

Feynn Labs Internship

Project Report on

AI Product Service Prototype Development and

Business/Financial Modelling

Submitted By,

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Topic:

Prediction of Credit Card Fraudulent Transactions

Problem Statement:

The goal is to find the best model that effectively predicts and detects suspicious financial transactions, and then automate the existing Anti-Money Laundering (AML) software by incorporating machine learning and artificial intelligence algorithms.

Product-Market Fit:

Currently, financial institutions rely on a rule-based method that emphasizes regulatory compliance. Compliance officers utilize a set of predefined rules and criteria to investigate potentially fraudulent activities. These institutions maintain records of individuals who have violated regulations or been involved in money laundering, often referred to as penalty lists or watch lists. If a transaction does not adhere to applicable laws and guidelines, the rule-based AML software raises a red flag, prompting further investigation by compliance officers. This approach provides straightforward and easily understandable results.

However, the rule-based method has limitations. It requires frequent updates of regulations to address evolving patterns of money laundering, making it difficult to respond to emerging trends. Additionally, it consumes a significant amount of time and resources, reducing efficiency. To overcome these drawbacks, it is essential to enhance the method's effectiveness through automation. Automating the AML software using machine learning and artificial intelligence algorithms is necessary to improve efficiency, accuracy, and adaptability to changing patterns of financial crime.

Target Market Specification:

The target market for Anti-Money Laundering (AML) software includes financial institutions such as banks and credit unions. These organizations utilize AML software to analyze client data and identify suspicious activities. The software facilitates various processes, including transaction monitoring, client identification authentication, and compliance management.

By implementing AML software, financial institutions can enhance their operational security and efficiency. The software filters information and provides real-time warnings, enabling organizations to effectively meet regulatory requirements and combat financial crimes. Key

functions of AML software include reporting currency transactions (CTR), monitoring transactions, identifying customers, and handling compliance requirements. Client identification and monitoring are also crucial aspects of AML software.

The primary purpose of AML software is to help businesses meet the regulatory criteria necessary for combating financial crime. These requirements are applicable to all financial institutions, making AML software essential for compliance in the industry.

Opportunities for Business:

The market for Anti-Money Laundering (AML) software solutions is experiencing rapid expansion due to the increasing instances of money laundering worldwide. The integration of IT technologies to improve operational efficiency is expected to be a significant driving factor in the global AML market. It is projected that the AML software solutions market will grow at a compound annual growth rate (CAGR) of 16.0% during the forecast period, reaching a market value of USD 3.5 billion by 2027.

The market is categorized based on deployment, type, and industrial end-use. On-premise deployment is expected to be the largest sub-segment in the forecast period, while cloud-based solutions are anticipated to experience the highest growth rate. The increasing adoption of cloud-based services by various enterprises is a key factor contributing to this growth.

In terms of software categories, Transaction Monitoring Systems, Currency Transaction Reporting Systems, Customer Identity Management Systems, and Compliance Management Software are prominent. Transaction monitoring solutions are projected to generate the highest revenue throughout the forecast period.

The deployment of transaction monitoring systems by different financial institutions to mitigate the risk of money laundering is a significant driver of growth in the AML software market. The end-use industries that are expected to contribute to this growth include IT and telecommunications, healthcare, the BFSI sector, transportation and logistics, manufacturing, the defense and government sector, retail, and the energy and utilities sector. The BFSI sector is expected to dominate the market during the forecast period.

As the adoption of AML technology increases in the financial services sector, the incidence of money-related fraud is expected to decline. This presents opportunities for businesses operating in the AML software industry to provide effective solutions to combat financial crimes and enhance regulatory compliance.

Prototype Selection:

Based on the given criteria, the selected prototype idea is to develop an Anti-Money Laundering (AML) software as a Service (SaaS) solution.

1. Feasibility:

The project is deemed feasible as it can be developed and deployed within a year as a SaaS solution. This approach allows for scalability, easy deployment, and flexibility in serving multiple clients simultaneously.

2. Viability:

The AML software solution is highly viable as it enables banks and other financial institutions to monitor customer behavior for suspected criminal financial activities through automated processes. With the increasing volume of global transactions, the demand for AML solutions in the financial industry is on the rise. By addressing the critical need for enhanced compliance and fraud detection, the AML software solution can cater to the long-term future requirements of financial institutions.

3. Monetization:

The AML software solution can be directly monetized by offering it as a service to banking and other financial institutes. The software can be released as a subscription-based model, where financial institutions pay a fee to utilize the software's capabilities for transaction monitoring, compliance management, and customer identification. This monetization approach ensures a direct revenue stream for the business.

Product Development:

The development of the AML software solution involves the following key steps:

1. Input Behavioral and Profile Data:

The AML screening process begins by collecting and organizing customer and transaction data. Financial institutions gather transaction details, Know Your Customer (KYC) information, and other customer activities. This data is then fed into the AML software for analysis.

2. Analyze Transactions:

During this phase, the AML software analyzes the collected data to identify transactions that may pose a risk. The software makes decisions based on various risk factors, including money laundering risk, fraud risk, financial crime risk, and known offender risk. The software performs functions such as AML monitoring, screening, fraud monitoring, and blacklist screening.

3. Manage Customer Risk:

Based on the analysis in the previous phase, the AML software determines whether a transaction is potentially risky or not. If a transaction is deemed valid, it is allowed to proceed. However, if a transaction is flagged as fraudulent or suspicious, it is blocked and forwarded to a compliance officer for further screening. The software learns from these decisions to improve its accuracy over time.

Business Modelling:

The chosen business model for the AML software solution is the Software as a Service (SaaS) model. This model involves hosting the software on a cloud infrastructure and offering it to users through a subscription-based pricing structure.

SaaS allows users to access the AML software by paying a membership charge, typically on an annual or monthly basis, instead of a one-time fee. This approach provides recurring revenue for the business and enables continuous product improvements, feature updates, and enhanced customer service.

The global anti-money laundering software market was valued at \$868.0 million in 2017 and is expected to reach \$1.77 billion by 2023, with a projected compound annual growth rate (CAGR) of 15.71% in the Indian market during the same period. The application of analytics and machine learning in AML is driving the acceptance of AML software in emerging economies and the cryptocurrency sector.

Research shows that the adoption of AML software as a service (SaaS) solutions is progressing, with a significant number of AML transaction monitoring systems being implemented off-premise, particularly in the cloud. In 2019, SaaS accounted for 34% of all AML transaction monitoring systems in use. The growth of the SaaS market is further supported by forecasts indicating an increase in global end-user expenditure on SaaS, reaching \$117.7 billion in 2021.

By adopting the SaaS business model for the AML software solution, the company can tap into the growing market demand for AML software, generate recurring revenue through subscription-based pricing, and leverage the scalability and flexibility offered by cloud infrastructure.

Financial Equation

Cost Estimation:

1. Employees salary

AML KYC Analyst salary in India ranges between ₹ 2.5 Lakhs to ₹ 6.5 Lakhs with an average annual salary of ₹ 3.9 Lakhs. AML KYC Analyst salary in India with less than 1 year of experience to 6 years ranges from ₹ 2.5 Lakhs to ₹ 6.5 Lakhs with an average annual salary of ₹ 3.9 Lakhs based on 263 salaries.

Estimated Take Home Salary ₹ 28,513 - ₹ 29,875/month

Team Hiring Cost:

1. Software developer

Software Developer salary in India ranges between ₹ 2.2 Lakhs to ₹ 13.4 Lakhs with an average annual salary of ₹ 5.1 Lakhs. Salary estimates are based on 120.4k salaries received from Software Developers.

Estimated Take Home Salary ₹ 38,150 - ₹ 39,343/month

2. ML Engineer

Machine Learning Engineer salary in India ranges between ₹ 3.5 Lakhs to ₹ 21.8 Lakhs with an average annual salary of ₹ 7.5 Lakhs. Salary estimates are based on 1.4k salaries received from Machine Learning Engineers.

Estimated Take Home Salary ₹ 55,703 - ₹ 57,098/month

3. Compliance officer

Compliance Officer salary in India ranges between ₹ 2.3 Lakhs to ₹ 16.0 Lakhs with an average annual salary of ₹ 5.0 Lakhs. Salary estimates are based on 799 salaries received from Compliance Officers.

Estimated Take Home Salary ₹ 37,564 - ₹ 38,765/month

4. Financial Institutional Officers

Estimated Take Home Salary ₹ 13,644 - ₹ 15,094/month

Total cost for team hiring = 20.1 lakhs

An ML project roughly cost: \$8,750 to \$26,250

Equation:

$$y = m x(t) + c$$

y = Total Profit

m = Price of Product (RS 5000)

x(t) = total sale as a function of time (Calculated by Forecasting the Market with respect to time)

c = Production cost (includes Team Hiring ,server ,software and office cost)

Code & Documentation:

The complete code is available at the following GitHub link:

<https://github.com/keerthi-63/AI-Product-Service-Prototype-Development-and-BusinessFinancial-Modelling..git>

Conclusion:

In the fight against money laundering and terrorism financing, financial institutions play a crucial role. To improve the efficiency and effectiveness of their efforts, it is essential for financial institutions to leverage machine learning and incorporate it into their watch-list filtering systems for tracking financial transactions. However, there is cautiousness within the industry regarding the automation of regulatory compliance areas due to the potential consequences of failures, including significant fines.

Machine learning algorithms have been extensively researched and investigated for their potential in combating financial crime. The goal is to reduce the "time to value" by expediting the transaction life cycle and streamlining the investigation process. By incorporating machine learning into anti-money laundering (AML) software solutions, financial institutions can enhance their ability to detect and prevent suspicious activities more swiftly and effectively.

While there are challenges and concerns associated with automating regulatory compliance, the need for faster and more accurate detection of financial crime necessitates the adoption of advanced technologies. Striking a balance between compliance and innovation is crucial for

financial institutions to mitigate risks and ensure regulatory adherence while harnessing the power of machine learning in the fight against money laundering.