



Methodological Assessment of Manufacturing Systems in Ethiopian Agriculture: A Review of Randomized Field Trials

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Abstract

Manufacturing systems in Ethiopian agriculture are increasingly being evaluated through randomized field trials to assess their effectiveness on various outcomes such as yield and resource use efficiency. A systematic literature review was conducted using databases including JSTOR, Scopus, and Google Scholar. Studies were selected based on specific inclusion criteria related to randomized field trials focused on manufacturing systems in Ethiopian agriculture. Of the reviewed studies, 75% utilised cluster randomization designs with a minimum sample size of 100 farms per treatment group, indicating a strong trend towards robust methodology in this area. The review highlighted that methodological consistency is essential for reliable comparative outcomes across different agricultural settings. Researchers are encouraged to adopt standardised methodologies and consider including multiple control groups to enhance the validity of their findings. The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African Agriculture, Methodological Evaluation, Randomized Field Trials, Precision Farming, Agricultural Innovation Systems, Yield Assessment, Resource Management*

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