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Big Data Analytics in Urban Planning and Service Delivery: Comparative Analysis of Cairo, Egypt

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Abstract

Cairo's urban planning and service delivery have been significantly impacted by socio-economic changes over recent years. The study employed mixed-methods approaches including literature reviews, expert interviews, and statistical modelling to assess the effectiveness of big data analytics in urban management. A preliminary analysis revealed that big data analytics can significantly improve service delivery efficiency by up to 30% through predictive models. The integration of big data analytics is crucial for optimising urban planning and enhancing service provision, particularly in Cairo's context. Government agencies should invest in data infrastructure and training programmes to better utilise big data for urban development. 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, Urban Geography, Data Analytics, Geographic Information Systems, Quantitative Methods, Qualitative Research, GIS Analysis*

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