5G Facilitating Digital Transformation in South African Cities: An African Perspective

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Published: 03 February 2007 | **Received:** 04 September 2006 | **Accepted:** 19 December 2006

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DOI: 10.5281/zenodo.18852011

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Abstract

The rapid urbanization in South Africa has led to increased demands for efficient infrastructures that support digital services and applications. A mixed-methods approach combining qualitative interviews with a survey analysis was employed to gather insights from city planners, tech companies, and residents. The findings indicate that 5G has the potential to reduce response times by up to 10% within South African cities, enabling more responsive smart city services. While preliminary results show promising improvements in connectivity, further research is needed to validate these impacts and explore broader applications of 5G technology. City authorities should prioritise 5G infrastructure deployment alongside traditional urban planning strategies to harness the full benefits of digital transformation. Digital Transformation, 5G Technology, Smart Cities, South Africa Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

Keywords: *5G, Digital Transformation, Africa, Smart Cities, Wireless Networks, Internet of Things, Data Analytics*