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Big Data Analytics in Urban Planning and Service Delivery of Cairo, Egypt: An Analytical Study

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Abstract

Urban planning in Cairo, Egypt faces significant challenges due to rapid population growth and limited resources. Big data analytics offer a promising solution for improving service delivery and urban management. The research adopts a mixed-methods approach combining quantitative analysis with qualitative insights. Data from multiple sources including government databases, social media platforms, and surveys were collected and analysed using statistical software for predictive modelling. A preliminary analysis reveals that the integration of big data analytics can lead to a 20% reduction in urban congestion by optimising traffic light sequences based on real-time vehicle density data. The findings suggest that big data analytics could significantly enhance service delivery efficiency and urban management, but further empirical research is needed to validate these insights over time. Urban planners should consider implementing a comprehensive big data strategy for urban planning and service delivery. Collaboration with technology providers and data scientists will be crucial in ensuring successful implementation. 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: *Cairo, GIS, IoT, SDM, WSN, MABD, PESTLE*

ABSTRACT-ONLY PUBLICATION

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