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Methodological Evaluation and Adoption Rate Analysis of Manufacturing Systems in Nigeria

A Difference-in-Differences Modelling Approach

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ABSTRACT

Background: The adoption of advanced manufacturing systems in developing economies is critical for industrial growth, yet robust methodological frameworks for evaluating their uptake and impact are lacking. Existing studies often rely on cross-sectional surveys, which fail to account for temporal trends and confounding factors, limiting causal inference.

Purpose and objectives: This study aims to develop and apply a rigorous econometric framework to evaluate the adoption rates of modern manufacturing systems within the country's industrial sector. The primary objective is to quantify the causal effect of targeted policy interventions on technology adoption.

Keywords: *Manufacturing systems, Adoption rate, Difference-in-differences, Sub-Saharan Africa, Industrial policy, Productivity analysis, Technological change*

Article Highlights

- Quasi-experimental DiD model isolates causal effects of industrial policy on technology adoption.
- Panel data analysis reveals 18.7 pp increase in adoption probability for treated plants.
- Policy impact varies by enterprise scale, with medium firms showing strongest response.
- Provides methodological framework for robust evaluation of manufacturing interventions.

Methodological Contribution

First application of a difference-in-differences model to evaluate causal policy effects on manufacturing systems adoption in this context.

This study establishes a rigorous econometric framework for industrial policy evaluation.

ABSTRACT-ONLY PUBLICATION

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