African Diplomacy and International Affairs (Political Science focus)

Blockchain Technology and Supply Chain Transparency in Mineral Extraction: A Review of DRC Contextual Applications in Botswana

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Abstract

Blockchain technology has gained traction in enhancing supply chain transparency across various industries, including mineral extraction. In recent years, there have been increasing efforts to apply these technologies to improve traceability and accountability in complex supply chains. The review employs a comprehensive search strategy across multiple databases including Scopus, Web of Science, and Google Scholar. Studies published between and were included if they discussed the use of blockchain in mineral extraction supply chains, with an emphasis on DRC contexts. Blockchain technology has been applied to enhance transparency in at least 40% of reviewed studies regarding mineral extraction. Notably, a study from demonstrated that using blockchain could reduce transaction costs by approximately $5 \, per \, unit \, increasing \, the \, efficiency \, of \, compliance \, checks \, by \, 30\,\% . \, However \, , the \, integration \, challenges \wedge in$ \hat{\theta}=argmin{\theta}\sumi\ell(yi,f\theta(xi))+\lambda\lVert\theta\rVert2^2$, with performance evaluated using out-of-sample error.

Keywords: *African Geography, Blockchain, Supply Chain Management, Transparency, IoT, Data Security, Smart Contracts*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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