



5G Technology and Digital Transformation in Algerian Urban Environments,

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Abstract

Urbanization in Algeria has accelerated rapidly, necessitating robust technological solutions to enhance digital infrastructure and services. A mixed-methods approach was employed, combining qualitative interviews with quantitative data analysis using statistical models. The analysis reveals a significant increase ($p < .05$) of at least 30% in download speeds across tested areas, indicating an improved digital infrastructure that supports enhanced service delivery. The integration of 5G technology is pivotal for advancing the digital transformation agenda in Algerian urban settings, offering substantial improvements in connectivity and service quality. Public and private sector collaboration is essential to implement and scale up 5G networks across Algeria's urban areas. Urban Digital Transformation, 5G Technology, Connectivity, Service Delivery 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: *Africanization, Digital Divide, Fifth Generation (5G), Network Effects, Urban Informatics, Smart Cities, Ubiquitous Computing*

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