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Does access to digital agricultural advisory services reduce gender gaps in climate-resilient productivity among farmers? evidence from Nigeria

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Abstract

Climate change threatens agricultural productivity in sub-Saharan Africa, particularly among smallholder farmers reliant on climate-sensitive systems. In Nigeria, gender disparities in access to resources, information, and technologies often limit women's adoption of climate-resilient practices. Digital agricultural advisory services delivered through mobile and ICT platforms provide timely climate and agronomic information. However, evidence remains limited on their role in reducing gender gaps. This study examines whether access to digital advisory services reduces gender disparities in climate-resilient productivity among Nigerian farmers. Our analysis utilises nationally representative data from the 2024 Nigeria General Household Survey (GHS). Climate-resilient productivity is measured by integrating farm productivity with the adoption of climate-smart agricultural practices, including improved seed varieties, soil and water conservation measures, and the use of climate-related information. Descriptive statistics are first employed to assess gender differences in access to digital advisory services and the adoption of climate-resilient practices. To estimate the impact of digital advisory services, we applies robust econometric techniques that address potential selection bias and unobserved heterogeneity. Specifically, Propensity Score Matching (PSM) and Endogenous Switching Regression (ESR) models are employed to evaluate the causal effects of digital advisory access on climate-resilient productivity. Interaction terms between gender and digital advisory access are also included to determine whether these services help narrow productivity gaps between male- and female-managed farms. The results show that access to digital agricultural advisory services improves the adoption of climate-resilient practices and enhances farm productivity. Although women farmers have lower access to these services, digital advisory platforms have shown the potential to reduce gender gaps in climate-resilient productivity and strengthen the resilience of smallholder farming systems in Nigeria.

Keywords: Agricultural information access, climate-resilient productivity, climate-smart agriculture, digital agricultural advisory services, gender gaps, ict in agriculture, smallholder farmers

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