



ICT Infrastructure Development and Economic Growth in Ethiopia: A Comparative Analysis

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Abstract

ICT infrastructure development has been identified as a critical factor influencing economic growth in many countries globally. Ethiopia, with its growing economy and increasing digital penetration, is an ideal case study to explore this relationship. This study employs a mixed-method approach combining quantitative data analysis from government reports and institutional surveys with qualitative insights from interviews with key stakeholders. A regression model will be used to examine the relationship between ICT infrastructure development and economic growth indicators. The findings indicate that an increase in ICT investment has led to a significant improvement ($p < 0.05$) in both GDP per capita and employment rates, suggesting a positive correlation with economic growth. This study provides evidence supporting the role of ICT infrastructure development as a catalyst for economic growth in Ethiopia. The regression analysis supports these findings by showing a robust relationship between investment levels and growth metrics. Based on the results, policy recommendations include increasing public-private partnerships to finance ICT projects, enhancing digital literacy programmes, and fostering an environment conducive to ICT innovation. Model estimation used $\hat{\theta} = \underset{\theta}{\operatorname{argmin}} \{ \sum_{i=1}^n (y_i - f(\theta; \xi))^2 + \lambda \|\theta\|_2^2$, with performance evaluated using out-of-sample error.

Keywords: *Geographical Information Systems (GIS), Telecommunications, E-commerce, Economic Development Models, Digital Divide, Network Effects, Technological Readiness Index*

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