African Science and Innovation Policy (Interdisciplinary - Policy/Social/Tech)

Big Data Analytics in Urban Planning and Service Delivery in Cairo: A Systematic Literature Review

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Abstract

Urban planning in Cairo has faced challenges such as rapid population growth and inadequate infrastructure, necessitating innovative solutions. A comprehensive search strategy was employed using academic databases, including Scopus and Web of Science, with inclusion criteria based on keywords related to big data, urban planning, and service delivery in Cairo. Studies were screened, assessed for quality, and synthesized following PRISMA guidelines. A total of 53 studies met the inclusion criteria, revealing a significant trend towards integrating real-time data sources such as satellite imagery and social media feeds to enhance urban management decisions. The review underscores the potential of big data analytics in improving service delivery efficiency and urban planning outcomes but highlights the need for robust data quality control mechanisms. Developing standardised datasets, enhancing public-private partnerships, and integrating citizen feedback into decision-making processes are recommended to maximise the benefits of big data in Cairo's urban environment. 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: *Geographical Information Systems, Geographic Information Systems, Urban Informatics, Geospatial Analytics, Data Mining, Spatial Databases, Internet of Things*

ABSTRACT-ONLY PUBLICATION

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