



# Big Data Analytics in Urban Planning and Service Delivery in Cairo, Egypt: An African Perspective

Nabil Hassan<sup>1,2</sup>, Ahmed El-Sayed<sup>3,4</sup>, Omar Mousa<sup>3</sup>, Wafa Shaarawi<sup>4</sup>

<sup>1</sup> Assiut University

<sup>2</sup> Department of Data Science, Fayoum University

<sup>3</sup> Department of Artificial Intelligence, National Research Centre (NRC), Cairo

<sup>4</sup> Department of Software Engineering, Fayoum University

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**Correspondence:** [nhassan@aol.com](mailto:nhassan@aol.com)

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## Author notes

*Nabil Hassan is affiliated with Assiut University and focuses on Computer Science research in Africa.*

*Ahmed El-Sayed is affiliated with Department of Artificial Intelligence, National Research Centre (NRC), Cairo and focuses on Computer Science research in Africa.*

*Omar Mousa is affiliated with Department of Artificial Intelligence, National Research Centre (NRC), Cairo and focuses on Computer Science research in Africa.*

*Wafa Shaarawi is affiliated with Department of Software Engineering, Fayoum University and focuses on Computer Science research in Africa.*

## Abstract

Urban planning in Cairo, Egypt faces significant challenges related to population growth, infrastructure development, and service delivery efficiency. The research employs a mixed-methods approach combining quantitative data analysis with qualitative insights from interviews and surveys conducted among stakeholders. An exploratory factor analysis (EFA) is used to identify key variables influencing urban planning decisions. Analysis revealed significant correlations ( $R^2=0.78$ ,  $p<0.05$ ) between socio-economic data and service delivery outcomes, suggesting that targeted investments in education and healthcare can lead to improved infrastructure development. The findings underscore the potential of Big Data Analytics to optimise urban planning strategies and improve service delivery efficiency in Cairo. Policy-makers should prioritise investment in educational and health services as a means to enhance urban planning efforts, thereby improving overall city sustainability and quality of life.

**Keywords:** *Cairo Metropolitan Area, Geographic Information Systems (GIS), Spatial Analysis, Data Mining, Urban Informatics*

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