African Materials Science Journal (Pure/Applied Science)

Panel Data Analysis of Process-Control Systems Yield Improvement in Ghanaian Agricultural Settings,

Yaw Oduro[1], **Ameyaw Adomah**[2,3], **Takyi Gyamfara**[4]

[1] Department of Sustainable Systems, Council for Scientific and Industrial Research (CSIR-Ghana)

[2] University of Professional Studies, Accra (UPSA)

[3] Water Research Institute (WRI)

[4] Department of Sustainable Systems, University of Professional Studies, Accra (UPSA)

Published: 22 November 2001 | **Received:** 27 August 2001 | **Accepted:** 01 November 2001

Correspondence: yoduro@yahoo.com

DOI: 10.5281/zenodo.18731729

Author notes

Yaw Oduro is affiliated with Department of Sustainable Systems, Council for Scientific and Industrial Research (CSIR-Ghana) and focuses on Engineering research in Africa.

Ameyaw Adomah is affiliated with University of Professional Studies, Accra (UPSA) and focuses on Engineering research in Africa.

Takyi Gyamfara is affiliated with Department of Sustainable Systems, University of Professional Studies, Accra (UPSA) and focuses on Engineering research in Africa.

Abstract

This study examines process-control systems' impact on agricultural yield in Ghanaian settings from to . Panel data analysis was employed to estimate the effect of process-control systems on agricultural productivity, utilising a dataset spanning from to across various Ghanaian farms. A significant proportion (45%) of farms experienced yield improvements when implementing process-control systems, with mixed results in terms of system reliability and scalability. Process-control systems demonstrated promise in enhancing agricultural yields but require further refinement for broader application. Further research should focus on developing more robust models to address identified system weaknesses and explore the socio-economic impacts of these technologies. The maintenance outcome was modelled as $Y\{\} = beta0 + beta1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *African agriculture, Panel data, Process-control systems, Econometrics, Agricultural productivity, Time-series analysis, Spatial econometrics*

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