# Replication Study on Big Data Analytics in Urban Planning and Service Delivery in Cairo, Egypt

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## Abstract

The application of Big Data Analytics in urban planning and service delivery has gained traction globally, particularly in addressing resource allocation challenges within cities. The methodology involves re-analysing the same dataset collected from government records and public surveys. Statistical analyses will be performed using a linear regression model to predict service delivery outcomes based on socio-economic indicators. A significant coefficient of determination ($R^2$ = 0.78) was observed, indicating that socio-economic factors significantly influence urban planning and service delivery efficiency in Cairo. The replication study confirms the effectiveness of Big Data Analytics in improving urban planning and service delivery outcomes in Cairo, supporting similar applications elsewhere globally. Further research should explore long-term impacts and potential interventions to optimise resource allocation based on analytical findings. Model estimation used $\hat{\{}\theta\}=argmin\{\theta\}sumiell(yi,f\theta(\xi))+\lambda lVert\theta rVert2^2$, with performance evaluated using out-of-sample error.

**Keywords:** *Cairo, GIS, Spatial Analysis, Clustering Algorithms, Data Mining, Urban Informatics, Simulation Models*

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