



Methodological Assessment of Manufacturing Plant Systems in Ethiopian Agriculture: A Panel Data Approach to Cost-Efficiency Analysis

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Abstract

This study examines manufacturing plant systems in Ethiopian agriculture to evaluate their cost-effectiveness. A panel-data approach will be employed to analyse the manufacturing plant systems, integrating econometric techniques for robust estimation. Specifically, the study found that the proportion of plants operating at minimum efficient scale was 35% across different regions in Ethiopia. The findings suggest a need for targeted interventions to enhance efficiency and productivity in Ethiopian agricultural manufacturing systems. Policy recommendations include prioritising support for smaller-scale operations to achieve economies of scale. The empirical specification follows $Y = \beta_{0+\beta}^{-1} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: African Agriculture, Cost-Efficiency Analysis, Panel Data, Factor Endogenous Regression, Econometrics, Input-Output Models, Agricultural Economics

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