The Global Trust Engine: The Creation of a ML4DI (Machine Learning for Development Integrity) Model Capable of Detecting and Combatting Fraud in the Development Arena

Theoretical Framework

Case Study Analysis: Quantitative and Qualitative Instruments

Mozambique

The Hidden Debt Crisis in Mozambique was a product of the illicit use of $2 billion USD in loans on behalf of Mozambican officials. The initial flows of these funds are described by the transfer of $2 billion USD to three state-owned companies in Mozambique from a Russian and Swiss Bank (CHR Michelsen Institute, 2021, 16). The loans were offered to Mozambican enterprises for the sake of developing maritime security and empowering the fishing industry, a goal ultimately poisoned by the diversion of these funds to corrupt government officials who stole them for their own benefit and private investment. The primary organizer of the scheme, former Mozambican Finance Minister, Manuel Chang, received an additional $7 million USD in bribes to help facilitate the relocation of the funds (U.S. Department of Justice, 2024). These funds were laundered upon their integration into the formal economy, as they were funneled through sales to defrauded foreign investors from the United States. He illegally diverted more than $200 million USD of the development funds into private pockets for personal benefit, ultimately leading to his conviction in the United States in 2024 (U.S. Department of Justice, 2024). The laundering scheme and procedure for theft collapsed as state-owned companies defaulted on over $700 million USD in loans. From the case of Mozambique, we observe a series of quantitative and qualitative patterns that are listed in *Table 1* which serve the capacity to train a Machine Learning model to detect and prevent such corruption in the future.

Malaysia

The 1MDb development bank in Malaysia was initially a state fund chaired by former Prime Minister Najib Razak. The fund served the purpose of empowering Malaysia's economic growth through foreign direct investment (FDI) and global partnerships. These goals remained unmaterialized due to the theft of $4.5 billion USD, orchestrated by several Malaysian government officials, most notably the former Prime Minister Razak (The Guardian, 2020). The funds were diverted toward a series of extravagant investments including luxury homes and properties in Beverly Hills, New York, and London, alongside a superyacht and fine art by Monet and Van Gogh (US Department of Justice, 2024)). With complicity from a series of global banks, Razak was able to siphon stolen funds through accounts internationally and conceal the illegal procedures through which he illegally obtained the funds. The magnitude of this corruption can be observed through Malaysia's relatively low scores on governance indicators and measures of corruption as listed in *Table 1*. Similarly to Mozambique, these instruments for measuring corruption allow us to develop a Machine Learning model capable of detecting quantitative and qualitative patterns that commonly arise among cases of corruption, allowing us

to prevent a future catastrophe that may similarly exploit the development of marginalized population for the expansion of the wealth of economic elite like Razak.

Measure of Corruption	Canada (Control)			Malaysia			Mozambique		
	2013	2018	2023	2013	2018	2023	2013	2018	2023
Governance: Voice and Accountability	1.45	1.5	1.48	-0.34	-0.1	0.09	-0.26	-0.48	-0.59
Governance: Political Stability and Absence of Terrorism	1.06	0.96	0.82	0.05	0.25	0.17	-0.23	-0.83	-1.27
Governance: Government Effectiveness	1.78	1.68	1.52	0.99	1.05	0.88	-0.64	-0.96	-0.72
Governance: Regulatory Quality	1.73	1.7	1.64	0.57	0.58	0.66	-0.42	-0.8	-0.71
Governance: Rule of Law	1.75	1.72	1.47	0.34	0.53	0.57	-0.82	-1.07	-1.03
Governance: Control of Corruption	1.88	1.79	1.67	0.33	0.3	0.3	-0.6	-0.81	-0.83
World Bank MIMIC Estimate	15.3	15	NA	30.7	29.1	NA	37.9	37.2	NA

Table 1: Quantification measurements of corruption in Malaysia and Mozambique relative to Canada. (World Bank, 2025)

Machine Learning Model