BIRCH ALGORITHM BASED SUSPICIOUS CURRENCY LAUNDERING DETECTION DATA MINING TECHNIQUE

D.NAPOLEON
Department of Computer Science
Bharathiar University, Coimbatore
mekaranapoloen@yahoo.co.in

R.GOPAL
Department of Computer Science
Bharathiar University, Coimbatore
itsgopalmail@gmail.com

***Abstract*— The Money Laundering Detection System (MLDS) it refers to the activities of financial institution that perform to achieve compliances with legal requirements. Money laundering regulations combine money laundering (source of fund) with a destination of fund. Money laundering is a process of veiling the illicit origin of black money and makes them appear genuine. Money laundering is an infiltration of black money is a crucial problem from national economies. Process that takes black money and puts it through a cycle of transactions or through various accounts in one bank or within another banks. The regeneration of the cash brands the money seems to be after legitimate bases and the money cannot be drew back to its illegitimate basis. Beating legitimately learnt money to evade taxation also succeeds as money laundering. World has adopted statutory measures aimed at the effective detection and prevention of money laundering. It is a global crime which is performed by every other individual in developing and developed countries. It determines the money laundering has caused to economy. Noticing doubtful monetary dealings is a vital condition and key aspect of anti-money laundering. Methods are based on the number of transactions, and the identification implementation process is extremely restricted to the mechanism of unusual banking activities reporting. The aim of this article is to present the trends and effectiveness of money laundering counter measures from the perspective of a number of suspicious transactions.**

Keywords — *Birch Algorithm, Currency Laundering, Data Mining, Suspicious Records.*

I. INTRODUCTION

The problematic of cash laundering was tinted in 1998 by the then executive of the International Monetary Fund (IMF), who projected the amount of cash being laundered to be amid two and five per cent of global Gross Domestic Product (GDP) Money laundering is the process of converting or transferring the asset with knowledge of its being derived from an illegal source is commit with a money laundering. Labors are made to hiding the nature and origin of the illegal income made and integrating it into the monetary system without sketch attention from tax establishments or law enforcement activities. Separately from a variety of subversive doings such as drug trafficking, cybercrime, dishonesty and so forth, there are quasi-legal doings connecting the disguise of income after public establishments. Such acts produce the shadow economy the true extent of money laundering transactions is unknown and uncertain, potentially because financial firms lack incentive and tools to estimate the extent of money laundering in them accounts [1]. The currency laundering procedure has a extended history, nonetheless has changed and modified to contemporary society, globalization, and digital transformation, causing major damage to citizens, companies, and states, becoming a catalyst for illegal activities (fraud, and corruption) that lead to decreasing integrity and transparency, and creating a widespread lack of confidence markets The monitoring of suspicious transactions with respect to money laundering in a typical goes through three stages: the alert stage, case stage and the reporting stage The remaining alerts are gathered into cases built around a main suspect party and possible related parties. At this stage, several different alerts related to the very same party may be merged into a single case [2]. As a final opinion, these bags are thoroughly examined by knowledgeable examiners who brand the final choice on whether to account each circumstance to the establishments. At each phase, choices are made founded on info about the deal itself and the new deal past of bank books attached to the complicated parties. Exactly, the physical study in the second and third phases benefit from other contextual info about the gatherings, unquantifiable monetary information and knowledge. As discriminating between the reported transactions and all other types of transactions. Money laundering is a process of disguising the illicit origin of black money and makes them appear genuine. Money laundering is a process that takes illegally obtained or black money and puts it through a cycle of transactions or through various accounts in one bank or between banks [3]. The rotation of the money brands the money seems to be from genuine bases and the money cannot be drew back to its unlawful source. Hiding legally acquired cash to avoid assessment also succeeds as money washing. Moreover, a usual global confidence was that in an exertion to hide and hide the illegal coffers, they remained being moved to offshore authorities and duty harbors. Subsequently, the phenomenon of money laundering garnered attention as a threat to legitimacy and stability of financial systems and a source of reputational risk [4]. Supervised learning is generally preferable when data with known outcome/labels are available. For money laundering that is problematic as, in contrast to other types of financial fraud, a financial institution rarely finds out if a money laundering suspect is actually guilty of crime. However, get around this issue by modelling suspicious behavior instead of actual money laundering. In argue that suspicious behavior is actually what most financial

institutions. This article presents the money laundering and financing prevention. The basic concepts are defined, the principles and fundamentals of international regulations analyzed, and the regulatory system covered by statute and money laundering prevention Regulations is presented, in conjunction with a description of the organization, remit and international actions of the Money Laundering Prevention [5]. The unlawful resources are first presented into the genuine monetary scheme to hide their actual basis. The black money is often moved around through financial services organizations like banks, insurance firms, real estate and investment brokers to further legitimize the money. Finished these manifold dealings, the unclean cash seems clean and is combined into the monetary scheme. Offenders can remove the washed cash from genuine books and put it to the backing of violence, prearranged crime, drug trading, and human trafficking. Money laundering mentions to the activities financial institutions perform to achieve compliance with legal requirements to actively monitor for and report suspicious activities [6].

II. Literature Review

Francis M. J Proposed the Providing a clear understanding of money laundering practices, it explains the investigative and legislative processes that are essential in detecting and circumventing this illegal and dangerous activity.

D. A. Flores, O. Angelopoulou, and R. J Proposed Digital forensics is the science that identify, preserve, collect, validate, analyze, interpret, and report digital evidence that may be relevant in court to solve investigations. Conversely, money laundering is a form of crime that is compromising the internal policies in financial institutions, which is investigated by analyzing large amount of transactional financial data. Extensive reporting tasks to detect money laundering without incorporating digital forensic practices to handle evidence.

E. Brockner. Ecuador Proposed the anti-money laundering as a case study to illustrate the benefits of cross-disciplinary engagement when major policy making functions develop separately from public policy design principles. Essential glitches may untruth in its place by the article of the essential rule medicine. With an important policymaking function operating largely as an independent of specialist illustrate the benefits of cross-disciplinary engagement when major policy making functions develop separately from public policy design principles.

Anna Simonova Proposed the Risk-based approaches to AML require banks and other financial institutions to carefully assess any potential risks they may face. This requires you to know the customer (KYC). Financial institutions must adhere to governmental regulations to prevent money laundering.

III. PROPOSED SYSTEM

Money laundering (ML) compliance programs consist of all controls and directives applied to ensure banks meet obligations and are protected against regulatory penalties.

A. Money Laundering Compliance

Banks and other financial institutions are required to appoint a compliance officer that provides oversight for the ML compliance program and acts as a liaison for the financial authorities. The ML compliance officer should be a senior employee with the expertise and authority to carry out their role effectively.

B. ML Training

Bank employees should undergo ML training to remain capable of identifying suspicious transactions for potential money laundering or illegal financing. The bank's policies should also include ongoing ML training, keeping employees well-informed to adapt to new legislation and emerging trends in methodologies. Money Laundering (ML) compliance programs should include the process of submitting a suspicious activity report (SAR) to financial authorities if potential money laundering is observed. The proposal procedure of SAR must be straightforward and comprehensive of contributions from older organization.

BIRCH (balanced iterative reducing and clustering using hierarchies) is an unsupervised data mining algorithm that performs hierarchical clustering over large data sets. Through alterations, it container also be rummage-sale to hurry k-means clustering and Gaussian mixture demonstrating with the expectation-maximization algorithm.

Money Laundering (ML) compliance programs must monitor customer transactions for suspicious activities and evaluate their client's risk profiles. Transaction monitoring should detect transactions above regulatory thresholds, unusual transaction patterns, any transaction involved or sanctioned individuals and any transaction involving a high-risk country. The record-keeping practice is essential at every stage of the ML process. Banks necessity assess monetary dangers based on their client annals. A bank's ML compliance program should cover the need for effective record keeping and records from on boarding to monitoring, screening and submission of SARs. Banks should perform a risk assessment with KYC (Know Your Customer) and CDD (Customer Due Diligence) procedures upon every customer on boarding. With a greater knowledge of customer criminal activity risk levels, banks can more strategically focus their efforts. Banks necessity to safeguard that they do not do commercial with persons, businesses or republics comprised in global sanctions lists. A bank's AML compliance program should take all relevant sanctions lists into account, including those lists issued by national and international authorities. For instance, banks in the United States must shade customers against the U.S. Office of Foreign Assets Control (OFAC) authorizations tilt. Banks must establish whether a customer is a politically exposed person (PEP). Because of their positions, PEPs are at a higher risk of being involved in money laundering. Customers who are PEPs are topic to enhance owing assiduousness events.

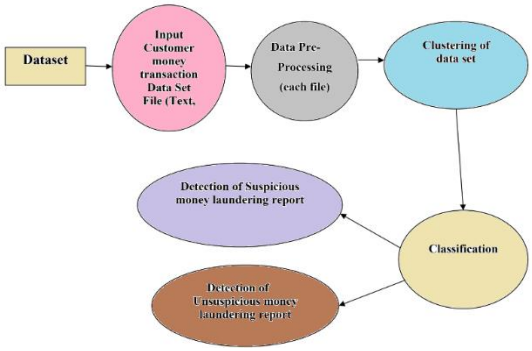

Fig 1: Proposed System Architecture Diagram

In the proposed system, this article provided a simple and efficient data mining-based solution for money laundering. Article present a data mining framework those bases on a combination of clustering and classification techniques for analyzing transaction datasets to detect these cases. A framework for detecting money laundering activities is normally consisted of four layers corresponding to four levels of analysis: transaction, account, institution and multi-institution. The first three levels: transaction, account and institution are the most important where the last one depends more or less on the organizations and their policy. The data extracted for the present study, include the number of suspicious transactions reported to the Financial Intelligence Units, the number of cases submitted for investigation to the competent authorities, and case studies on the latest cases investigated. Based on the analysis of the extracted data and the information provided through the case studies, as well as other elements and statistics from the analyzed reports, it was likely to subject sentiments on the efficiency of events to stop and battle money laundering. The distribution of datasets requires integration process in data preprocessing and that can lead as consequence to data quality issue. For instance, defines a massive dimensional support vector that consists of data type of account value is continuous; meanwhile the geography obtains discrete value. Instances of money laundering reporting are likely to be rare.

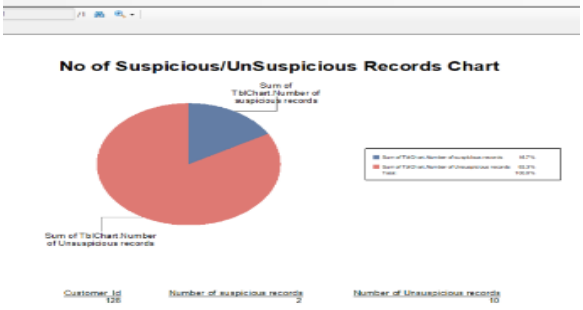

Fig 2: Suspicious Report Generation

The money laundering activities are more and more sophisticated because of this reason. Hence, they exist in the large majority of legal transactions. Therefore, data volumes and the nature of money laundering are challenges to the first generation of money laundering solutions that are rule-based mechanisms based on predefined sets of fixed thresholds for example, the using mean and standard deviation rules for volume and quantity of transactions in a period of time. Current data mining approaches in money laundering.

This phase does data normalization, noise removal and measurement discount. It too castoffs transactions that are above a certain threshold amount. These transactions and the corresponding customers form the k-means cluster. Is formerly practical on the regularized data set to classify qualities having important loadings in the primary few principal mechanisms that cover most of the alteration. There are dissimilar gathering approaches in the literature and they have been positively browbeaten for technical datasets, three-dimensional datasets, commercial datasets, etc.
They create clusters based on segments. This method recovers initially the difficulty by plummeting the gathering problematic to a division problematic. Next, it avoids the iterative search existing in other clustering algorithms such as K-means. Furthermore, it is more or less appropriate for analyzing individual behaviors or group behaviors by their transactions to detect suspicious behaviors related to “abnormal” hills in their histogram. However, this research has to analyze many customers with many transactions of variety amounts for a long period, it is difficult to detect suspicious cases, as there are very few or no “peak hills” in the histogram. Another global analysis is firstly needed and research can then apply this method for further analysis.

IV. CONCLUSION

A typology on money laundering literature has been formulated, as depicted in a review of the current literature led to the identification of money laundering and shell companies as an important area that is currently under-researched. The article on money laundering has focused on the money laundering framework and its effectiveness researchers have critiqued the money laundering regime and drawn attention to its effectiveness. Effect of money laundering on other fields and the economy, Prior research has investigated the effects of money laundering on the economy and its relationship with other fields such as accounting. Role of actors and their relative importance the role of actors such as accountants and auditors in undertaking money laundering and their respective importance has also been examined by research, Magnitude of money laundering: In order to establish the gravity of the problem, researchers have made efforts to quantify the amounts of money being laundered globally. Discovery of money laundering there too is some investigation absorbed to the approaches used to notice money laundering.

Main goal of this paper is to Design and Development architecture of illegal transaction of money transfer and black money in control using the birch algorithm with the data mining aspects.

References

[1]. M Ozaki, Ardizzi, G., Petraglia, C., Piacenza, M., Schneider, F. and Turati, G. "Money Laundering as a Crime in the Financial Sector: A New Approach to Quantitative Assessment ". (2014).

[2]. Alberto, G. S. "Spain: financial ownership file and money laundering prevention", Journal of Money Laundering Control (2016).

[3]. Compin,F. "The role of accounting in money laundering and money dirtying", Critical Perspectives on Accounting (2018).

[4]. D. A. Flores, O. Angelopoulou, and R. J. Self. Combining Digital Forensic Practices and Database Analysis as an Anti-Money Laundering Strategy for Financial, Conference-Emerging Intelligent Data and web Technologies(EIDWT) September 2012.

[5]. E. Brockner. Ecuador. Blacklisted for Money Laundering. International Relations and Security Network, April 2010.

[6]. Zengan Gao and Mao Ye. Develop a framework for data-mining based on AML research. Journal of Money Laundering Control 10(2), (2007).

[7]. Anna Simonova. F. S. Authority. Review of Firms' Implementation of a Risk Based Approach to Anti-Money Laundering (AML), 2008

[8]. Bidabad, B. Money laundering detection system (MLD) (a complementary system of Rastin banking) Journal of Money Laundering ISSN: 1368-5201 (2017).

[9]. Tian Zbau.g, Ragbu Rau)akt-ishuan, aud Mirou Liv,,y, BIRCH: An Ef%cient Data Clustering Mtthod for VPTV Largr Databases, Technical Report, Computer Scieuces Dept., (Juiv. of Wisconsiu-Madison, 1995.

[10]. R. C. T.Lee, Clustering anrdgsis ar,d its application., A+ vauces in Information Systems ,Science, Edited by J ,T. Toum, Vol. 8, pp. 169-292, Plenum Press, New York, 1981.

[11]. Martin Ester, Haus-Peter Kriegel, aud Xiaowei Xu, A Database Interface for Clustering in Largr Spatial Databases, Proc. of 1st Int'1 Conf. ou Kuowledge Discuvery aud Data Miuiug, 1995