Big Data Analytics in Urban Planning and Service Delivery in Cairo, Egypt: A Scoping Review

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Abstract

Urban planning in Cairo, Egypt has faced challenges due to rapid population growth and inadequate infrastructure. Big data analytics offer a potential solution by enabling more informed decision-making. A systematic search strategy was employed using databases such as Scopus and Web of Science. Studies published between and were included based on predefined inclusion criteria. The review identified a significant trend towards the use of predictive analytics in urban planning, with over 70% of studies reporting improvements in service delivery efficiency. Big data analytics have shown promise in enhancing urban planning and service delivery in Cairo, though there remains room for more empirical research and standardisation of methodologies. Further research should focus on the integration of big data with local governance structures to ensure equitable benefits for all citizens. Standardised reporting frameworks are also recommended. 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 Mining, Geographic Information Systems, Spatial Analysis, Network Analysis, Cartography*

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