# AI-Powered Mobile Money Fraud Detection

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**Stage:** Idea Development
**Category:** AI for Financial Crime Prevention

## 1. Problem Statement

Mobile money has transformed financial access in Kenya, with millions relying on platforms such as M-Pesa and Airtel Money for daily transactions. However, this convenience has led to a surge in fraudulent activities including fake reversals, impersonation, SIM swap scams, and false confirmation messages. Current detection systems are manual and reactive — leading to huge financial losses and declining user trust.

## 2. The Need for the Solution

Over 80% of Kenyan adults use mobile money services. Thousands fall victim to fraud each year, often losing unrecoverable funds. There is no adaptive AI system capable of identifying real-time mobile money fraud before funds are lost. Hence, an AI-powered system is needed to automatically detect, flag, and prevent suspicious transactions and scam messages.

## 3. Proposed Solution

AI ScamShield for Mobile Money — A machine learning–based system that: 1. Learns user transaction behavior to detect unusual patterns (amount, frequency, timing). 2. Uses Natural Language Processing (NLP) to detect fake SMS confirmations or scam messages. 3. Provides real-time alerts to users or financial institutions when fraudulent activity is suspected. 4. Leverages community-driven reporting to continuously learn from new scam trends.

## 4. Technology Stack

| Component | Tools/Frameworks |
|---|---|
| Data Analysis | Python, Pandas, NumPy |
| Machine Learning | Scikit-learn, TensorFlow |
| NLP (message analysis) | Hugging Face Transformers, NLTK |
| Dashboard/Prototype | Streamlit, Flask |
| Data Visualization | Matplotlib, Plotly |

## 5. Proof of Experience

I have hands-on experience building machine learning models, including a data-driven oil pricing prediction model available on GitHub: https://github.com/jackie-wk/BreastCancer_dt/blob/main/oil_pricing_df.ipynb This project demonstrates my ability in data cleaning, analysis, and model creation — skills I will apply to this AI fraud detection concept.

## 6. Expected Impact

• Protect users and agents from mobile money scams.
• Build trust in Kenya’s digital finance ecosystem.
• Support financial institutions and regulators with real-time fraud insights.

## 7. Future Vision

Once a working prototype is ready, the solution can be integrated with telecom APIs or mobile banking apps to provide end-user protection and reporting dashboards for fraud monitoring.