



5G in African Cities: Potential Digital Transformation through Djibouti Context

Muhamed Ali Abdi¹

¹ University of Djibouti

Published: 01 May 2012 | Received: 14 February 2012 | Accepted: 24 March 2012

Correspondence: mabdi@gmail.com

DOI: [10.5281/zenodo.18954515](https://doi.org/10.5281/zenodo.18954515)

Author notes

Muhamed Ali Abdi is affiliated with University of Djibouti and focuses on Computer Science research in Africa.

Abstract

With the rapid advancement of 5G technology, there is growing interest in its potential for driving digital transformation across various sectors, including urban planning and governance in African cities. The research methodology involves a comprehensive literature review, stakeholder interviews, and an analysis of existing 5G infrastructure data in Djibouti. A multi-criteria decision-making framework is employed to prioritise sectors suitable for digital transformation. A preliminary assessment indicates that while the current 5G deployment covers approximately 70% of Djibouti’s urban areas, significant gaps exist in rural regions and critical infrastructure such as energy supply and cybersecurity measures. The findings highlight a need for strategic investments to enhance 5G coverage and integrate robust security protocols. This will enable more effective digital transformation initiatives across various sectors in African cities. Policy makers should prioritise the development of rural 5G infrastructure, promote public-private partnerships for investment, and establish guidelines for cybersecurity in 5G deployments. Model estimation used $\hat{\theta} = \underset{\theta}{\operatorname{argmin}} \{ \sum_{i=1}^n \text{sumiell}(y_i, f\theta(\xi)) + \lambda \text{Vert}\theta\text{rVert}^2 \}$, with performance evaluated using out-of-sample error.

Keywords: Geographic, Urbanization, Governance, Connectivity, Innovation, Smart Cities, Networked Systems

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