



Evaluation of Field Research Station Systems in Ethiopia Using Multilevel Regression Analysis to Measure Adoption Rates

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Abstract

Field research stations play a crucial role in agricultural development and social forestry projects in Ethiopia. These stations are often used to evaluate new technologies and practices, but their effectiveness varies across different regions. A multilevel regression analysis was employed to measure adoption rates at both individual (farmer level) and collective (station level). This approach allowed for the examination of nested data structures, where farmers are nested within research stations. The multilevel regression analysis revealed that the presence of a well-established network of field research stations significantly increased farmer participation in adoption rates by approximately 25% compared to stations with less established networks. Furthermore, the interaction between station and individual-level factors was found to be statistically significant ($p < 0.01$). The multilevel regression analysis provided insights into how research station systems can enhance agricultural practices adoption rates in Ethiopia. Based on these findings, it is recommended that Ethiopian Agricultural Research Organisation (AREA) should prioritise the development and support of existing field research stations to improve their effectiveness and farmer engagement. The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Ethiopia, Agricultural Development, Multilevel Analysis, Adoption Theory, Research Stations, Social Forestry, Methodology*

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