Module 4 : Fraud Analysis

- What is fraud analysis
- 5 Analysis methods to use
- Benefits
- Monitoring

Summary / What you Will Learn:

- What is fraud analysis?
- Five analysis methods to use
- Benefits
- Monitoring
- What to include
- Seven steps to starting an effective fraud analysis programme
- Data mining

Fraud is used in a number of different ways, which means that companies need to focus on the various ways they may be victims of fraud and then put measures in place to identify these threats. With the internet, fraud isn't only related to accounting and bribery within the company, but can just as easily be carried out by a customer purchasing a large and expensive product.

4.1 What is Fraud Analysis?

Fraud analysis combines analytical techniques and technology with human assistance to detect false transactions before or after they occur.

This means that they include preventative and detective techniques which can be used by companies daily to ensure that they don't become victims of fraud.

The process includes gathering and storing information. This information is then used to identify patterns, abnormalities, and discrepancies which are then used to help companies manage potential fraud threats moving forward.

Continuous analysis requires setting up scripts that run large volumes of data to identify abnormalities as they happen over a period of time. The benefit to this is that this method improves efficiency and ensures consistency, overall improving your fraud detection process.
Create and test scripts and then run them against the data you have collected to get notifications when any abnormality may occur, identifying trends and patterns and providing reports you can present to management.

Techniques often used in fraud analysis include:

- Calculating statistical parameters and looking for outliers or values that exceed the averages and are outside the standard deviations.
- Focusing on the low and higher values to identify what anomalies may be there. Often these anomalies are a sign that fraud is occurring or may have taken place.
- Grouping the data and the transactions into groups based on certain criteria, such as location. Seeing how many transactions are taking place outside the statistical parameters and where they come from. Seeing if they are distributed evenly throughout the geographical area.

4.2 Is Fraud Analysis Essential?

When anyone commits fraud of any kind, they leave a trail behind.

The trail is often a digital fingerprint, an opportunity for a company to prevent harm and sniff out fraud. The analysis process can be the 'sniffer dog', so to speak, a system that can identify discrepancies and anomalies and use this information to identify if and when fraud has taken place. This can also be used as an effective preventative tool, which can save companies millions in the long run.

4.3 Why You Should Use Fraud Analysis

Fraud analysis has been used for more than 20 years to fight fraud and corruption.

It involves useful and powerful tools which can identify fraudulent activity and help companies bring fraudsters to justice while helping them save money and keep their good reputations.

The process ensures that the correct evidence is collected to make a case and start an effective investigation to catch the perpetrator, whether they work for your company or have committed the crime against your company, either way costing you money in the long run.

The process is simple and includes identifying the data that needs to be used in the analysis. This involves a three step process: identification, organisation, and analysis.

Identification

This first stage includes collecting the data needed to determine if fraud is taking or has taken place. This involves identifying what data is essential to the analysis process. While the systems for analysis can hold high volumes of data at any given time, narrowing down the data can narrow down the search and make fraud that bit easier to identify.

Organisation

Collecting the data to use is one thing, but organising it into specific groups can help with the analytical process. You can use geographical area, for example, grouping all the data related to each area and then using that as an analytical point. This data will need to be carefully integrated into the system. This is where a simple spreadsheet may not be good enough.

Analyse

The data used should enable you to get as much out of the analysis as possible. This step is used to identify important information and make the decision on whether further analysis is needed.

4.4 Five Analysis Methods to Make Use of

When it comes to fraud analysis, you need to know the most common methods and what systems you can use to prevent and detect fraud, reduce the impact it has, and catch the people involved.

Outlier detection

Outlier detection measures the distance between data points, focusing extensively on those outside the standard ranges. Outlier detection can determine fraud cases.
A good example is identifying high cash transactions or purchases using an order that is out of sequence

Continuous monitoring and anomaly detection

Monitoring in real time while combining with anomaly detection using past findings to identify current fraud trends taking place. Identifying new trends and patterns which can lead you to possible fraud taking place.
An example of this is setting up alerts that notify you when a cheque issued doesn't match the cheques paid out or when a dormant account suddenly becomes active.

Regression analysis

This is statistical analysis which studies the strength of a relationship between independent and dependent variables. An example of regression analysis involves analysing the volume of loans given by a particular bank compared to the amount of each of the loans over a set period of time.
A sudden increase in both could be a signal to look a little deeper to identify if fraud has taken place.

Semantic modelling

This process identifies semantic patterns, often written communication, that is unique to a person, similar to a fingerprint, when it comes to their patterns and thoughts.
An example is when specific words are identified that lack present tense or detail when describing a certain event. This may be an accident which leads to an insurance claim. This may lead to suspicion and result in further investigation.

Neural network

This is a non-linear statistical tool which has been modelled based on the human brain. This is usually used to identify certain patterns using clustering and classification.
An example would be an insurance company that adjusts their thresholds for identifying suspicious pattern claims or a bank locating which branch has an unusual number of loans being processed through their systems that are not repaid or are larger than the collateral used to secure the loan in the first place.

4.5 Benefits of Fraud Analysis

There are numerous benefits that you will find when making use of fraud analysis tools.

The benefit of preventing and detecting fraud and saving the company millions in the long run is a massive bonus that cannot be ignored. It is important to remember that every company in every city around the world is at risk of becoming a victim of fraud, which is why companies need to take relevant steps to reduce the risk and ensure that they can detect fraud as it happens.

- ***Notice any hidden patterns.*** Often fraud isn't easy to detect. People who commit fraud have seen a weak process and have taken advantage of it. With the right analytical tools, the hidden patterns can be brought to the surface to ensure that all fraud cases are seen and relevant action is taken.

- ***Improve current methods.*** If your current methods are not effective and fraud is simply slipping through your fingers, then you will find that fraud analysis can help you find those hidden patterns and offer an outstanding preventative and detection solution you can trust.

- ***Use data from across the board.*** When it comes to fraud analysis, you can use data from across the board as a point of reference. Anything that steers away from the standard parameters can be a sign that further investigation is required.

- ***Improve performance.*** Fraud analysis tools can be used to improve the performance of your current fraud systems, work with them and ensure that suspicious behaviour is noted and that

further investigations take place to detect fraud and take relevant action.

4.6 Monitoring

Monitoring your fraud analysis on a regular basis is essential to ensuring it works effectively and that all fraudulent activity is brought to your attention.

Monitoring your fraud analysis regularly can provide you with a host of benefits to help you combat fraud within your organisation.

Risk assessment

Fraud analysis monitoring can assist you in writing and managing your fraud risk assessment, identifying potential threats and how to manage them effectively. Your risk assessment can be part of your general risk assessment or it can be a standalone agreement.

Analytical perspective

Real-time monitoring can provide you with an analytical perspective that you can rely on when identifying fraud and taking relevant steps to prevent and detect fraud from taking place within your business.

Identify high risk areas

When monitoring your fraud analysis systems on a regular basis, you are able to identify your high risk areas, your weak points, those areas that fraudsters could potentially take advantage of. Remember someone who commits fraud is often one of the last people you would think could commit a crime of any kind. They come across as honest and trustworthy, but when they see that weak spot, they will take advantage.
Identifying the weak spot can help you reduce the risk of fraud taking place in the first instance.

Evaluate the system's accuracy

Regular monitoring of the system can help you identify how accurate it is and any adjustments or changes that need to be made. Periodic reviews can help you identify false positives and also

determine if any violations have been missed. This helps you see if you need to change the data you have entered or amend the parameters you are using to ensure that you get accurate results at all times.

Identify gaps in system

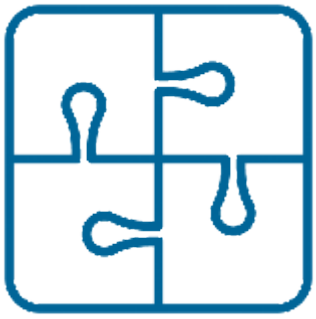
When you are first setting up a fraud analysis process or system, you will find that there are gaps which can only be rectified through regular monitoring and analysis. Identifying gaps is an opportunity to make necessary changes to ensure that you achieve accurate testing results and identify fraud quickly and effectively.

FACT

There are 758 reported frauds every day or 31 every hour. The actual number of frauds is much higher.

Source: cifas.org.uk

4.7 What Fraud Analysis Includes



Fraud analysis is made up of a number of different components which work together to provide you with the answers you are looking for.

This can be used to notify you the minute suspicious activity takes place. You can also use this tool to identify if further analysis or investigations need to take place.

The first thing fraud analysis includes is the data that needs to be collected. When you are setting up your system, you need to know what data you need to create an accurate analysis. These systems can often handle very large volumes of data at any given time, but choosing the correct data with care can narrow down your search parameters to ensure that you get accurate results.

You will have an integrated process which will be carefully designed based on your business and the type of fraud you may fall victim to. As a bank, you will be susceptible to financial fraud, whereas as an online company, you may be a victim of identity theft with clients using financial crimes against you to secure expensive products and services.

Fraud analysis also includes regular evaluation of the system, ensuring it runs smoothly and also monitoring all activity at all times. With regular monitoring, you are able to identify if any fraudulent activity has been missed and what changes need to be made to the system moving forward.

The fraud analysis process and technology will give you the ability to report your findings, which can then be analysed to determine if further analysis or investigation needs to take place.

4.8 Seven Steps to Starting Your Fraud Programme

This is an easy seven step process you can follow to start your very own fraud programme to protect your company against fraudulent activity in the future.

1. Create a complete profile which lists the different fraud areas that may occur along with the types of fraud that fall into each of these areas. This is to be company-focused based on your company and the industry that you are in. If you are a banking institution, then you will be focusing on financial crimes, as an example.

2. Identify the overall exposure of your company and quantify that to the risk of fraud occurring. Focus on the highest priorities first, monitoring them regularly.

3. Do ad-hoc testing to look for fraud indicators in these areas based on the analysis conducted. Establish a risk assessment to identify areas where you need to be paying more attention. Investigate patterns and identify which indicators emerge.

4. Ensure you share the monitoring activity with everyone within the company. This ensures that vendors and employees are aware that you are monitoring for fraudulent activity and you have your finger on the pulse, which can deter criminals from taking steps to commit fraud against or within your company.

5. Provide management with notification the minute you notice something is wrong. Raising issues immediately is better than ignoring them and letting them slide until later.

6. Fix broken controls immediately. Segregate duties so the person that approves the transaction is different to the person that accepts the goods. This ensures any discrepancies are quickly noted.

7. Expand the scope of your analysis and repeat the process.

4.9 Data mining

Data mining uses data analysis techniques combined with high-end technology.

The aim is to develop knowledge to help you with future events. There are steps you will want to take when using data mining to provide you assistance when it comes to preventing and detecting fraud moving forward.

The steps in a data mining process include:

- the collection of data
- defining the problems
- strategising
- training and testing of the models
- analysing any results

- implementing the results

Data mining falls into two groups. These include supervised learning and unsupervised learning.

Supervised learning is when there is a target variable with values that are known and where predictions will be made using other variable values as input.

Unsupervised learning methods involve data where there is no target variable. While unsupervised learning methods are often used in cases where target variables are unknown, this does not stop the outcomes of unsupervised learning in the long run.

Analysing results

Diagnostics used vary between supervised and unsupervised learning. When it comes to classification problems, analysts will review a number of factors including lift, gain, threshold charts, profit charts, and more.

Business domain knowledge is significant when it comes to interpreting results. Models that are clustered can be identified to determine group performance.

Diagnostics focuses on identifying the capability of the model in separating the input data into sets where similar cases have taken place in the past. Analysts also identify the adequacy when it comes to certain clusters. They achieve this by analysing statistics based on key fields against remaining data.

Assignment

Fraud Analytics

Time: 30+ minutes

It is important you absorb as much of the information in this module as you can, so with this in mind, it is a good idea to run through this worksheet and help to consolidate all that you have learnt.

Download the worksheet below, print out, and complete.
Download Worksheet

Module Summary

This module helped you understand fraud analysis a little better by understanding why fraud analysis is so important and the benefits of using it within your business. You also learned how to monitor your analysis and what to include to ensure you achieve accurate results at all times. This module also provided you with five analysis methods and the seven steps you need to follow to start your own fraud analysis system along with essential information and insight into data mining.

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