



Blockchain Facilitating Transparency in Mineral Extraction Supply Chains within DRC and Eritrea,

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Abstract

The Democratic Republic of Congo (DRC) and Eritrea are significant producers of minerals globally. However, their mineral extraction supply chains have faced issues related to transparency and accountability. A qualitative comparative analysis was employed to assess the implementation of blockchain technologies in both countries. Data collection included interviews with industry experts and an examination of existing blockchain implementations. Blockchain technology has been implemented in a manner that significantly improved record-keeping and traceability, reducing corruption by over 30% in DRC compared to Eritrea's current status. The integration of blockchain for supply chain transparency shows promise but faces logistical challenges such as high initial investment costs. Governments should provide incentives for private sector adoption and invest in infrastructure development. Public-private partnerships can facilitate smoother implementation. Model estimation used $\hat{\theta} = \operatorname{argmin}\{\theta\} \operatorname{sumiell}(y_i, f\theta(\xi)) + \lambda \operatorname{Vert}\theta \operatorname{rVert} 2^2$, with performance evaluated using out-of-sample error.

Keywords: *Geography, Africa, Big Data, Social Accountability, Supply Chain Management, Fintech, Blockchain Technology*

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