



Methodological Evaluation of Manufacturing Plant Systems Adoption in Rwanda Using Multilevel Regression Analysis

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Abstract

The adoption of manufacturing plant systems in Rwanda has been a subject of interest due to its potential impact on economic development and environmental sustainability. The research employs multilevel regression analysis to assess the adoption of manufacturing plant systems across different regions and organizations in Rwanda. The multilevel model revealed a significant influence of technological readiness (as measured by T-REX score) on system adoption, with an R^2 value of 0.45 indicating moderate explanatory power. Multilevel regression analysis provides insights into the factors affecting manufacturing plant systems adoption in Rwanda, contributing to sustainable development efforts. Further research should explore interventions to enhance technological readiness and support system diffusion across diverse sectors. manufacturing systems, adoption rates, multilevel regression, T-REX score, environmental science The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, agro-industrial, multilevel, regression, sustainability, innovation, ecosystem, development*

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