Abstract

This study investigates the structural relationship between telecommunication infrastructure and income inequality in Kenya over 1995–2024. Theoretically, the study synthesises the Galor-Zeira Credit Friction Theory, where telecommunication access lowers information asymmetries and market search costs and Acemoglu's Skill-Biased Technological Change along with Van Dijk's Digital Divide Theory, which posit that technological returns are conditionally governed by human capital capabilities. Utilising an Autoregressive Distributed Lag (ARDL) bounds testing framework alongside robust non-parametric estimators, we establish a long-run cointegrating equilibrium among telecommunication proxies, human development, institutional quality, and income distribution. The empirical findings reveal that mobile penetration, internet access, and fixed broadband exert a direct, statistically significant inequality-reducing effect. Crucially, introducing interaction terms demonstrates that human capital acts as a vital absorptive threshold: digital infrastructure expansion only exerts its maximum redistributive power when complemented by higher levels of human development. Diagnostic checks, including Cumulative Sum and Cumulative Sum of Square stability tests and the Log Palma Ratio as an alternative inequality proxy, confirm the structural robustness of the model. We conclude that digital infrastructure expansion is an effective, yet non-autonomous, redistributive policy tool. Sustainable inequality reduction requires pairing digital coverage with targeted human capital building and institutional safeguards.