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Leveraging Artificial Intelligence for Combating Money Laundering and Enforcing Anti-Corruption Strategies: Challenges for Anti-Corruption Agencies, Financial Regulators and Recommendations for Future

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Abstract

Money laundering poses a significant threat to the global financial system by enabling illicit activities that affect the economy globally. In recent years, the rise of artificial intelligence (AI) has offered new opportunities to enhance the detection and prevention of money laundering activities. This work of the Author is an attempt to analyze and overview money laundering, highlighting the importance of combatting this criminal activity and exploring the role of AI in addressing this critical issue. The first section explains money laundering and the second section explains the role of AI in detecting the same along with a brief description of the workings of the AI model to detect such instances. The third section gives an overview of anti-corruption efforts in India and the fourth section talks of integration of AI in Anti-Corruption Bureaus of India. Subsequently, challenges in implementing AI in Anti Money Laundering (AML) efforts are discussed. The sixth section is about recommendations to integrate AI in anti-corruption and AML Strategies. Based on the research, the author has given the conclusion that while AML AI is being used extensively in financial institutions, the pace is not the same for the ACBs of the country. Significant progress can be made to develop and integrate AI specifically for AML in governmental institutions.

Keywords: *Anti Money Laundering, Anti-Corruption, Artificial Intelligence, Anti-Corruption Bureau, Data pattern*

Introduction

Money laundering is the process of disguising the proceeds of criminal activities to make them appear legitimate. It involves primarily three stages: placement, layering, and integration.[1] [2] During the placement stage, illicit funds are introduced into the financial system.[3] In the layering stage, the funds are moved through a series of transactions to obscure their origin.[4] Finally, in the integration stage, the laundered funds are reintroduced into the economy as legitimate assets. [5]

[1] *The complete e-book on layering in Money Laundering*, AML UAE Compliance made easy, https://amluae.com/wp-content/uploads/2023/11/The-Complete-eBook-on-Layering-in-Money-Laundering.pdf
[2] Fabian Maximilian Johannes Teichmann. "Twelve methods of money laundering". In: Journal of money laundering control (2017).
[3] Alison S. Bachus, 'From Drugs to Terrorism: The Focus Shifts in the international fight against money laundering after September 11, 2001' (2004) Arizona Journal of International & Comparative Law 842
[4] Norhashimah Mohd. Yasin, Legal Aspects of Money Laundering in Malaysia (LexisNexis 2007)
[5] *Ibid.*

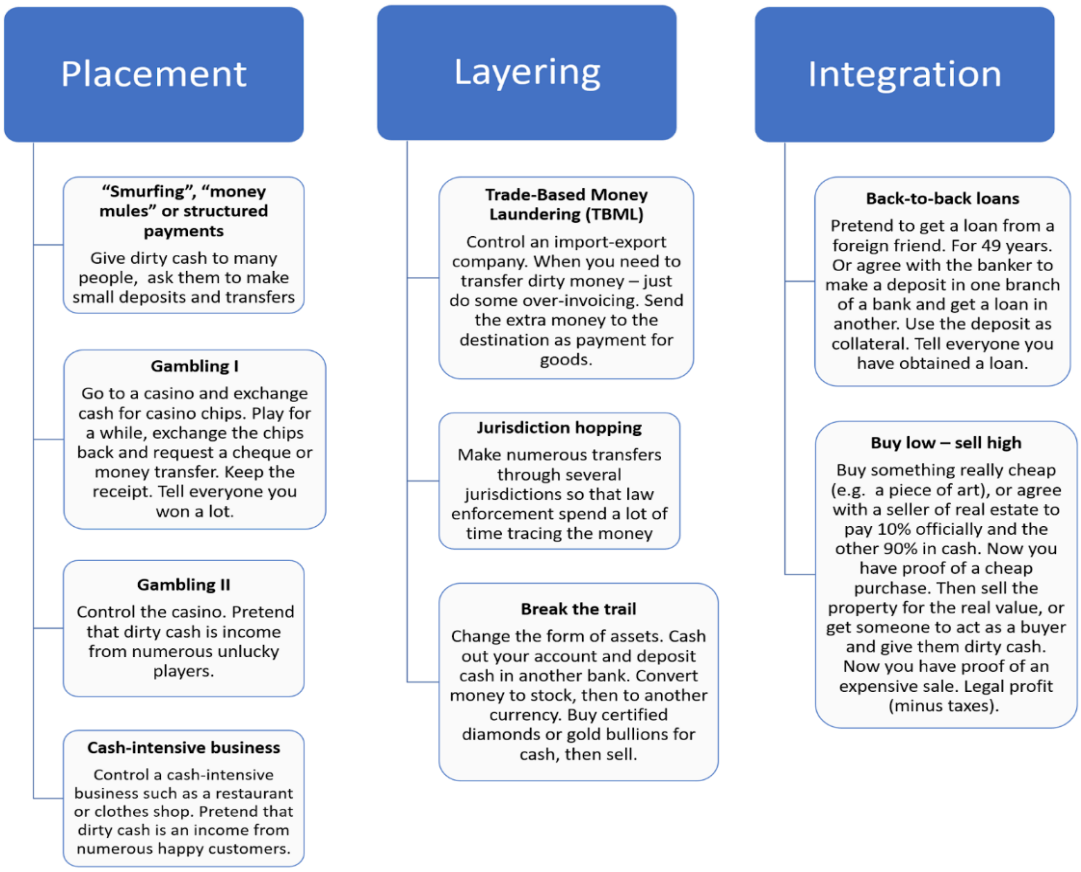

Image source: UN Toolkit on Synthetic Drugs[6]

There are several other ways by which money laundering happens. These include investments in movable commodities like gold, which can easily be moved through several jurisdictions, gambling, formation of shell companies, laundering money through online auctions, phishing, counterfeiting, etc.[7]

Money laundering poses serious risks to the financial system, including facilitating organized crime, terrorism financing, and corruption. The Financial Action Task Force (FATF) estimates that money laundering accounts for 2-5% of global GDP, amounting to trillions of dollars laundered annually.[8] Different countries have varying regulations and enforcement mechanisms regarding money laundering. The FATF has named 8 countries as not having sufficient money laundering regulations in place: Iran, Angola, North Korea, Ecuador, Ethiopia, Pakistan, Turkmenistan, São Tomé and Príncipe.[9] Money launderers exploit the loopholes by conducting transactions across multiple jurisdictions, taking advantage of weak regulations or enforcement in certain areas. Money launderers also exploit differences in regulatory requirements between sectors within a jurisdiction. For example, they may choose to launder money through sectors with less stringent reporting requirements, such as real estate, precious metals, or art, where regulations may be less comprehensive or enforcement less rigorous.

Additionally, the evolving nature of money laundering techniques, including the use of digital currencies and complex corporate structures, has also made it increasingly challenging to detect and prevent these activities, which in itself is a whole new territory for regulators to navigate.

Combating money laundering is essential to safeguard the integrity of the financial system and prevent the proliferation of illicit activities. A failure to address money laundering shall not only undermine the stability of financial institutions but also have broader societal implications such as funding criminal organizations and terrorist groups.

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[6] United Nations, UN Toolkit on Synthetic Drugs, https://syntheticdrugs.unodc.org/syntheticdrugs/en/cybercrime/launderingproceeds/methods.html
[7] Investopedia, *What Methods Are Used to Launder Money?*, https://www.investopedia.com/ask/answers/022015/what-methods-are-used-launder-money.asp#:~:text=Other%20Methods
[8] Financial action Task Force, https://www.fatf-gafi.org/en/publications/Fatfrecommendations/Fatfstepsupthefightagainstmoneylaunderingandterroristfinancing.html
[9] Global Witness, *28 countries accused of facilitating money laundering … but key offenders missing*, https://www.globalwitness.org/en/archive/28-countries-accused-facilitating-money-laundering--key-offenders-missing/#:~:text=Note%20to%20editors%3A%20The%20FATF,Turkmenistan%2C%20S%C3%A3o%20Tom%C3%A9%20and%20Pr%C3%ADncipe.

Regulatory authorities and financial institutions worldwide have made significant efforts to enhance their Anti-Money Laundering (AML) measures in response to the growing threat of money laundering.[10] However, traditional AML methods have limitations in effectively identifying and mitigating money laundering risks, given the complexity and volume of financial transactions. This creates the need to implement a sophisticated system that can not only analyze and process large volumes of data but also identify any unanticipated patterns in funds and create alerts to enable further investigations.

Role of Artificial Intelligence in Detection and Prevention

Anti-money laundering is tackled by two methods: **Traditional AML methods** and **Contemporary AML methods**. Traditional rules-based AML systems use predefined scenarios or "rules" to identify suspicious activity. These systems first analyze huge volumes of transactional data. Then they identify any transactions that meet the rules indicating money laundering and flag them. Flagged transactions go to a fraud investigator for further review as part of the case management process.

The following is a usual framework followed by the traditional AML system:

1. Systems analyze transactional data for scenarios that break the "rules" and flag them.
2. Transactions that meet the predefined rules generate alerts and flag the activity as suspicious.
3. AML analysts investigate to determine if the transaction is unlawful. If it is, the analyst may file a suspicious activity report (SAR) with regulatory authorities.
4. Predefined rules are regularly updated based on new data and feedback to improve the accuracy of the system.

This process detects layering money laundering and placement by catching strange behaviour. In some cases, it can also detect money laundering past the integration phase if a criminal makes an irregular transaction.[11]

The issue with traditional approaches lies in the fact that 90 to 95% of the alerts produced by traditional AML systems turn out to be false positives [12] Moreover since it is trained only on particular patterns of laundering, it is unable to detect any new pattern by itself.

Contemporary AML methods on the other hand involve Artificial Intelligence & Machine Learning which are exposed to new scenarios, testing, and adaption, while employing pattern and trend detection. This helps in going through millions of transactions in a very small amount of time and gives comparatively more accurate results even when such a specific scenario has not been fed into the system.

Artificial intelligence is currently being used extensively to fight money laundering through its advanced analytical capabilities and automation techniques.[13] This improves the effectiveness of AML efforts by manifold. [14] AI technologies, such as machine learning and natural language processing, can analyze vast amounts of data in real-time to identify suspicious patterns and anomalies indicative of money laundering activities. [15] [16] [17] [18]

An efficient detection framework is one that is capable of identifying suspicious behavior that might lead to money laundering, based on which it is decided whether the particular case should be further investigated or not.[19] [20]

Any AML solution should ideally have four features:

- Data Quality
- Scalability
- Detection accuracy
- Reaction Time

[10] International Monetary Fund, https://www.imf.org/en/Topics/Financial-Integrity/amlcft
[11] Datavisor, *Anti-money Laundering (AML): Rules for Catching Financial Crime*, https://www.datavisor.com/wiki/anti-money-laundering/#:~:text=Traditional%20rules%2Dbased%20AML%20systems,money%20laundering%20and%20flag%20them
[12] Association of Certified Financial Crime Specialist, https://www.acfcs.org/wp-content/uploads/2019/12/AI-and-FinTech-Richards-RegTech-Consulting-LLC-ACFCS-Seminar-December-5-2019.pdf
[13] Sarker, I.H. Data Science and Analytics: An Overview from Data-Driven Smart Computing, Decision-Making and Applications Perspective. *SN COMPUT. SCI.* **2**, 377 (2021). https://doi.org/10.1007/s42979-021-00765-8
[14] Alhajeri, R. and Alhashem, A. (2023) Using Artificial Intelligence to Combat Money Laundering. Intelligent Information Management, 15, 284-305. https://doi.org/10.4236/iim.2023.154014
[15] Bakhshinejad, Nazanin & Soltani, Reza & Nguyen, Uyen & Messina, Paul. (2022). A Survey of Machine Learning Based Anti-Money Laundering Solutions.
[16] Zhiyuan Chen et al. "Machine learning techniques for antimoney laundering (AML) solutions in suspicious transaction detection: a review". In: Knowledge and Information Systems 57.2 (2018), pp. 245–285
[17] Alhanouf Abdulrahman Saleh Alsuwailem and Abdul Khader Jilani Saudagar. "Anti-money laundering systems: a systematic literature review". In: Journal of Money Laundering Control (2020)
[18] Alhanouf Abdulrahman Alsuwailem, Emad Salem, and Abdul Khader Saudagar. "Performance of different machine learning algorithms in detecting financial fraud". In: Computational Economics (2022). DOI: 10 . 1007/ s10614 - 022 - 10314-x.
[19] Jiawei Han, Jian Pei, and Micheline Kamber. Data mining: concepts and techniques. Elsevier, 2011.
[20] Kevin P Murphy. Machine learning: a probabilistic perspective. MIT press, 2012

Data quality refers to the basic characteristics of any data- accuracy, completeness, consistency, timeliness, etc.[21] Essentially it should be accurate and unambiguous, complete with all the required values, uniform and relevant.

Scalability in this context means the AML model's capability to process large amounts of data without requiring significant change in the model every time. A large number of concurrent users, storage capacity, large transaction numbers, etc should not be a hindrance to a good AML model.[22]

Data accuracy means the model's capability to reduce the number of false positives, i.e. the number of "suspicious activities" it detects which is not suspicious per se. This has to be done without decreasing the efficiency of the model to process large amounts of data.[23]

Reaction time is the time taken by the model to go through millions of transactions to detect any suspicious activity or to identify a pattern.

There are two common machine learning ways for AML. These include:

i. Data Preparation
ii. Machine Learning Model

i. Data Preparation

It is the collecting, gathering, and structuring of data in a way that it can be used by business models. It improves the data quality. Data preparation is done to ensure that the data being fed to the system is accurate and consistent. This helps in making sure that the output given by the AML model is correct to a greater extent. However, data often has missing values, mistakes, or non-compatible formats when coming from various sources. Fixing all of this is a part of data preparation.

Data preparation involves gathering raw data from different sources- it could be bank transactions, account records, etc. It further includes several processes like data pre-processing, data profiling, and data cleansing. Data pre-processing is a step in many machine learning processes where the data's structure is changed to make it easier for machines to understand. Most machine learning models work better with organized data. For example, preprocessing bank transaction information enables the model to recognize client behavior and detect suspicious patterns.

Data profiling involves evaluating the data to understand its structure and relationship with other datasets. It helps to identify patterns, anomalies, and inconsistencies in it.

Finally, data cleansing is done which is the process to correct errors in the data to create a complete and accurate dataset for analysis. Errors are majorly of three types: faulty data (typos etc.), inconsistent values, and missing values.

Usually, data preparation is the most time-consuming part of the machine learning model.[24]

ii. Machine Learning Model

Machine Learning Models, or MLM models are Artificial Intelligence subsets that allow computers to "self-learn" without much detailed prior knowledge. It adapts to the digital environment it is given and analyses data accordingly to give output without much human intervention.[25] It focuses on developing algorithms that can learn from and improve over time without explicit programming.[26]

This is especially useful in the AML context because which transaction is laundered cannot be detected manually through millions of transactions. The machine is instead fed with the patterns that could potentially lead to money laundering, and the MLM goes through the transactions to detect them.[27] [28]

Apart from these, data mining and pattern recognition algorithms enable the analysis of large datasets to identify unusual transaction patterns, detect money laundering schemes[29], and generate alerts for further investigation. Natural language processing (NLP)

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[21] Roger H Blake and Paul Mangiameli. "The Effects and Interactions of Data Quality and Problem Complexity on Data Mining." In: ICIQ. 2008, pp. 160–175.
[22] Varun Chandola, Arindam Banerjee, and Vipin Kumar. "Anomaly detection: A survey". In: *ACM computing surveys* (CSUR) 41.3 (2009), pp. 1–58
[23] Jiawei Han, Jian Pei, and Micheline Kamber. Data mining: concepts and techniques. Elsevier, 2011
[24] Shichao Zhang, Chengqi Zhang, and Qiang Yang. "Data preparation for data mining". In: *Applied artificial intelligence* 17.5-6 (2003), pp. 375–381.
[25] Michael I Jordan and Tom M Mitchell. "Machine learning: Trends, perspectives, and prospects". In: Science 349.6245 (2015), pp. 255–260
[26] Google Cloud, https://cloud.google.com/learn/artificial-intelligence-vs-machine-learning#:~:text=Instead%20of%20explicit%20programming%2C%20machine,trained%E2%80%94exposed%20to%20more%20data.
[27] Bharadiya, Jasmin. (2023). Machine Learning and AI in Business Intelligence: Trends and Opportunities. International Journal of Computer (IJC). 123-134.
[28] Alotibi, Johrha & Almutanni, Badriah & Alsubait, Tahani & Alhakami, Hosam & Baz, Abdullah. (2022). Money Laundering Detection using Machine Learning and Deep Learning. International Journal of Advanced Computer Science and Applications. 13. 10.14569/IJACSA.2022.0131087.
[29] Zenghan G. and Mao Ye, A framework for data mining based anti money laundering research, *Journal of Money Laundering Control (2007)*, DOI:10.1108/13685200710746875

techniques are utilized to analyze unstructured data sources such as text documents, emails, and social media posts to extract relevant information and detect potential red flags related to money laundering activities.[30] [31]

Researchers are also exploring deep learning techniques that combine neural networks and advanced computing power to identify complex money laundering patterns within global criminal networks.[32]

By using such AI algorithms, financial institutions can monitor their transactions, and perform customer due diligence and risk assessment. Trained AI applications enable the detection of suspicious activities and reduce false positives.

A good AML software will assist companies complete these AML tasks:

- Verify identities of individuals
- Conduct due diligence on customers (Customer Due Diligence CDD)
- Identify and track changes in beneficial ownership (Ultimate Beneficial Owner UBO)
- Check customers against politically exposed persons (PEPs) and sanctions lists
- Use automated tools to screen for negative media coverage
- Evaluate and update financial crime risk levels
- Monitor transactions and report any suspicious activities
- Maintain records of due diligence processes carried out by the company[33]

A good example of an AML AI is the one provided by Google Cloud. Google Cloud's Anti Money Laundering AI (AML AI) product is an API that scores AML risk. It is used to identify risks with fewer false positives and less review time. The main function of this API is to generate monthly risk scores for retail and commercial banking customers and is mainly marketed for financial services. In this, the financial institutions provide their own data to train their Machine Learning models that give the risk scores of any transaction.

This system examines transactions, accounts, customer relationships, company, and other data to identify patterns, instances, groups, anomalies, and networks for retail and commercial banks and shows which transactions could potentially be a part of money laundering.

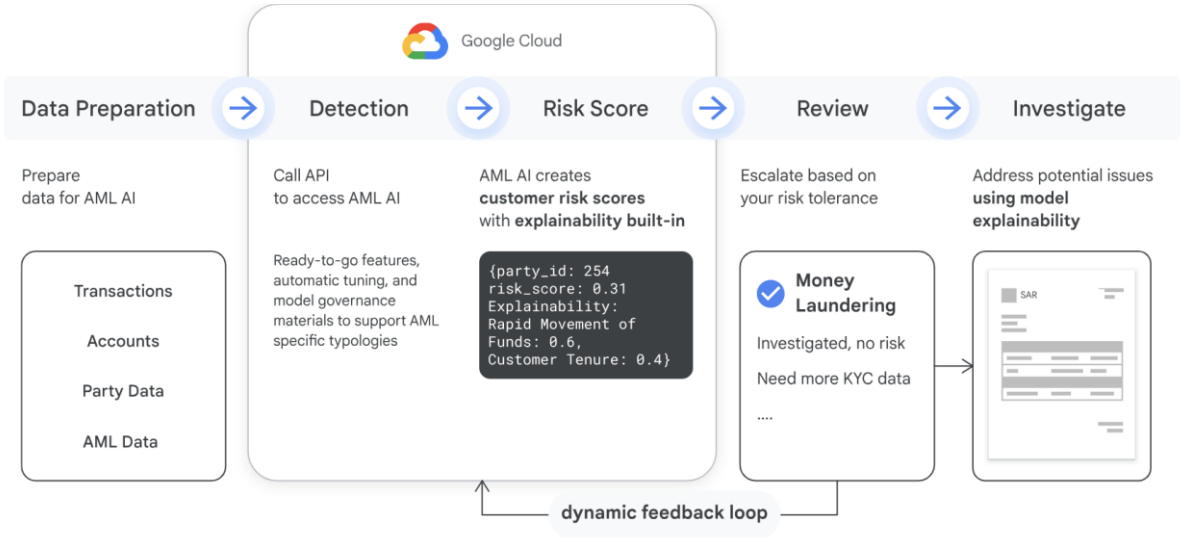

Image source: Google Cloud[34]

AML AI can identify five types of potential money laundering. These include:

i. **Laundering of money via risky jurisdictions and activities occurring cross-border**
Here, the money launderers try to transact through countries with weak AML laws in place so that their transactions are not flagged. This can be done via shell companies, trusts, and other legal entities incorporated in such jurisdictions.

[30] Paper SAS2225-2018 Harvesting Unstructured Data to Reduce Anti-Money Laundering (AML) Compliance Risk Austin Cook and Beth Herron, SAS Institute Inc.
[31] Zhang, J., Blaschke, T., Chen, Y., Chen, T., & Terzi, E. (2022). AI for anti-money laundering: A framework for representation learning. Applied Sciences, 12(2), 728
[32] Chen, T., & Terzi, E. (2019). Problems and solutions in developments of AI in anti-money laundering: A survey. ArXiv. https://arxiv.org/abs/1910.07450.
[33] Gabija Stankevičiūtė, iDenfy, Anti-Money Laundering (AML) Software: Explanation, Features & More, https://www.idenfy.com/blog/anti-money-laundering-aml-software/#2-what-is-the-meaning-of-aml-in-software
[34] Google Cloud, https://cloud.google.com/financial-services/anti-money-laundering/docs/concepts/overview

ii. **Laundering of money via domestic funneling and pass-through funds**
Money launderers use a method called funneling to introduce illegally obtained funds into the financial system, making it hard to trace the money's original source. This process is the initial step in money laundering and involves transferring illicit funds into the financial system for further laundering.

iii. **Laundering of money via shell companies and professional enablers**
In this, the money launderers use shell companies, i.e., companies that exist only on paper but do not have actual business or assets, to make transactions that look like legitimate business transactions to hide the real source of the funds.

iv. **Money laundering through structuring funds**
Usually, huge transactions are under the radar of the government or the authorities in charge of any potential money laundering activities. Under this technique, the money launderers split the amount into smaller chunks and then do the required transactions so as to remain below the threshold of notifying the authorities. This can be done either by splitting the amount into smaller transactions or using several individuals ("smurfs") to transact on their behalf.

v. **Money laundering through money mulling**
Money launderers enlist individuals known as "money mules" to handle illicit funds on their behalf. These money mules may be either unaware of their involvement or complicit in the illegal activities. They are tasked with activities such as opening bank accounts, receiving and transferring money, or making purchases using illegal funds to disguise their origin and give them a legitimate appearance. By acting as intermediaries, money mules help make the transactions harder to trace.[35]

There have been several cases where the implementation of AI in the AML process has significantly improved its detection. Major instances include:

1. **SAS and Nordea Bank**

SAS's AI AML technology was used by Nordea Bank to detect suspicious behavior in consumer transactions. For this, the system used machine learning and natural language processing. As a result, it showed an improvement of 50% in the detection of high-risk situations and a drop of 60% in false positives after 18 months.[36]

2. **Feedzai and FTC Capital**

Feedzai's machine-learning software was used by FTC Capital to detect potential money laundering transactions. It reduced false positives by 95% and increased detections by 25% in the first year itself.[37] [38]

Overview of Anti-Corruption Efforts in India

India has a long history of corruption, with cases of bribery, fraud, and embezzlement occurring in public, private, and civil society sectors. To address this, the Indian government has implemented several anti-corruption laws and established specialized agencies to investigate and prosecute corrupt practices. These include laws like the Income Tax Act, of 1961, the Prevention of Corruption Act, of 1988, the Benami Transactions (Prohibition) Act, of 1988 to prohibit benami transactions, and the Prevention of Money Laundering Act, of 2002. The top investigative body in India is the Central Bureau of Investigation (CBI), which looks into cases of serious crimes, economic violations, and corruption. Additionally, each state in India has its Anti-Corruption Bureau (ACB) tasked with investigating corruption cases at the state level.

In spite of these initiatives, corruption continues to pose a serious threat to India's economy, public confidence, and the rule of law. Anti-corruption agencies in India face various obstacles, including limited resources, complex legal procedures, and a bureaucratic maze. In this context, the integration of AI technologies holds promise for enhancing the capabilities of anti-corruption agencies and improving their effectiveness in detecting and combating corrupt practices.

However, AI algorithms can analyze large volumes of data to identify patterns, anomalies, and trends indicative of corrupt activities. By processing structured and unstructured data sources, AI systems can uncover hidden connections, detect suspicious transactions, and prioritize cases for investigation.[39]

The Union Cabinet has recently approved a sum of Rs 10,371.92 crore investment for the national AI mission in alignment with the "Making AI in India" and "Making AI work for India" vision. The implementation of the India AI mission will be overseen by the Independence Business Division (IBD) within Digital India Corporation (DIC). The IndiaAI Innovation Centre is set to start Large Multimodal Models (LMMs) for data analysis.[40]

Furthermore, policy-level endeavors led by the Ministry of Electronics and Information Technology (MeitY), along with initiatives by NASSCOM and the Defence Research & Development Organization (DRDO), have laid the groundwork for the AI revolution in India. The Centre for Artificial Intelligence and Robotics (CAIR) under DRDO has been founded to spearhead research and

[35] Google Cloud, https://cloud.google.com/financial-services/anti-money-laundering/docs/concepts/overview
[36] SAS. (2021). AI-driven AML gives Nordea 50% detection boost. https://www.sas.com/en_gb/customers/nordea.html.
[37] Feedzai. (2018). Feedzai helps FTC capital reduce false positives by over 95 percent. https://feedzai.com/cases/ftc/.
[38] Ziade, Abdallah & Ziade, Fouad & Daher, Malak. (2024). Artificial Intelligence for Money Laundering Detection. 10.4018/979-8-3693-1046-5.
[39] IndiaAI, https://indiaai.gov.in/news/up-adgp-says-ai-has-revolutionised-the-investigation-of-anti-corruption-cases
[40] Times of India, *Government announces India AI mission: What it is and more,* https://timesofindia.indiatimes.com/gadgets-news/government-announces-india-ai-mission-what-it-is-and-more/articleshow/108322391.cms

development in this field. Additionally, the Indo-US Science and Technology Forum (IUSSTF) inaugurated the US-India Artificial Intelligence Initiative on March 18, 2021, aimed at nurturing AI innovation.

National initiatives like Responsible AI for Youth aim to equip the younger generation with AI skills to address the skill gap in India. The Ministry of Corporate Affairs (MCA) recently unveiled a new version of its portal, MCA 21 version 3.0, which will utilize data analytics, AI, and ML to streamline regulatory filings for companies. Moreover, India AI, a portal jointly developed by MeitY and NASSCOM, will serve as a centralized platform for all AI-related developments and initiatives in the country. Although these efforts are not directly targeted at combating corruption and money laundering, they play a crucial role in advancing AI technology in India. This progress will inevitably influence the development of AML strategies and techniques in the country.[41]

While all these efforts are not specifically to combat money laundering, they are still working significantly towards the development of AI in the country, which will ultimately reflect in the AML strategies and techniques of the country as well.

Integration of AI in Anti-Corruption Bureau (ACB) Activities

In India, the Anti-Corruption Bureau is the main investigative unit of the Vigilance Department regarding corruption cases.[42] Every state has its own Anti-Corruption Bureau that works for the eradication of corruption in government departments and to provide a corruption-free, transparent, and fair administration.[43]

Integrating Artificial Intelligence with ACB can help detect money laundering and corruption cases much more efficiently than ever before. AI algorithms can analyze vast amounts of structured and unstructured data, identify suspicious patterns and anomalies, and generate actionable insights to support decision-making by ACB investigators and analysts.[44] Machine learning models can adapt to evolving threats, detect emerging trends, and enhance the efficiency of financial crime detection and prevention efforts.

Furthermore, AI technologies can streamline and automate routine tasks. This includes processes such as data collection, processing, and reporting, that enable ACB teams to focus on high-value investigative activities and strategic decision-making.[45] The integration of AI in ACB activities also facilitates real-time monitoring of financial transactions. It helps in early detection of suspicious activities, and timely intervention to prevent money laundering and corruption. By harnessing the power of AI, ACBs can enhance their operational efficiency, reduce investigative costs, and achieve better outcomes in combating financial crimes.[46] Additionally, it helps in examining the digital reports of criminals.[47]

Challenges and Ethical Considerations

Despite the potential benefits of AI in financial crime detection, several challenges and ethical considerations need to be addressed. Data privacy and security concerns arise from the use of sensitive financial information and personal data in AI-driven algorithms.[48] The need for fairness, accountability, and transparency in how the data of the people are being used are the main ethical concerns.[49]

There are some regulations in place for effective control of ANI (Artificial Narrow Intelligence- a subset of Artificial Intelligence) technology. The European Parliament has already asked the European Commission back in October 2020 "*to present a new legal framework outlining the ethical principles and legal obligations to be followed when developing, deploying and using artificial intelligence, robotics, and related technologies in the EU including software, algorithms, and data*"[50] Regulatory compliance and legal implications also pose challenges in ensuring that AI applications adhere to existing laws and regulations governing financial

[41] Analytics India Magazine, *What Are The Key AI Initiatives Of Indian Government?*, https://analyticsindiamag.com/what-are-the-key-ai-initiatives-of-indian-government/
[42] Anti Corruption Bureau Haryana, https://acb.haryana.gov.in/
[43] Anti Corruption Bureau, Haryana, https://acb.haryana.gov.in/citizen-charter/#:~:text=Anti%20Corruption%20Bureau%20is%20the,curbing%20the%20evil%20of%20corruption.
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[46] Odeyemi, Olubusola & Mhlongo, Noluthando & Nwankwo, Ezinwa & Soyombo, Oluwatobi. (2024). Reviewing the role of AI in fraud detection and prevention in financial services. International Journal of Science and Research Archive. 11. 2101-2110. 10.30574/ijsra.2024.11.1.0279.
[47] IndiaAI, https://indiaai.gov.in/news/up-adgp-says-ai-has-revolutionised-the-investigation-of-anti-corruption-cases
[48] See, e.g., Dell Technologies, Leveraging AI for Good—A Global Opportunity for Policy-Makers, September 2, 2019, https://www.delltechnologies.com/en-us/perspectives/leveraging-ai-for-good-a-global-opportunity-for-policy-makers/.
[49] See, e.g., AI Ethics Guidelines Global Inventory, Algorithm Watch, https://inventory.algorithmwatch.org/; Deutsche Telekom, Digital Ethics Guidelines on AI (July 19, 2018), available at https://www.telekom.com/en/company/digital-responsibility/details/artificialintelligence-ai-guideline-524366; Microsoft, Microsoft AI principles, available at https://www.microsoft.com/en-us/ai/responsible-ai.
[50] European Parliament, Release: Parliament leads the way on first set of EU rules for Artificial Intelligence, October 20, 2020, https://www.europarl.europa.eu/news/en/headlines/priorities/artificial-intelligence-in-the-eu/20201016IPR89544/parliamentleads-the-way-on-first-set-of-eu-rules-for-artificial-intelligence

crime detection.[51] Such legal issues can extend to data privacy, cybersecurity, the use of anti-corruption machine learning for lawful purposes, etc.[52]

Some potential risks are not very obvious at the start but start to manifest at later stages. For example, in 2020, the Risk Indication System (SyRI), a statutory data processing tool used by the Dutch government was held to be against Article 8 of the European Convention on Human Rights (ECHR). The tool was applied only to the "problem" neighborhoods which were the poorer sections of the society. Hence the court held that it was very much possible that the SyRI would start linking fraud cases only to those societies in the long run. These societies could be discriminated against based on their socioeconomic or immigration status.[53]

Hence, by using AI tools and technologies, ACBs and law enforcement agencies can strengthen their investigative capabilities and efficiency. This can potentially reduce the impact of financial crimes on society. However, care has to be taken that the data being fed to such machine learning models are not misused and the privacy of people is not breached.

Future Directions and Recommendations for Integrating AI into Anti-Corruption Strategies

As the use of artificial intelligence (AI) in anti-corruption efforts continues to evolve, there are several key areas for future research and development. Policy changes to integrate AI in anti-corruption strategies and collaboration between AI experts and ACBs could be explored. The main benefit would arise from developing stronger AI algorithms that could be tailored to the specific needs of anti-corruption agencies. This can involve deep learning models, NLP techniques, etc.

Another segment that could be looked into is the predictive analysis, which is in the nascent stage right now, but can be significantly developed to detect any potential patterns of money laundering. Research in this area can explore the integration of real-time data sources, risk modeling techniques, and scenario planning approaches to enhance the predictive capabilities of AI systems.

A lot of changes are expected in the policy frameworks as well as the Artificial Intelligence and its integration evolves. Policymakers should establish clear regulatory frameworks governing the use of AI in anti-corruption strategies, including guidelines for data collection, processing, and sharing. This includes defining the roles and responsibilities of AI developers, anti-corruption agencies, and oversight bodies in ensuring compliance with ethical and legal standards. Policymakers could also look into collaboration with AI experts, the technology industry, and anti-corruption agencies to co-create innovative solutions for combating corruption.

Care must also be taken to sensitize government officials, specifically those involved in ACBs on how to integrate AI with their departments. Investing in training programs, skill development initiatives, and knowledge-sharing platforms to enhance the technical expertise of anti-corruption officials could be done.

Conclusion

The integration of AI in anti-corruption strategies presents significant opportunities for enhancing the effectiveness of anti-corruption measures, improving detection rates, and promoting integrity in governance. Currently, traditional AML practices are more in practice to combat money laundering and corruption, but significant advancements are being made to strengthen and popularize contemporary AML techniques involving AI and ML as well.

Several corporate giants have already started providing such APIs to help process data for potential money laundering cases. They have not only improved the detection efficiency of the system but have also reduced the number of false positives drastically. Currently, a lot of them are being employed by financial institutions to go through huge numbers of transactions in a very small amount of time. These strategies can effectively be implemented by the Anti-Corruption Bureaus of the country as well as not just financial institutions, to predict and detect any potential money laundering activity that might affect the country. Care is also taken that the information provided to such AI-integrated models is safe and secure to prevent any data breach. By focusing on future research and development, policy implications, and collaboration strategies, stakeholders can harness the transformative potential of AI technologies to combat corruption and advance the rule of law in society.

[51] Eleanor B. et. al., The ethics of Artificial Intelligence, STOA, ISBN: 978-92-846-5799-5 DOI: 10.2861/6644

[52] https://www.coalitionforintegrity.org/wp-content/uploads/2021/04/Using-Machine-Learning-for-Anti-Corruption-Risk-and-Compliance.pdf

[53] *Dutch Lawyers Committee for Human Rights v. State of the Netherlands*, No. C-09-550982-HA SAT 18-388 (Hague District Court, February 5, 2020), https://uitspraken.rechtspraak.nl/inziendocument?id=ECLI:NL:RBDHA:2020:865