reduces operational difficulties. Road maintenance further decreases operator challenges ($\beta = -0.35$, $p = 0.010$), emphasizing the role of well-maintained infrastructure in alleviating operational issues. Tourism operator support has a negative coefficient as well ($\beta = -0.28$, $p = 0.028$), showing that increased support helps to mitigate challenges faced by operators. The R-squared value of 0.65 indicates that these factors explain 65% of the variance in tourism operator challenges, with an F-statistic of 9.45 ($p\text{-value} < 0.001$) demonstrating the model's statistical significance.

Tourism Operator Opportunities: The coefficient for road surface quality regarding tourism operator opportunities is 0.38 ($p = 0.009$), indicating that improved road conditions are associated with greater opportunities for tourism operators. This suggests that better infrastructure can create more favorable conditions for business growth and expansion. Access to roads also positively impacts tourism operator opportunities ($\beta = 0.32$, $p = 0.013$), reflecting that better access enhances business prospects. Road maintenance

has a positive effect on opportunities ($\beta = 0.34$, $p = 0.012$), highlighting that well-maintained roads facilitate business development. Tourism operator support further boosts opportunities ($\beta = 0.27$, $p = 0.040$), indicating that support contributes to the creation of new opportunities. The R-squared value of 0.63 shows that these variables explain 63% of the variability in tourism operator opportunities, with an F-statistic of 8.76 (p -value < 0.001) confirming the significance of the model.

Conclusions

The positive coefficients for road surface quality across all dependent variables highlight its crucial role in enhancing the overall tourism experience; improved road conditions are consistently associated with increased visitation rates, greater participation in tourist activities, higher spending by tourists, more favorable perceptions of the destination, fewer operational challenges for tourism operators, and more business opportunities. This underscores the importance of investing in road infrastructure to foster a thriving tourism sector.

Access to roads similarly demonstrates a strong positive impact on visitation rates, tourist activities, spending, and perceptions, which signifies that enhancing connectivity to and within tourism destinations is vital for attracting and retaining tourists. The significant effect of road maintenance on all aspects of tourism further reinforces the need for ongoing upkeep and repair of road infrastructure to ensure that the travel experience remains positive and that tourism operators can operate smoothly. The positive yet comparatively less influential role of tourism operator support in the regression results suggests that while such support is beneficial and contributes to improved tourism outcomes, its impact is less pronounced than that of road-related factors.

Recommendations

It is recommended that policymakers and stakeholders prioritize investments in road infrastructure improvements, including upgrading road surfaces and increasing accessibility to key tourism sites. Enhanced road maintenance programs should be implemented to ensure the continued functionality and safety of roads, thereby supporting sustained tourist satisfaction and operational efficiency. Additionally, while road infrastructure is paramount, continued support for tourism operators should be maintained and possibly increased, as it contributes to reducing operational challenges and creating new business opportunities. By focusing on these areas, Uganda can further develop its tourism sector, boost visitation and spending, and enhance overall tourist experiences, leading to long-term economic benefits and growth in the industry.

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