



# Methodological Assessment of Process-Control Systems Adoption in Ghana Using Panel Data Analysis

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### Abstract

Process-control systems (PCSs) have been adopted in various manufacturing industries worldwide to enhance efficiency and quality control. A mixed-method approach combining qualitative insights with quantitative analysis. Panel data from 20 manufacturing firms were collected over a five-year period to estimate adoption rates and analyse determinants. Panel-data estimation revealed that investment in PCSs was significantly higher among larger enterprises (over 1 million) compared to smaller ones, indicating resource constraints as an influencing factor. The study provides  $Y_{it} = \beta_0 + \beta_1 X_{it} + \epsilon_{it}$ , with robustness checked using heteroskedasticity-consistent errors.

**Keywords:** *Sub-Saharan, African, Econometrics, Panel-Data, Qualitative-Methods, Industries-Studies, Process-Control*

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