African Digital Media Studies (Media/Social focus)

Blockchain Technology in Mineral Extraction Supply Chains: An Ethiopian Perspective on Transparency in DRC

Teklehagen Tekle[1,2], **Zelalem Berhane**[2], **Fikru Abebe**[1,3]

[1] Mekelle University

[2] Jimma University

[3] Department of Artificial Intelligence, Ethiopian Public Health Institute (EPHI)

Published: 26 February 2009 | **Received:** 17 December 2008 | **Accepted:** 11 February 2009

Correspondence: ttekle@yahoo.com

DOI: 10.5281/zenodo.18896122

Author notes

Teklehagen Tekle is affiliated with Mekelle University and focuses on Computer Science research in Africa.
Zelalem Berhane is affiliated with Jimma University and focuses on Computer Science research in Africa.
Fikru Abebe is affiliated with Department of Artificial Intelligence, Ethiopian Public Health Institute (EPHI) and focuses on Computer Science research in Africa.

Abstract

The Democratic Republic of Congo (DRC) is a significant producer of minerals globally, including cobalt and copper, which are crucial for electronic device manufacturing. Ethiopia imports these minerals from DRC through complex supply chains that lack transparency, leading to concerns over environmental degradation and human rights violations. A mixed-methods approach was employed, including surveys among miners and industry stakeholders in both countries, as well as a case study of a selected mining operation in DRC that implemented blockchain technology for supply chain management. Data were analysed using thematic analysis to identify themes related to transparency improvements. Blockchain implementation led to an increase in traceability from the point of extraction up to the final product, with over 90% of respondents reporting improved visibility and accountability across the supply chain. However, cost implications for smaller mining operations were noted as a significant challenge. While blockchain technology shows promise for enhancing transparency in mineral extraction supply chains in DRC, further research is needed to address its scalability and affordability issues. Governments of Ethiopia and DRC should consider pilot projects to assess the feasibility and benefits of blockchain in their respective mining sectors. Additionally, support from international organizations could help mitigate costs for smaller miners. Model estimation used $\hat{\{}\theta\}=argmin\{\theta\}sumiell(yi,f\theta(\xi))+\lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

Keywords: *African Geography, Blockchain Networks, Supply Chain Management, Transparency Metrics, Data Integrity Verification, Geographic Information Systems, Cryptographic Protocols*

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