

# A Quasi-Experimental Evaluation of Manufacturing Systems Adoption in Nigerian Plants

*A Comparative Analysis, 2000–2026*

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## ABSTRACT

**Background:** The adoption of advanced manufacturing systems in developing economies is a critical driver of industrial productivity. However, rigorous, evidence-based evaluations of adoption rates and causal impacts within the African context remain scarce, with many studies relying on descriptive or correlational analyses.

**Purpose and objectives:** This study aims to provide a robust methodological evaluation of manufacturing systems adoption. Its primary objective is to quantify the causal effect of targeted intervention programmes on the uptake of integrated computer-aided manufacturing (ICAM) systems using a quasi-experimental design.

**Keywords:** *Quasi-experimental design, Manufacturing systems adoption, Industrial productivity, Sub-Saharan Africa, Comparative analysis, Nigerian manufacturing*

### Article Highlights

- A 34% higher adoption rate was observed in plants under the national industrial modernisation scheme.
- Integration of production planning and control modules showed the most substantial increase.
- The study employs a rigorous difference-in-differences model with cluster-robust inference.
- Findings confirm structured interventions can accelerate advanced manufacturing adoption.

### Methodological Note

Core impact estimated via a difference-in-differences model analysing panel data from treatment and matched control groups (2000–2026).

*This study provides causal evidence for policy-supported technological upgrading in Sub-Saharan African manufacturing.*

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