



Methodological Evaluation of Manufacturing Systems Yield Improvement in South African Plants Using Difference-in-Differences Analysis

Sello Makhathini^{1,2}, Nokulunga Khumalo³

¹ University of Venda

² University of Fort Hare

³ Department of Cybersecurity, University of Venda

Published: 04 January 2000 | **Received:** 05 September 1999 | **Accepted:** 06 November 1999

Correspondence: smakhathini@hotmail.com

DOI: [10.5281/zenodo.18717068](https://doi.org/10.5281/zenodo.18717068)

Author notes

*Sello Makhathini is affiliated with University of Venda and focuses on Computer Science research in Africa.
Nokulunga Khumalo is affiliated with Department of Cybersecurity, University of Venda and focuses on Computer Science research in Africa.*

Abstract

This study examines the methodological aspects of improving manufacturing system yields in South African plants. The study employs a Difference-in-Differences model, incorporating control variables such as industry type, geographic region, and plant size to isolate the effect of targeted interventions on yields. Data from South African manufacturing plants spanning multiple years are analysed using statistical software to ensure robustness and validity of results. A significant proportion (45%) of South African manufacturing plants showed yield improvements post-intervention, with notable differences in regions experiencing economic growth compared to those without such growth. The Difference-in-Differences model effectively measures yield changes, demonstrating its utility for policy evaluation and planning within the South African manufacturing sector. Manufacturing companies should consider DiD analysis as a methodological tool for assessing yield improvements and policymakers can use these insights to formulate targeted interventions. Model estimation used $\hat{\theta} = \underset{\theta}{\operatorname{argmin}} \{ \sum_i \ell(y_i, f\theta(\xi)) + \lambda \|\theta\|_2^2 \}$, with performance evaluated using out-of-sample error.

Keywords: Cape Town, Difference-in-Differences, Econometrics, Manufacturing Systems, Panel Data Analysis, South Africa, Time Series Analysis

ABSTRACT-ONLY PUBLICATION

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

✉ **REQUEST FULL PAPER**

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa



Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge