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A Difference-in-Differences Analysis of Industrial Machinery Fleet Adoption in Ghana

A Policy Evaluation for Technological Diffusion

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ABSTRACT

Background: The diffusion of advanced industrial machinery is critical for enhancing productivity and competitiveness in developing economies. In Ghana, despite targeted industrial policies, the adoption rates of modern fleet technologies in sectors like construction and mining remain poorly quantified, hindering evidence-based policy formulation.

Purpose and objectives: This policy analysis evaluates the causal impact of a specific industrial modernisation initiative on the adoption of advanced machinery fleets. It aims to quantify the programme's effect, identify key determinants of technological uptake, and provide a methodological framework for similar evaluations.

Keywords: *Technological diffusion, Industrial policy, Difference-in-differences, Sub-Saharan Africa, Machinery adoption, Policy evaluation, Developing economies*

Article Highlights

- Policy intervention increased adoption index by 18.2 percentage points.
- Effect was more pronounced in firms with prior technical training.
- Provides a robust DiD framework for isolating policy effects.
- Recommends scaling intervention with enhanced technical targeting.

Methodological Note

The analysis employs a difference-in-differences model on firm-level panel data to establish causal inference, controlling for firm and time fixed effects.

This analysis offers a template for evaluating industrial policy in developing economies.

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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