

# Fraud Detection System for Banking Services

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**Abstract:** Bank fraud is obtaining money, assets, or other valuable properties owned by financial institutions, or obtain money from depositors by use of potentially illegal means. Bank frauds have always remained an attractive source of revenue for the fraudsters. Frauds not only affect the bank customers but also result in loss to the bank in terms of profitability and image. These issues can't be processed manually, requiring a series of antifraud measures. Fraud detection is not only concerned with capturing the fraudulent activities, but also implementing processes of continuous monitoring, to capture them as quickly as possible. Data mining technology and machine learning techniques will be applied to form an Anti-Fraud System, which will collect all the information regarding the transactions. The system will then determine whether a transaction is fraudulent or legit.

**Keywords:** Data mining, Machine learning, Fraud detection, Anti-Fraud system.

## I. INTRODUCTION

Banks are of due importance in an economy of a country. In recent years, this sector has been gaining tremendous importance. Banking industry in India has travelled a long way to assume its present state. The nationalization of 14 major commercial banks in 1969, 5 more on 15 April 1980 and the liberalization of economy in 1991 not only supported the growth of banks in India, but also have emerged banks as engines for social change. An ideal banking system should protect depositor's interest and faith. Banks should have a supervised and well regulated system to ensure its fair working. Due to their nature of dealing with money daily, it is very tempting for the people to make personal gains by means of fraudulent activities. With the increase in banking business, bank frauds are also increasing. The fraudsters are also becoming sophisticated and ingenious with the advancements. Bank frauds, unlike other frauds are concerned with huge amounts that runs into lakhs and crores of rupees. As per the Section 5(b) of the Banking Regulation Act 1949[1], "Banking is the accepting for the purpose of lending or investment, deposits of money from the public, repayable on demand or otherwise." Bank frauds not only results in wrongful gain to the fraudsters, but also imposes monetary loss to the bank. Banks deal with exponentially huge data having details of the daily transactions. To detect a fraudulent transaction, the fraud control team members need to have a look at every transaction that occurs, but, this process can no longer be performed manually. It can be eased by using various data analysis tools and programs. There are plenty of fraud detection solutions, but, the main criticisms is the lack of timeliness in the detection. As timeliness is crucial in decreasing financial losses. The main objective of this paper is to highlight promising system that will not only detect the suspicious transactions, but also make recommendations to improve the control activities.

## LITREATURE SURVEY

Fraud in the money related area which incorporates the expense Organization area, is progressively turning into a significant issue and thus, this exploitative execution of citizens' impacts contrarily the wages accessible to open administrations and additionally creating harm on the legit citizens. Organization, regardless of whether they are open or private, neighborhood or multinational, enormous or little, they are influenced by this reality of misrepresentation, which truly undermines the standards of concordance and decency of residents under the steady gaze of the law and undermines business. At present, an ever increasing number of organizations are utilizing BI apparatuses to investigate deals and other related value-based information to recognize extortion. Fraud detection has drawn a great deal of research intrigue and various procedures, with extraordinary accentuation on neural systems, information mining and dispersed information mining have been proposed. Use of Machine Learning in Fraud detection. Machine learning is a part of artificial intelligence which encompasses many algorithms to learn from data and make decisions on new events. Its power comes from the available information from the system. There is no one-size-fits-all, it is as good as the data it relies on. The data comes from various Data Sources. Data source The data is preprocessed and anonymized after it is collected from the applet of the Bank. The data is complex and heterogenous:

- Geographic information
- Browser information
- OS information
- Timing information

## Data Mining in India

In India, the Chairman of the Central Board of Direct Taxes confirms that Income Tax Department (ITD) has embarked on an ambitious computerization plan including implementation of a comprehensive Data Warehouse and Business Intelligence (DW & BI) to improve taxpayer services, promote voluntary compliance and deter tax evasion. The main objective of this plan when implemented is to Discover non-filers with potential tax liabilities, Identify potential under-reporting taxpayers, Improving compliance of tax evaders, Identify noncompliance in service sector and implicit linkages for effective investigation.

Data mining can be utilized as a part of the banking industry is in fraud detection. Having the capacity to identify false activities is an increasing concern for some organizations; and with the assistance of information mining more fake activities are being recognized and detailed. Two distinctive methodologies have been produced by money related foundations to recognize misrepresentation designs. In the first approach, a bank taps the information distribution center of an outsider (conceivably containing exchange data from numerous organizations) and utilizes information mining projects to distinguish misrepresentation designs. The bank would then be able to cross-reference those examples with its own database for indications of inward inconvenience. In the second approach, fraud detection distinguishing proof is based entirely on the bank's possess interior data. The greater part of the banks are utilizing a hybrid approach. One framework that has been fruitful in recognizing misrepresentation is Flacon's fraud evaluation system. It is utilized by nine of the main ten banks,

### Top 10 Frauds in Indian Banking Sector

The Reserve Bank of India – RBI maintains data on frauds on the basis of area of operation under which the frauds have been perpetrated. According to such data pertaining, top 10 categories under which frauds have been reported by banks are as follows

- 1) Credit Cards
- 2) Deposits – Savings A/C
- 3) Internet Banking
- 4) Housing Loans
- 5) Term Loans
- 6) Cheque / Demand Drafts
- 7) Cash Transactions
- 8) Cash Credit A/c (Types of Overdraft A/C)
- 9) Advances
- 10) ATM / Debit Cards

## PROPOSED SYSTEM

**SIMULATOR:** This is the first element, it is used to accept input from user. As for demonstration purpose, it is feasible to accept details from user through a form and these details would be passed on to Rule Builder.

**RULE BUILDER:** This is the element where cases would be filtered based on violation of rules. Based on Study done on which type of frauds are committed and how are they carried out and generalizing it in conditions and creating rule from it, this is known as association rule mining.

**AFS:** This is the main element of whole system, as the cases which are filtered through rule builder are added here and investigated further by afs admins and add remarks based on study they have done and information received, admin can either declare case as fraudulent ,or pass it another admin, or declare it as false alert.

Categories of cases:

**Loan Approval:** When a customer requests for loan, it takes certain days for loan approval (duration varies from bank to bank, duration is calculated based on average of prior cases) if the loan is approved in less than the prescribed days and rule would be violated and alert would be generated

**Digital Wallet:**

This based on behavior analysis, if a person generally transfers certain amount and if once amount transfer does not match the pattern, and also device or location differs then rule is violated and alert is generated

**POS:** It is defined as point of sale , basically wherever user is using his card regularly (food, train reservation etc..) based on user's usage a pattern would be formed and if information received breaks the pattern then rule is violated and alert would be generated

**Expected Outcomes:** Unidentified fraudulent cases would be registered and will not be unregistered. Alert would be generated, with even minute change in pattern of committing fraud.



## LIMITATIONS

The internet and offline transaction environment is being often threatened more and more by various attacks. Most of them are executed by special financial malware, or this malware is used in at least at one of the multiple phases of the attack. Conducting this study properly had a number of limitations some of which are as follows:

- To have sensitive information like the data related to transactions many procedures were implemented so that we get the necessary authorizations.
- Extraction of data was also a big challenge, as most of the sensitive data came from raw data files also its size was too huge to handle. It took days to finalize the data for use.
- Duplication of data was also a major challenge to handle.

## CONCLUSION

The study confirms that data mining and machine learning are the key combatants against error and frauds. The banking sector is the most important sphere of operation currently. Case studies too have proved helpful in a great way. Not only it serves the purpose of our research and project but also it will be further enhanced to achieve real-time integration which is a prior scope for the future of our project. The purpose of this study was to establish a system to enable recognition of the extent of the challenges in fraud detection and also the automation and development of fraud detection tools using the results from the baseline study and data mining.

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