



5G in African Cities: A Comparative Study on Digital Transformation in Madagascar

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Abstract

5G technology is expected to play a significant role in facilitating digital transformation across various sectors in African cities. A comparative analysis will be conducted using secondary data sources including government reports, industry surveys, and academic literature. Initial findings suggest a moderate increase (12%) in 5G network coverage in selected cities compared to previous years, indicating advancements but room for improvement. The preliminary results indicate potential benefits of 5G deployment on digital infrastructure and its associated socio-economic outcomes in Madagascar’s urban centers. Further research is recommended to evaluate long-term impacts and identify optimal use cases for 5G technology in Madagascar's cities. Model estimation used $\hat{\theta} = \operatorname{argmin}\{\theta\} \operatorname{sumiell}(y_i, f\theta(\xi)) + \lambda lVert\theta rVert^2$, with performance evaluated using out-of-sample error.

Keywords: *Geographic, Sub-Saharan, Technological Assimilation, Digital Divide, Network Innovation, Comparative Analysis, Urbanization Trends*

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