

# ISTANBUL CONFERENCE ON ECONOMICS AND SOCIETY (ISTCES) 2025

*Pathways to Inclusive Growth: Overcoming Challenges in  
Emerging and Developing African Countries.*

24-26 SEPTEMBER 2025

*Book of Proceedings*

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## **Editors**

Prof. Dr. Hasan Vergil

Prof. Dr. Muhittin Kaplan

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Assist. Prof. Dr. Arab Dahir Hasan

Ayuba Napari, PhD

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Mahat Maalim Ibrahim, PhD

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Res. Asst. Abdülkadir Kömü - Res. Asst. Enes Cebe

**Copy Editor**

Şeyma Kılıç

**ISBN**

978-625-93023-8-6

**1<sup>st</sup> Edition**

İstanbul - 2026

**IHU Press**

155

**Executive Editor**

Savaş Cihangir Tali

**Publishing Director**

Ayşenur Alper

**Design**

IHU Press

**Cover Design**

IHU Press

**Layout**

Muhammed Muttaki Topcu

**Imprinting  
and Binding**

Milba Matbaacılık  
Certificate No: 77090

Istanbul Conference on Economics and Society (ISTCES) 2025 : pathways to inclusive growth : overcoming challenges in emerging and developing African countries / Hasan Vergil, Muhittin Kaplan, Asad Ul Islam Khan, Ayman Bekirođlu, Arab Dahir Hasan, Ayuba Napari, Mohammed Muntaka Abdul Rahman, Mahat Maalim Ibrahim, Abdülkadir Kömü, Enes Cebe ; copy editor Şeyma Kılıç. -- First edition -- Istanbul : Ibn Haldun University Press, 2026.

352 s. ; 24 cm. -- (IHU Press ; 155.).

Bibliographical references.

ISBN 978-625-93023-8-6.

1. Economic development\_Africa. 2. Inclusive growth\_Africa. 3. Africa\_Economic conditions.

HC800

330.96

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## 10.

# Geospatial Network Analysis of Transportation Infrastructure and Mobility Experiences in Africa

Mahat Maalim Ibrahim, PhD<sup>1</sup>

Infrastructure networks and ease of mobility constitute fundamental pillars of modern economic systems, facilitating trade flows, labor movement, and knowledge transfer that drive growth and development. The quality and extent of transportation infrastructure determine transaction costs, market access, and the ability of economies to integrate into global value chains. Contemporary economic performance requires robust connectivity, leaving regions with inadequate infrastructure at a disadvantage in attracting investment and fostering trade. Despite the African continent's vast territorial expanse, diverse political systems, vibrant young populations, and abundant natural resources, infrastructure deficits remain a persistent constraint on economic integration and development. This study examines Africa's physical infrastructure connectivity through network analysis that maps the continent's highway, railway, and air transportation networks, complemented by Afrobarometer survey data that captures citizens' experiences and perceptions of cross-border movement. The findings show that a substantial proportion of survey participants report significant obstacles in cross-border travel. Corruption, road quality, internet access restrictions, and income levels emerge as primary factors that contribute to these mobility challenges. The network analysis demonstrates considerable variation in infrastructure density and quality across different regions, with notable disparities in connectivity infrastructure.

The study concludes that meaningful regional integration requires substantial infrastructure investment and the removal of mobility barriers, which constitute fundamental prerequisites for African economic integration and sustainable development. These findings provide empirical foundations for policy interventions aimed at enhancing intra-African trade and mobility.

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1 Ibn Haldun University, Department of Economics [mahatibrahim@ihu.edu.tr](mailto:mahatibrahim@ihu.edu.tr)