

## BRICS Ülkeleri ve Türkiye’de Bilişim ve İletişim Teknolojilerinin Ekonomik Büyümeye Etkisi: Panel Veri Analizi

### The Impact of Information and Communication Technologies on Digital Economy in BRICS Countries and Türkiye: A Panel Data Analysis

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#### Abstract

Information and communication technologies (ICT) are regarded as one of the fundamental drivers of the knowledge economy and play a critical role in enhancing countries’ capacity for economic growth, competitiveness, and innovation. In an increasingly globalized world characterized by rapid technological advancements, understanding the extent and nature of ICT’s impact on economic growth has become a prominent topic in literature. However, comprehensive analyses of this relationship remain limited, particularly in the context of developing economies. Against this backdrop, the present study aims to investigate the effects of ICT usage and the prevalence of digital transformation on economic growth within the scope of the digital economy in BRICS countries and Türkiye. The theoretical framework of the study is built upon the main approaches in the literature regarding the role of ICT in fostering economic growth. In the research, the dependent variable is defined as economic growth, measured by gross domestic product (GDP, current US\$). The independent variables include ICT service exports (% of service exports, BoP), the percentage of individuals using the internet (% of population), and local patent applications. These variables were selected based on a thorough literature review and were included in the study to support the theoretical foundation. The analysis is based on a panel dataset covering BRICS countries over the period 2000–2023, utilizing panel data analysis methods. This methodology enables simultaneous modeling of time- and country-specific effects, thereby allowing for a comprehensive evaluation of dynamic relationships. The findings reveal that ICT usage has a significant and positive impact on economic growth. In particular, the widespread adoption of the internet and the increase in local patent applications emerge as key factors supporting economic growth. However, the impact of ICT service exports on economic growth was found to vary across countries. These results not only elaborate on the multifaceted effects of ICT on economic growth but also underscore the necessity of adopting differentiated strategic approaches among countries. In addition to addressing existing gaps in literature, this study offers valuable insights into the potential of ICT to support economic development in emerging economies. The findings may provide guidance to policymakers in formulating evidence-based strategies to enhance the effectiveness of ICT investments. Furthermore, through its theoretical and empirical contributions, the study establishes a robust foundation for future academic and practical research in the field of economic growth.

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