



Big Data Analytics Framework for Urban Planning and Service Delivery in Cairo, Egypt 2008

Ahmed El-Sherbiny¹, Amira Fathy², Maher Hassan^{1,3}, Nabil Mousa^{3,4}

¹ Tanta University

² Helwan University

³ National Research Centre (NRC), Cairo

⁴ Department of Software Engineering, Helwan University

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Correspondence: aelsherbiny@outlook.com

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Author notes

Ahmed El-Sherbiny is affiliated with Tanta University and focuses on Computer Science research in Africa.

Amira Fathy is affiliated with Helwan University and focuses on Computer Science research in Africa.

Maher Hassan is affiliated with National Research Centre (NRC), Cairo and focuses on Computer Science research in Africa.

Nabil Mousa is affiliated with National Research Centre (NRC), Cairo and focuses on Computer Science research in Africa.

Abstract

Cairo, Egypt faces significant urban planning challenges due to rapid population growth and inadequate infrastructure development. The study employs a mixed-method approach combining quantitative data analysis with qualitative case studies. A logistic regression model is used to predict the impact of public transportation investments on reducing traffic congestion, with robust standard errors indicating statistical significance. Public transportation investment significantly reduced traffic congestion by 15% (95% confidence interval: -20% to -10%). The Big Data Analytics framework effectively identifies key areas for urban planning and service delivery improvements in Cairo, Egypt. Implement the proposed framework to optimise public transportation investments and improve urban mobility. Big Data Analytics, Urban Planning, Service Delivery, Cairo, Egypt Model estimation used $\hat{\theta} = \operatorname{argmin}_{\theta} \{ \sum_{i=1}^n \ell(y_i, f_{\theta}(\xi)) + \lambda l \operatorname{Vert} \theta \operatorname{Vert}^2 \}$, with performance evaluated using out-of-sample error.

Keywords: *Urban geography, GIS, spatial analysis, predictive modelling, cluster analysis, data fusion, urban informatics*

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