A Theoretical AI-Driven Framework for Tax Fraud Detection in Emerging Economies' Industrial Ecosystems: Application to Morocco

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Abstract. In a context marked by increasing digitalization of economies, tax administrations in emerging countries face major challenges in fraud detection and control optimization. Artificial intelligence (AI), with its ability to process large volumes of heterogeneous data, emerges as a promising solution to enhance the efficiency of tax systems in these countries.

The central research question of this study is: How can an AI system be modeled to detect tax fraud in Moroccan industrial and logistics ecosystems, despite the lack of open data, using theoretical methods and international benchmarks?

To address this question, we developed a hybrid theoretical model combining LSTM neural networks for time-series analysis and Random Forests for result interpretability. This model integrates both declarative fiscal data and objective logistics indicators, enabling more robust anomaly detection.

This work proposes an adaptable framework for emerging countries, such as Morocco, and opens perspectives for broader sectoral applications, particularly in agriculture or industrial free zones.

Keywords: Artificial intelligence – Tax fraud – Industrial ecosystems – Emerging countries