Anti Money Laundering System to Detect Suspicious Account

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Abstract - *Money Laundering is a criminal activity to disguise black money as white money. It is a process by which illegal funds and assets are converted into legitimate funds and assets. Money laundering occurs in three stages: Placement, Layering, and Integration. It leads to various criminal activities like Political corruption, Smuggling, Financial Frauds, etc. The Reserve Bank of India (RBI), has issued guidelines to identify suspicious transactions and send it to the Financial Intelligence Unit (FIU). FIU verifies if the transactions are suspicious or not. The process is time-consuming and not suitable to identify the illegal transactions that occur in the system. To overcome this problem we propose an efficient Anti-Money Laundering System which can able to identify the traversal path of the Laundered money using the Hash-based Association approach and success in identifying agents and integrators in the layering stage of Money Laundering by Graph-Theoretic Approach. Also, detect credit card fraud.*

***Key Words*: Data mining, Anti-Money Laundering, Apriori algorithm, FIU, Traversal Path, BLA, and FDS.**

1. INTRODUCTION

Money laundering is a process of converting unaccountable money into accountable money. Day to day the technology is getting updated and in this fast-changing technology, many merits, as well as demerits, is associated. With the advent of E-Commerce, the world has been so globalized and further the technology has made everything so user-friendly that with a single click of a button, many transactions can be performed. Fraud Detection is mandatory since it affects not only the financial institution but also the entire nation. This criminal activity is appearing more and more sophisticated and perhaps this might be the major reason for the difficulty in fraud detection. This criminal activity leads to various adverse effects ranging from drug trafficking to financial terrorism. There are three stages involved in money laundering; placement, layering, and integration.

Data Mining is an area in which huge amounts of data are analyzed in different dimensions and angles and further categorized and then eventually summarized into useful information. Data Mining is the process of finding correlations or patterns among dozens of fields in large databases. The major issue lies in this layering stage of money laundering because here the transfer of money may be from one to one or one-to-many.

The difficulty arises in tracing out all the chaining of transactions. In the integration stage, all the cash is transferred to a beneficiary often called as Integrator. At this stage, all the transactions are made legal. To trace out the dirty proceeds immediately this proposed frame work aims at developing an efficient tool for identifying the accounts, transactions and the amount involved in the layering stage of money laundering.

The rest of the paper is organized as follows; the literature survey is presented in section 1.2 of the paper, section 1.3 of the paper deals with the existing system. Section 2 the proposed system and in section 3 the conclusion and Further Enhancement have been explained.

Fig 1. Type of Fraud

1.1 Literature Survey

Jyoti Trehan [10] has given a detailed analysis of "Crime & Money Laundering – Indian Perspective" (2008) Oxford University Press. The author has researched the topic from the Indian perspective especially its impact on national security and issues due to economic liberalization. Attempt was made to examine money laundering laws in India and initiatives at the domestic level to curb money laundering. Gordon has given a detailed analysis of money laundering. Emerging markets have loose regulations concerning anti-money laundering. Money launderers often set up trade companies and have it acquire highly marketable goods and resell it well below market prices. This gives an unfair advantage to the fraudulent companies because they are not concerned about profits as legitimate business is. This destroys competition in the free market. Also, fraudulent companies can obtain much cheaper financing from illegal sources than legitimate businesses that need financing from free markets. Governments are worried about two implications of money laundering one is, money laundering

acts as a mechanism to aid terrorist financing and second is, money laundering reduces government tax revenues in a wide variety of ways.

R.cory Watkins et al. [6] has mentioned that from the time of layering stage criminals try to pretend that laundered money looks like funds from legal activities and that cannot be differentiated normally. Traditional investigative approaches use to uncover money laundering patterns can be broken down into one of three categories: Identification, detection avoidance, and supervision.

Nhien An Le Khac et al. [1][2][3] constructed a data mining based solutions for examining transactions to detect money laundering and suggested an investigating process based on different data mining techniques such as Decision tree, genetic algorithm, and fuzzy clustering. By merging natural computing techniques and data mining techniques; knowledge-based solutions were proposed to detect money laundering. Different approaches were proposed for quick identification of customers of Anti-money laundering. In their paper implemented an approach wherein they determined the important factors for investigating money laundering in the investment activities and then proposed an investigating process based on clustering and neural network to detect suspicious cases in the context of money laundering. To improve running time heuristics such as suspicious screening were applied.

Yang Qifeng et al. [4] in their paper mentioned that online payment becomes a convenient way to launder money with the development of e-commerce. They constructed an anti-money laundering system as a service function of the union bank center. This system can monitor and analyze the transaction data dynamically, and provide auxiliary judgment and the decision support for anti-money laundering.

1.2 Existing System

Money laundering is a criminal activity to disguise black money as white money. It is a process by which illegal funds and assets are converted into legitimate funds and assets. Money Laundering occurs in three stages: Placement, Layering, and Integration. It leads to various criminal activities like Political corruption, smuggling, financial frauds, etc. In India, there are no successful Anti-Money laundering techniques that are available. The Reserve Bank of India (RBI), has issued guidelines to identify suspicious transactions and send it to the Financial Intelligence Unit (FIU). FIU verifies if the transaction is suspicious or not. This process is time-consuming and not suitable to identify the illegal transactions that occur in the system. To overcome this problem, we propose an efficient Anti-Money Laundering technique that can able to identify the traversal path of the Laundered money using the Hash-based Association approach and successful in identifying agents and integrators in the layering stage of Money Laundering. Also, find out the credit card fraud.

2. Proposed System

Identifying Money Laundering is a very difficult task due to the vast number of transactions was involved. To overcome this problem, we propose a method which makes use of Hash-based association mining for generating frequent transactional datasets and a graph-theoretic approach for identifying the traversal path of the suspicious transactions, using which all possible paths.

In the proposed system, we present a Behavior and Location Analysis (BLA). Which does not require fraud signatures and can detect fraud by considering a cardholder's spending habit.

1. Card Transaction processing sequence by the stochastic process of BLA.

2. The details of items purchased of individual transactions are usually not known to any Fraud Detection System (FDS) running at the bank that issues a credit card to the cardholders.

3. Hence, we feel BLA is an ideal choice for addressing this problem.

4. Another important advantage of the BLA-based approach is a drastic reduction in the number of false-positive transactions identified as malicious by an FDS although they are genuine.

5. An FDS runs at a credit card issuing bank. Each incoming transaction is submitted to the FDS for verification.

6. FDS receives the card details and the value of a purchase to verify, whether the transaction is genuine or not.

7. The types of goods that are bought in those transactions are not known to the FDS.

8. It tries to find any anomaly in the transaction based on the spending profile of the cardholder, shipping address, and billing address, etc.

9. If the FDS confirms the transaction to be of fraud, it raises an alarm, and the issuing bank declines the transaction.

The fraud detection features use user behavior and location scanning to check for unusual patterns. These patterns include user characteristics such as user spending patterns as well as usual user geographic locations to verify his identity. If any unusual pattern is detected, the system requires re-verification. The system analyses user credit card data for various characteristics. These characteristics include user country, usual spending procedures. Based upon previous data of that user the system recognizes unusual patterns in the payment procedure. So now the

system may require the user to login in again or even block the user for more than 3 invalid attempts.
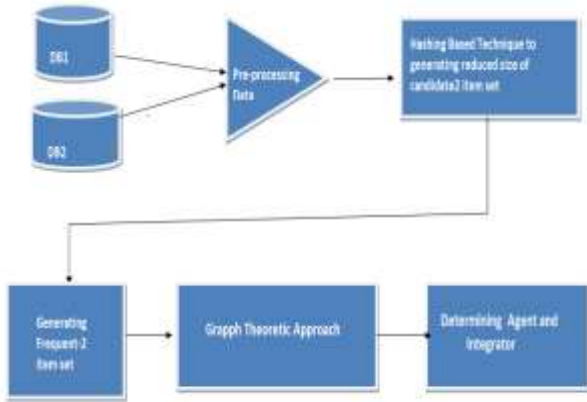

Fig 2. Proposed System Model

2.1 Algorithm Used:-

Apriori algorithm is an influential algorithm for mining frequent item-set for association rules. The Apriori algorithm solves the frequent item-sets problem. The algorithm analyzes a data set to determine which combination of items occurs together frequently. Apriori uses the bottom-up approach, where the frequent subsets are extended one item at a time. Apriori is designed to operate on the database containing transactions. The Apriori algorithm is at the core of various algorithms for data mining

2.2 Diagrams

2.2.1 Use-case Diagram

problems. The best-known problem is finding the association rules that hold in a basket-item relation. Here we used the Apriori algorithm because there is a large amount of data and it is very difficult to examine bank data, so this Apriori algorithm is useful to scan a large amount of bank data.

Basic idea:-

1. An item-set can only be a large item-set if all its subsets are large item-sets.

2. Frequent item-sets: The sets of items that have minimum support.

3. All the subsets of a frequent item-set must be frequent e.g. {PQ} is a frequent item-set {p} and {Q} must also be frequent.

4. Find frequent item-sets frequently with cardinality 1 to K (K-item-set).

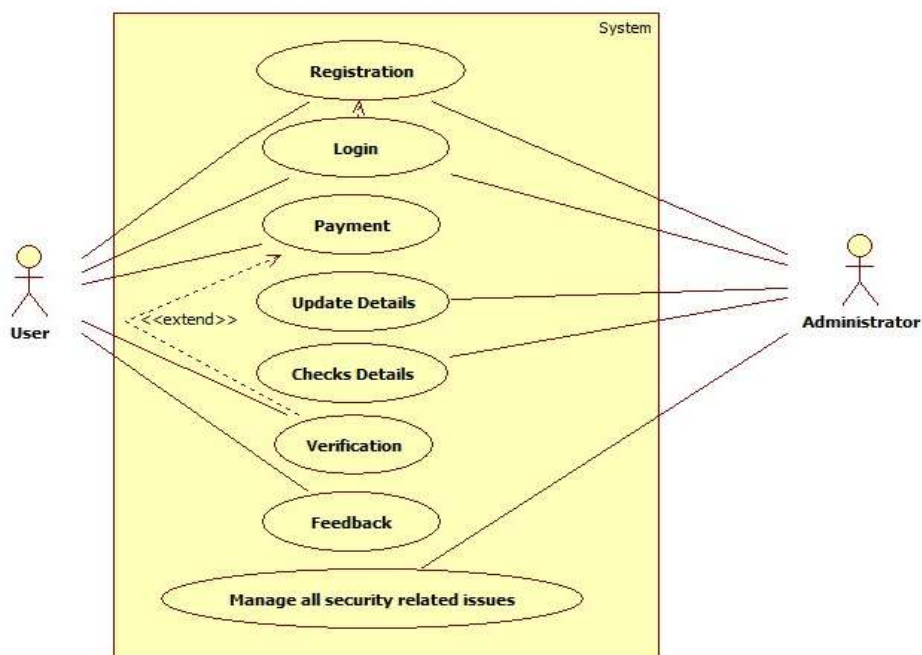5. Generate association rules from frequent item-sets.

Fig 3. Usecase Diagram
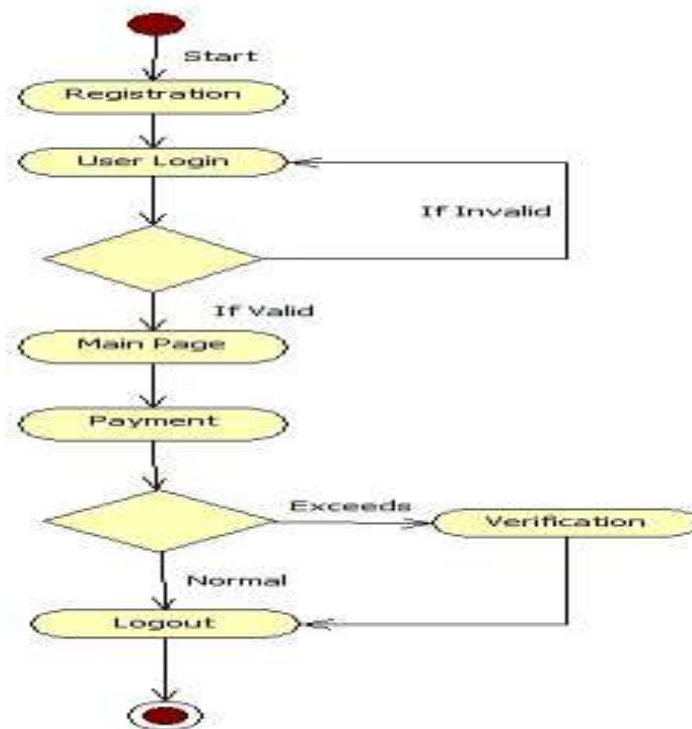
2.2.2 Activity Diagram

Fig 4. Activity Diagram

3. CONCLUSION

Credit card fraud is an act of criminal dishonesty. This article has reviewed recent findings in the credit card field. This paper has identified the different types of fraud, such as bankruptcy fraud, counterfeit fraud, theft fraud, application fraud, and behavioral fraud, and discussed measures to detect them. Such measures have included pair-wise matching, decision trees, clustering techniques, neural networks, and genetic algorithms. From an ethical perspective, it can be argued that banks and credit card companies should attempt to detect all fraudulent cases. Yet, the unprofessional fraudster is unlikely to operate on the scale of the professional fraudster and so the costs to the bank of their detection may be uneconomic. The bank would then be faced with an ethical dilemma. Should they try to detect such fraudulent cases or should they act in shareholder interests and avoid uneconomic costs? As the next step in this research program, the focus will be upon the implementation of a 'suspicious' scorecard on a real data-set and its evaluation. The main tasks will be to build scoring models to predict fraudulent behavior, taking into account the fields of behavior that relate to the different types of credit card fraud identified in this paper, and to evaluate the associated ethical implications.

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