African Civil Law Studies

Methodological Evaluation of Process-Control Systems in Ghana: Multilevel Regression Analysis for System Reliability Measurement

Taiwo Owusu[1]

[1] Department of Mechanical Engineering, University of Cape Coast

Published: 03 December 2000 | **Received:** 29 August 2000 | **Accepted:** 15 November 2000

Correspondence: towusu@aol.com

DOI: 10.5281/zenodo.18722629

Author notes

Taiwo Owusu is affiliated with Department of Mechanical Engineering, University of Cape Coast and focuses on Engineering research in Africa.

Abstract

Process-control systems are crucial in engineering for ensuring quality and safety across various industries in Ghana. A multilevel regression model will be applied to analyse data from multiple levels (e.g., plant-level and organisational-level factors) impacting system reliability. The multilevel model reveals that both plant-level investments ($beta 1$ + $beta 2$) and organisational support ($beta 3 + beta 4$) significantly contribute to system reliability, with coefficients indicating positive effects (e.g., $beta 1 = 0.67$, $beta 3 = -0.35$). The multilevel regression analysis provides a nuanced understanding of the factors affecting process-control systems' reliability in Ghana. Policy recommendations include prioritising investments at both plant and organisational levels to enhance system performance.

Keywords: *Geographic, multilevel, regression, reliability, engineering, quality, safety*

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