

Thesis Abstract

No.

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Thesis Title				
Adoption of digitalization of climate-smart agricultural services: Case of Tamil Nadu, India				
Thesis Summary:				
Access to timely and relevant agricultural information is critical for farmers' decision-making and overall productivity. However, limited access to such information and the shortage of extension professionals hinder the adoption of Digital Climate-Smart Agricultural (DCSA) services i.e. advisory, especially in regions vulnerable to climate change. This study investigates the factors influencing farmers' perceptions toward advisory adoption in Tamil Nadu, India. A conceptual framework with seven constructs was developed to understand key influences on DCSA perception and adoption. An in-person survey was conducted with 200 farmers across four agro-ecological zones, affiliated with government, NGO, and private extension institutions. Using Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Structural Equation Modelling (SEM), the study identified five latent variables significantly affecting DCSA adoption: Awareness and DCSA Adoption (ADA), Agricultural Information Seeking Behavior (AISB), Recognition of Climate Change Impact (RCCI), Infrastructure Facilities (IF), and Awareness of Government Policies (AGP). Findings revealed that ADA and AGP had the highest factor loadings, with tool-specific awareness (ADA3) and scheme awareness (AGP5) being particularly influential. SEM results showed AGP had the strongest positive impact on Extension Agency Contact (EAC) ($\beta = 1.249$, $p < 0.001$), followed by IF ($\beta = 0.094$), while AISB had a negative impact ($\beta = -0.180$). EAC significantly influenced farmers' perception (FP) ($\beta = 1.206$). NGOs and private agencies were more effective than government bodies in enhancing farmer perceptions, with NGOs showing an R^2 of 15.46% and private agencies 14.73%. The study highlights the need for a pluralistic extension system, improved digital infrastructure, and better communication of policies. It emphasizes the importance of a community-led, bottom-up approach and sustained institutional support for equitable DCSA adoption. By addressing contextual and environmental factors, this research contributes to agricultural technology adoption models and offers practical insights for enhancing climate-smart agriculture resilience.				
Keywords: Climate-smart agriculture, Digitalization, Climate change adaptation, Structural equation modeling, Farmer's perception.				