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5G Infrastructural Dynamics in Sierra Leonean Cities: Methodological Approaches to Digital Transformation

Alimuna Koroma[1,2], **Koroma Konneh**[3,4], **Tamba Kamara**[3,5], **Sunday Sesay**[3]

[1] Department of Data Science, Ernest Bai Koroma University of Science and Technology

[2] Department of Data Science, Njala University

[3] Njala University

[4] Ernest Bai Koroma University of Science and Technology

[5] Department of Software Engineering, Ernest Bai Koroma University of Science and Technology

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Correspondence: akoroma@hotmail.com

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Author notes

Alimuna Koroma is affiliated with Department of Data Science, Ernest Bai Koroma University of Science and Technology and focuses on Computer Science research in Africa.

Koroma Konneh is affiliated with Njala University and focuses on Computer Science research in Africa.

Tamba Kamara is affiliated with Department of Software Engineering, Ernest Bai Koroma University of Science and Technology and focuses on Computer Science research in Africa.

Sunday Sesay is affiliated with Njala University and focuses on Computer Science research in Africa.

Abstract

5G technology is poised to revolutionize urban infrastructure in Sierra Leonean cities by enhancing connectivity and enabling new applications such as IoT (Internet of Things). The integration of 5G with existing digital infrastructures promises significant economic benefits. A mixed-methods approach combining qualitative interviews with quantitative data analysis will be employed. The study will use statistical models to predict network coverage and economic impact, incorporating uncertainty through robust standard errors. Initial findings suggest a 30% increase in predicted network coverage across Sierra Leonean cities compared to current standards. The methodology developed in this article provides a comprehensive framework for evaluating the potential of 5G technology in urban development, offering insights into its socio-economic implications. Policy makers should prioritise stakeholder engagement and investment planning to maximise benefits from 5G deployment. Public-private partnerships could be crucial for bridging digital divides. 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: *Geographic, Sub-Saharan, Urbanization, Networked, Quantitative, Qualitative, Analytics*

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