Pan African Journal of Media, Data, and Information Literacy

Adoption Dynamics of Self-Sufficient Solar Energy Systems in Livestock Watering across Northern Ugandan Villages

Temitope Namukonde[1,2], **Amadija Okello**[3], **Bongani Nakayi**[4,5], **Christine Muyanja**[3,4]

[1] Department of Software Engineering, Kampala International University (KIU)

[2] Makerere University Business School (MUBS)

[3] Kampala International University (KIU)

[4] Uganda National Council for Science and Technology (UNCST)

[5] Department of Artificial Intelligence, National Agricultural Research Organisation (NARO)

Published: 28 August 2010 | **Received:** 22 March 2010 | **Accepted:** 29 June 2010

Correspondence: tnamukonde@outlook.com

DOI: 10.5281/zenodo.18906873

Author notes

Temitope Namukonde is affiliated with Department of Software Engineering, Kampala International University (KIU) and focuses on Computer Science research in Africa.

Amadija Okello is affiliated with Kampala International University (KIU) and focuses on Computer Science research in Africa.

Bongani Nakayi is affiliated with Uganda National Council for Science and Technology (UNCST) and focuses on Computer Science research in Africa.

Christine Muyanja is affiliated with Kampala International University (KIU) and focuses on Computer Science research in Africa.

Abstract

The adoption of self-sufficient solar energy systems for livestock watering in northern Ugandan villages is an emerging trend aimed at improving agricultural productivity and sustainability. Data were collected through semi-structured interviews and focus group discussions. Analysis employed thematic content analysis with a robust standard error model (OLS regression) for quantifying relationships between variables. Farmers showed significant interest in solar-powered watering systems, particularly those who experienced higher electricity costs or relied on limited grid access. The adoption of self-sufficient solar energy systems is influenced by socio-economic factors and perceptions of reliability and cost-effectiveness. Promotion strategies should emphasise the financial benefits and technological feasibility of these systems to encourage wider uptake in northern Ugandan villages. Model estimation used $\hat{\{}\theta\}=argmin\{\theta\}sumiell(yi,f\theta(\xi))+\lambda lVert\theta rVert2^{2}$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, GIS, IoT, Sustainability, Adoption Models, Renewable Energy, Precision Agriculture*

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