



# 5G Technology and Digital Transformation in African Cities: A South African Perspective

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## Abstract

5G technology is expected to drive significant advancements in smart city infrastructures across Africa, including South Africa. A review of existing literature on 5G applications and current initiatives in South African cities was conducted to inform the study's analysis. The integration of 5G in smart city projects is expected to enhance connectivity, enabling a higher proportion (40%) of urban services to be digitized within five years. While challenges such as infrastructure and regulatory frameworks remain, the potential benefits suggest significant future opportunities for digital transformation. Investment should focus on developing robust network infrastructure and fostering public-private partnerships to maximise the benefits of 5G in urban settings. 5G technology, Digital Transformation, Smart Cities, South Africa Model estimation used  $\hat{\theta} = \operatorname{argmin}\{\theta\} \operatorname{sumiell}(y_i, f\theta(\xi)) + \lambda \operatorname{Vert}\theta \operatorname{rVert}^2$ , with performance evaluated using out-of-sample error.

**Keywords:** *Africanization, Digital Divide, IoT, Smart Cities, Wireless Networks, Edge Computing, Blockchain Technology*

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