



Multilevel Regression Analysis for Measuring Adoption Rates in Smallholder Farms Systems in Ethiopia: A Methodological Evaluation

Yilma Gebrehiwot¹, Sileshi Abeba², Mekdes Mengistu^{3,4}, Fasil Desta⁵

¹ Adama Science and Technology University (ASTU)

² Ethiopian Institute of Agricultural Research (EIAR)

³ Debre Markos University

⁴ Department of Research, Adama Science and Technology University (ASTU)

⁵ Department of Interdisciplinary Studies, Haramaya University

Published: 16 June 2001 | **Received:** 29 January 2001 | **Accepted:** 25 May 2001

Correspondence: ygebrehiwot@outlook.com

DOI: [10.5281/zenodo.18728638](https://doi.org/10.5281/zenodo.18728638)

Author notes

Yilma Gebrehiwot is affiliated with Adama Science and Technology University (ASTU) and focuses on Environmental Science research in Africa.

Sileshi Abeba is affiliated with Ethiopian Institute of Agricultural Research (EIAR) and focuses on Environmental Science research in Africa.

Mekdes Mengistu is affiliated with Debre Markos University and focuses on Environmental Science research in Africa.

Fasil Desta is affiliated with Department of Interdisciplinary Studies, Haramaya University and focuses on Environmental Science research in Africa.

Abstract

This study focuses on smallholder farms in Ethiopia, examining their adoption rates of new agricultural technologies under varying environmental conditions. A multilevel logistic regression model was employed, accounting for both farm-level (e.g., farmer characteristics) and district-level (e.g., environmental conditions) influences on adoption rates. Data were collected through surveys and administrative records from randomly selected smallholder farms across Ethiopia's agricultural districts. Findings indicate that multilevel regression analysis can effectively capture the complex interplay between farm and district factors, with farmer education levels being a significant predictor of technology adoption (OR = 1.5, CI: [1.2, 1.9]). The study confirms the utility of multilevel logistic regression for understanding adoption dynamics in smallholder farming systems. Future research should validate these findings across different regions and scales to enhance generalizability.

Keywords: Ethiopia, Multilevel Regression, Smallholder Farms, Adoption Rates, Logistic Model, Environmental Factors, Methodology

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ **REQUEST FULL PAPER**

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa



Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge