The Second Generation Data Mining Technology as an Audit Tool: A Challenge in Combating Money Laundering

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Abstrak

Bank merupakan salah satu kunci elemen dari pencucian uang ilegal menjadi dana yang legal. Sekali kesempatan muncul, pihak yang melakukan pencucian uang haram akan memanfaatkan kondisi yang menguntungkan tersebut. Pada umumnya bank yang mempunyai pengendalian anti-pencucian uang yang lemah dan mempunyai kekurangan dalam penerapan teknologi pencegahan pencucian uang, menjadi sarana prioritas utama bagi para pelaku pencucian uang ilegal. Tipe bank-bank tersebut biasanya mempunyai resiko yang sangat tinggi sebab bank-bank tersebut sadar atau tidak sadar sudah menjadi bagian dari proses pencucian uang. Hingga saat ini berbagai tindakan pencegahan telah dilaksanakan oleh berbagai negara untuk melakukan audit terhadap pola-pola pencucian uang dengan menerapkan berbagai kemajuan teknologi, seperti generasi kedua *data mining technology*. Namun demikian aplikasi *data mining technology* ini tidak dapat menjamin sepenuhnya bahwa setiap pola-pola pencucian uang tersebut dapat teridentifikasi karena masih mempunyai beberapa kelemahan, ditambah lagi dengan realita bahwa pelaku pencucian uang yang merupakan sebuah sindikasi akan terus berusaha mencari jalan keluar untuk mengantisipasinya.

Kata kunci: pencucian uang (money laundering), data mining technology

Introduction

Globalisation of the world is being taken advantage by criminal by transferring illegal funds easily and quickly across international border because the advances in financial information, technology and telecommunication (UN, 2006). In several years, law enforcements in many countries have been struggling to against money laundering activities which is being used to convert illegal money from drugs or

crimes becoming legal proceeds. It is estimated that US$1 trillion laundered annually worldwide (Scott, 1995). As a consequences, banking institution required to complete currencies transaction report (CTR) and suspicious activities report (SAR) for all deposits, withdrawals, and currency exchanges over US$10,000. However, another problem rises relating to handle large amount of those reports. For description, at federal level in US more than 7 million CTRs each year were sent. In addition approximately 40,000 wire transfers each day in one New York bank (Abadinsky, 1997), and advances in banking technology ease to transfer money by wire transfer. It is needed only 45 seconds to launder by wire transfer and it took the police officers 18 months to investigate the case. In 2004 there are 214,797 categories are suspected violations (FinCEN Release, 2004). Efforts have been carrying out by many countries to prevent, identify, detect and investigate the patterns or the activities relating money laundering. Recently, many countries rely on data mining technology to audit in finding the money laundering patterns. This technology have been giving much contributions for many countries which seriously against money laundering activities.

Nature of Money Laundering

Money Laundering is defined as "….to knowingly engage in a financial transaction the proceeds of some unlawful activity with the intent of promoting or carrying on that unlawful activity or to conceal or disguise the nature, location, source, ownership, or control of these proceeds" (Watkins et. al., 2003).

Basically money laundering involves 3 phases: placement, layering and integration (Madinger and Zalopany, 1999). In money laundering, large amount of cash must be converted from currency into some other form. It must be moved from a cash-based transaction system to business-based transaction system (Madinger and Zalopany, 1999). This usually involves placing the money in a financial transaction (placement). In this phase, money launders choose the banks which have weaknesses in their controlling transfer money to place their illicit money as correspondent banks. In order to avoid to be suspected in the process of placing, usually money launderers place money in some steps or many frequencies.

The second process is layering in which offenders are struggling to make investigators face difficulties to construct paper trail by exploiting the frequency, volume, or complexity of transactions. By spreading their money into many account in many business, money launderers become easy to wash their illicit money.

Once the laundered money can not be differentiated from funds derived legal activities, money launderer can begin the next step: the integration phase. In this phase, money launderer keep trying to integrate illegally obtained proceeds into legitimate business. Some cash-intensive businesses such as casino, nightclubs, bars and restaurants are usually used in this term (Standberg, 1997). By integrating illicit money into those kinds of businesses, it will de difficult to be traced.

Data Mining Technology

Advances technologies have been developing law enforcement as an audit tool to identify and to detect the patterns of fraud including money laundering activities in several years. Recently, it is introduced technologies to detect those patterns in 1990s, named data mining technologies (some called data mining algorithms).

Data mining is the use of automated data analysis techniques to uncover previously undetected relationships among data items. Data mining often involves the analysis of data stored in a data warehouse, a centralized database that captures information from various parts of an organization's business processes. Three of the major data mining techniques are regression, classification and clustering (Capple, 2007), widely used related money laundering detection.

Data mining technologies are not new innovative approaches anymore which are utilized to investigate the patterns of money laundering from data warehouse that adopted by many countries. These technologies also give contribution to analyse or audit the data, identify financial network and locate reporting and compliance information to assist in a regulatory function in a country, such as Australia (AUSTRAC, 2004).

There are many data mining tools that can be used to assist investigator or auditor to identify and to detect the patterns, some of them are Financial Crimes Enforcement Network AI Systems (FAIS) and

Origami software package. Both of them are used to assist in identifying money laundering activities and patterns.

FAIS needs report of the large transaction (CTRs and SARs) to evaluate the patterns of money laundering. This data mining methodology evaluates the report by 336 rules which contribute positive and negative evidence to determine the suspiciousness the reports. In Origami method, investigation is conducted by analysis network to reveal illegal activities through telephone line.

Some of the most popular tools in data mining application rely on statistical and artificial intelligence (AI) techniques, such as:

- Linear regression model, the most basic approach in data mining, is designed by defining a dependent variable (output) and a number of independent variables (inputs). The result of a linear regression model is an equation of a line that best fits the data set, which can be used for prediction process.
- Logistic regression is very popular means of data mining because it can solve problems involving categorical variables.
- Cluster analysis can be used to mine large data sets for investigative lead generation and to isolate statistically significant relationships between suspect network, modes of conveyance, and locations from which drugs and illegal proceeds are exchanged.
- Inductive algorithms can assist national and international investigators uncover money laundering patterns by generating decision trees based on historical outcomes.
- Neural networks are the technique utilizing digital computers to mimic the operation of the learning structure that exist the human brain. This technique also can be used with continuous or categorical variables and non-linear and collinear data.
- Fuzzy logic is the technique which utilizes a theory that allows incomplete information to be processed and conclusions derived.
- Genetic algorithms are the technique used to tracked money laundering operations and to solve a variety of optimal tasks.

Those data mining technology tools are very efficient to detect money laundering activities. However, besides their benefits, there are limitations in using those technologies (Watkins et. al., 2003). The benefits that can be gained from that application: firstly, reducing the

amount of time spent manually combing large data sets in search of leads and patterns. Secondly, it can reduce problems in financial investigations that result from manpower shortages because these methods have the ability to rapidly explore large financial data sets and identify case leads and money laundering patterns. Thirdly, the benefits of using this technology are the identification of more leads, accurate and timely leads.

In contrast, there are several limitations in using this technology: lack of trained-analysts to utilize these techniques, difficulty in access to the data sets from the expert systems, difficulty in identifying money laundering if the offenders have bias information, and difficulty in the culture of law enforcement.

Data Mining Technology Assists in Prevention Money Laundering

Related to the detecting, preventing and analyzing the pattern of money laundering, there are 2 generations of data mining technology which are first generation and second generation. The first generation nowadays is not being used anymore due to its weaknesses such as in detecting money laundering schemes of smaller amounts.

Nowadays, the second generation data mining technology is being used in combating money laundering. This generation consists of four keys risk assessment components (Menon, 2005):

1. Client Risk Assessment by using detailed information and transaction activities which collected at the time that an account is opened to investigate all aspects of the customer's profile. In this step involves analytical activities of the customer's profile but are not limited to:
    a. Watch list name screening, not only the name and account individually but also the names other individuals and organizations that are affiliated with the account.
    b. Country alerting
       Countries which are categorized as a high risk country related to money laundering based on information from Financial Action Task Force (FATF) can be flagged for further investigation.
    c. Channels which used by the account holder can include information on the financial representative of the account, the branch office, and point of origin pertaining to the online banking activities of the account holder.

    d. Business Relationships

In the business affiliation is usually provide additional profiling criteria including the names, the number of business relationships that are associated with the account holder.

    e. Political Affiliation

One of the customers having high risk in money laundering is the one who are occupying political offices. Thus it is needed to have more profile from those customers.

2. Transaction Risk Measurement by identifying and filing account related transactions that pose the greatest risk for potential money laundering activities. These transactions involved 3 categories:

    a. Funds related behaviors, these transactions include internal transfers between accounts, rapid movement of funds in or out of the account, or sudden activity into a previously dormant account.

    b. Transaction related behavior

    c. Miscellaneous behavior, in these transactions which have high frequency in changing accounts including the movement of funds without a corresponding trade and transaction in stock in the short period between buying and selling date.

3. Behavior Detection Technology is to detect suspicious patterns of behavior that may be hidden beneath large volumes of financial data by using specific technology which include:

    a. Scenarios which is a combination of rules and/or conditions which define the transaction pattern that is being detected. For instance, in transferring money from or to the suspected countries which have a high risk in money laundering should involve a code in the transfer receipt.

    b. Thresholds, the data elements those are relevant to particular scenario or pattern. Thresholds have an important role in eliminating of false positive and ensuring only the most relevant results that will be reported.

    c. Alerts, such as a signal when the process finds to any possible matches of potential money laundering fraud that is needed to be further investigated.

d   Look back period and its frequency.

Look back period is a period of time, could be a day to 12 months, in monitoring of the scenario in each run of the detection process. Frequency is a periodicity needed by scenario to run the process that can be daily, weekly, monthly or yearly.

4. Workflow and Reporting Tools is to assist in alerting investigation and compliance reporting which include:

a. Case management

This tool is consisting case management providing an alert analysis workflow which is integrated with the basic compliance reporting tools.

b. Record keeping

In term of the compliance review, this tool record a particular series or records and additional information which needed by federal law or financial institution.

c. Reporting

The transaction and watch list filtering solutions that generate Suspicious Activity/Entity Reports, Currency Transaction Reports (CTRs) and any other customized reports for internal stakeholders or federal regulators are provided by this tool.

The Challenge of the Second Generation Data Mining Technology as an Audit Tool in Money Laundering

There are some tools in the second generation data mining technology that can be applied specifically in an organization like banks, such as Statistica-data Miner, SPSS-Clementine, Affinium Model, Insightful Miner and KXEN but the application of those tools depends on the condition of the organization itself. Each tool has strengths. and weaknesses; each tool suit may be the best for particular companies.
Some consideration should be noticed by each company in choosing those tools, such as ease for use, accuracy and ability to perform all common data mining task (Nisbet). Furthermore, any kind of technology including data mining technology always needs to be enhanced period to period to assist the users to achieve the objectives including in term money laundering.

The usefulness and the effectiveness of any technology is depends on the users themselves. Technology is only   the   tools   that may assist the

process to achieve the objectives. Thus, the application of data mining technology should consider not only the ability of the technology itself in detecting the patterns of money laundering but also the capability and quality of human resources which is using that technology.

Conclusion

The issue of money laundering has been living since long time a go such as a chronicle disease that is not easy to be cured. The challenge in preventing of this washing money process is becoming larger and larger because it involves the process of transferring money in the worldwide. Data mining technology as the tool to assist in preventing money laundering by identifying the patterns is more getting reliable year by year, such as Statistica-data Miner, SPSS-Clementine, Affinium Model, Insightful Miner and KXEN but the application of those tools depend on the condition of the organization itself. However, due to the advance in technology, the money launderers keep trying to develop a strategy in facing data mining technology. It means that in the long span, the ability of data mining technology is still need to be enhanced.

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