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FRAUD DETECTION TECHNIQUES IN BANKING SECTOR USING INFORMATION MINING

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Abstract – **Now a days banking sector is a very huge sector where several processes are carried out of the different subdivisions.Banking sector have a very large Information to handle various purposes such as maintaining individual details of clients to large businesses and their individual daily communications. To retrieve the specific information from this large Mining and to take important decision, and also to protected Information and prevent the frauds in Information Mining technique is used. This involves the conclusions like client relation managing, security decisions, credit decisions, physical transaction decisions, economic decisions and many more. This paper includes the overall Information Mining technique to overcome the battles of bank Information, fraud detection, Information Mining security and to make the safe businesses from the Information.**

I- INTRODUCTION:

Banking sector is distribution its divisions massively over a multiple area of various businesses with providing more functionality to its clients. Implementing such a large industry involves to supplies its enormous information in a secured and suitable format. Later in addition it is evolving its facilities rapidly in several operations like providing online transaction or contribution numerous strategies to their client also giving access to several other functions. So now presently banks have huge Information to store which is increasing speedily. Supervision such a large Information points to security if Information which is the most important task of Information mining. Information mining have announced various techniques and procedures that will help to focus on important pattern of Information from the data bank. And also helps to take significant conclusions.

Information mining is important tool which helps to take important decisions by picture or attractive the information and change them in some designs to understand the issues of data. Information miningis well known as knowledge discovery in database (KDD) which associates with Artificial Intelligence (AI), Decision Tree Approach, Visualization, and Genetic Algorithm.

Information miningtechnique works by following these major steps:

1) Predictive modeling
2) Clustering/Segmentation
3) Visualization
4) Link analysis
5) Deviation detection
6) Summarization

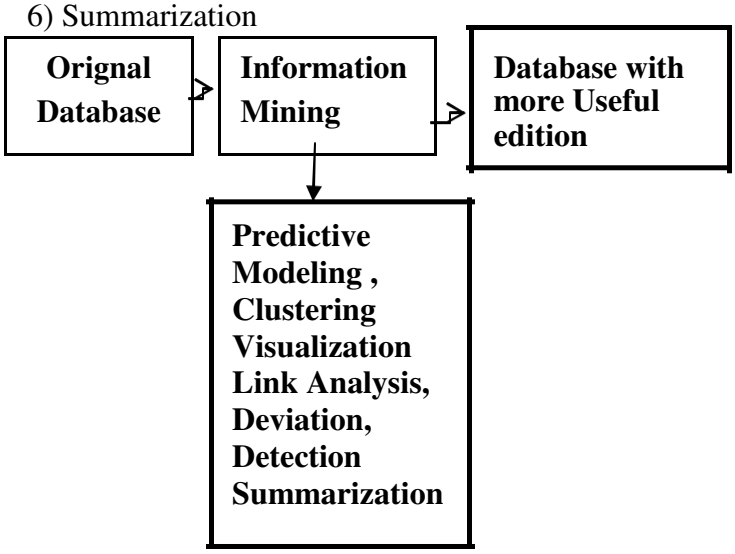

Fig.2.0 Operation in Information Mining

2.1. Predictive Modeling

Predictive displaying in information mining refers to guessing a particular pattern which will be formed by collecting specific data and which will give supplementary data about the existing database. Hence it is helpful in detecting frauds in bank database the relevant information of frauds which has been done in past records are collected and a similar pattern or statistic model is developed which will predict the future fraud hence bank can prevent it by analyzing the report generated by prognostic model. Extrapolation demonstrating can be done in numerous techniques as Decision Tree Algorithm or Artificial Neural Network Algorithm or Naive Bayes Algorithm

2.2. Clustering/Segmentation

Clustering mentions to manufacture a cluster of information from the provided database. It is required when we want to find the same group of information or identify the same arrangement for examination. Clustering can be performed with number of procedures such as K-means, K-Medoids, etc.

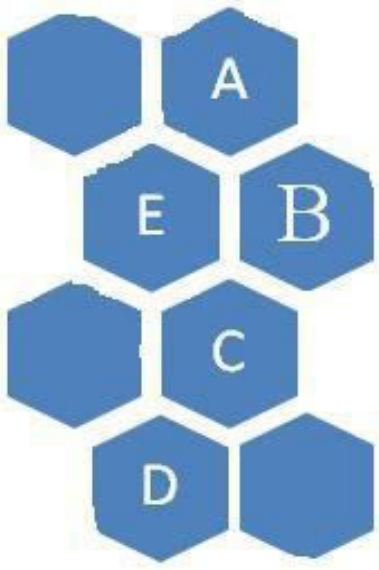

Fig. 2.1 Clustering segmentation of Database

This procedure will make group of information which is related to the structure or characteristics called as clusters Clustering will help in bank database for finding same partiality of clients or same type of transnational account holder hence it can help to attraction similar kind of fraud techniques used in fraud detection. Segmentation is performed to produce greater data patterns. Segmentation can be performed using three different procedures that is Sliding window approach top down approach or bottom-up approach. Hence segmentation is achieved because it creates better and stronger clusters than clustering procedure

2.3. Visualization

Statistics imagining is the graphical representation of material and data. By using graphic fundamentals like charts, graphs, and maps, data imagining tools provide an available way to see and comprehend trends, outliers, and patterns in data. In the world of Information Mining, data imagining tools and technologies are essential to analyze huge amounts of information and make data-driven decisions.

Visualization technique in information mining is introduced for more effective arrangement of formed data. Hence study evaluations that human brain is more well-designed to remember visualizing the image rather than remembering information in data format.Visualization translates the any raw data of characters or numbers to the image image is in the procedure of stationary graph or any kind of graphical representation. Visualization comprises systems such as tree map, scatter plot matrix, parallel coordinates, and spatial visualization Banking data base is very large and there is opportunity of inconsistent of data to do the study of banking sector file imagining method is very active. It can draw the pyramid chart of or plot matrix to meeting in which area the actual fraud has been completed or

the type of client or employee which have done the fraud also branch location where it has been done. Hence it is valuable in tracing the fraud zone and to check it.

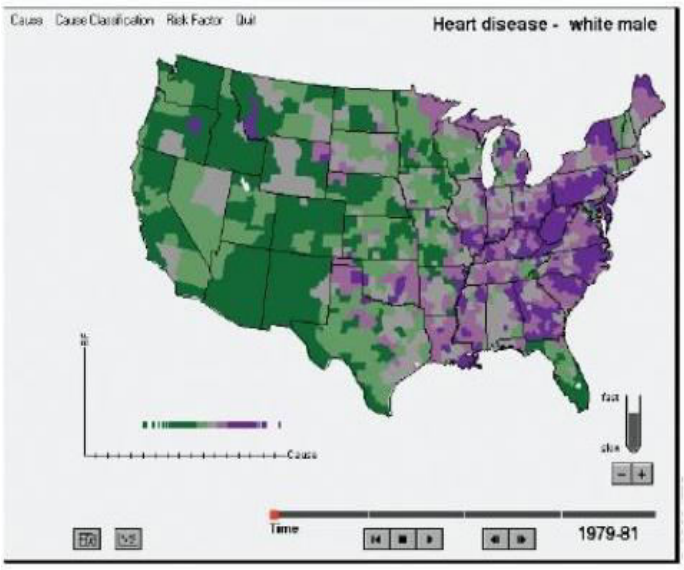

Fig.2.3.1 Special graph visualization

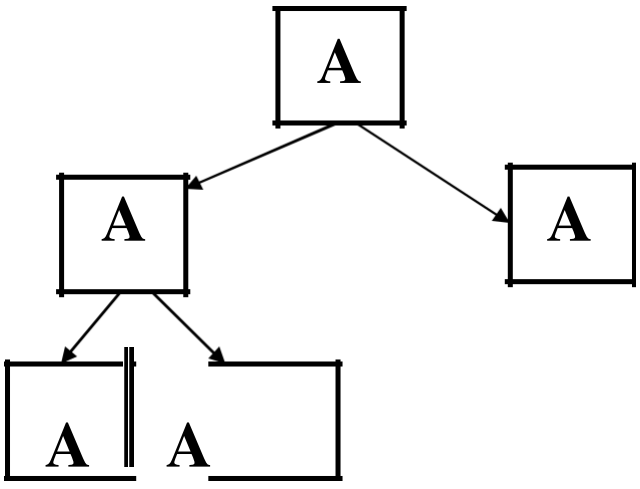

Fig 2.3.2 Tree Diagram

2.4 Link analysis

Link analysis is one of the most significant processes of information mining. It works very professionally to find out the associated data to each other. Link analysis is found out the connected data i.e. one part of database is linked with other part and that connection is recognized by link analysis. In banking database customer linked with account then account linked with transactions additional it link with type of communications and this will continued. Link analysis is based on part of mathematics called as graph theory where edges are connected to each other by some vectors to find out the correct path or some particular pattern of given data. It helps in fraud detection in many ways as bank employee can link the fraud detection area with each other and can summarize the data to find out the exact problem and their solution.

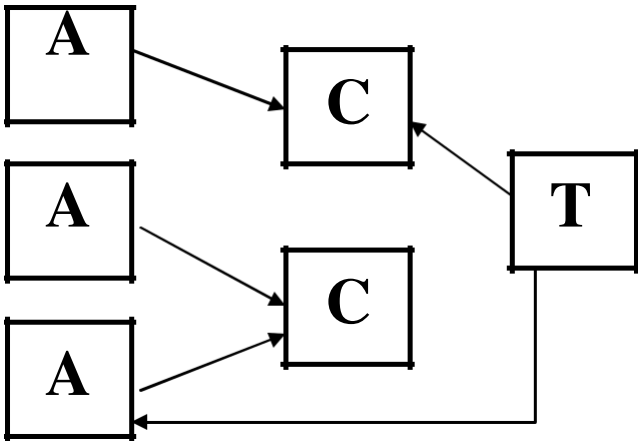

Fig 2.4.1 Link analysis A-Account C-Customer T-Transaction

2.5. Deviation detection

Deviation detection is refers to classifying the mistakes or noise or exclusion which happens in database. Clustering procedure will only cluster the pattern of strayed data and non- deviated data, clustering procedure attentions on removing the exception from the database where as unconventionality detection algorithm focuses on dividing those exception for better performance and error free data. Deviation discovery is helpful while testing the many application of bank like credit card fraud can be isolates or correct by deviation detection procedures. Deviation detection procedure considers the consecutive

exception problem to work on large databases hence it discovers the all possible exceptions on every single dataset

2.6. Data summarization

Data summarization is the main part of mining techniques at this will give the final plan to the data which we collected from the preceding operations i.e. relatives between the clusters and the dependence of the subgroups of data are explain to take the important decisions. Hence data summarization will give impression about which produce should be transported composed and which should be avoided for improved presentation also to avoid the battles of data and to prevent the data from fraud and provide security to bank database. Data summarization is process of generating the better and more instructive version of original database

3.1. Loss of integrity

Maintaining data integrity is the superior task among all other task for bank. Loss of integrity leads to improper data maintenance and that leads to frauds in banking area. When improper modification made by some threat or by some person it results into loss of data integrity. For example, bank may have many credit card holder with same name in different branch hence to maintain the integrity in this case card holders name should not conflict and data should Be conserved in a proper format.

3.2. Loss of confidentiality

Confidentiality is lost when some private data is handled by some unauthorized user or threats. Bank database holds all the personal as well as confidential information of their customers. Also it maintains the records of various industries, trust, companies with whom they have tie up. Hence, loosing such valuable information leads to a very big loss of banking industries.

3.3. Maintaining data quality

Maintaining data quality involves securing data from outsiders and including the data which is informative and useful for the organization. Including information or data which is not required anymore will only results in conflict in future database.

3.4. Financial crime detection

Today most bank industries face the problem of financial crime i.e. customers get hacked by some unknown threat likewise credit card PIN is also hacked by some threats which will leads to financial crime

4.1. Limiting access

Using Information miningalgorithm confidentiality of bank database can be maintained by clustering the group of authorized employee of bank which will handle the bank database

4.2. Remove needless group

Once certain fraud occurred in banking sector in a particular area to detect the actual theory behind it and to prevent it Information miningcan be used i.e. bank database will compare its own database patterns with other database where fraud has been detected and the similar patterns will generate using clustering algorithms. Those clusters will eliminate in deviation detection algorithms to avoid the future errors and exceptions

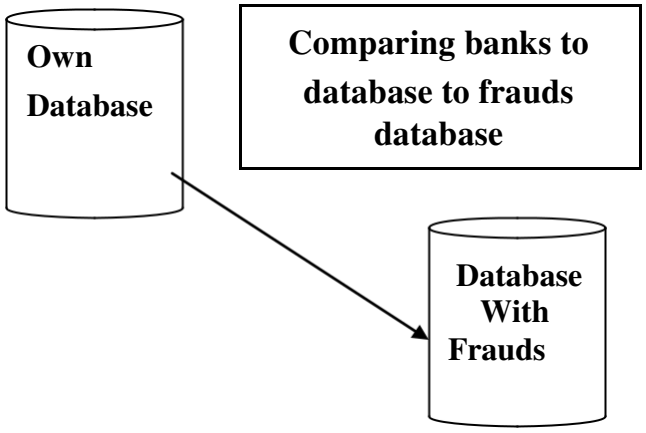

Fig 4.1 Detecting frauds and Comparing databases

4.3. Priority mechanism

To avoid the fraud bank database can be limited to some authorized people i.e. Information mininghelp to cluster the database information into priority basis and that information will link to particular authorized employee using link analysis this will secured the data in that loop only and if any fraud is detected it will be easier to detect because of link analysis system.

5. CONCLUSION

Information miningis a very important tool to prevent fraud and detecting fraud activities in bank related database. Operations performed in Information miningare used to give security to database and to enhance the decision making power. It fetches the important pattern from the large database which will help in improving database quality. This research paper includes almost all the issues related to banking database security and how Information miningis used to overcome those techniques. Paper also focuses on important algorithms like K-means or K-Medoids etc. this will give proper way to extract the data.

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